

**A MODELLING STUDY OF GLOBAL MARITIME FREIGHT
DEMAND FORECASTING**

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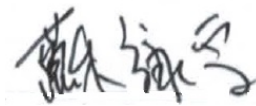
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DECLARATION

I hereby declare that this thesis is my original work and it has been written by me in its entirety. I have duly acknowledged all the sources of information which have been used in the thesis.

This thesis has also not been submitted for any degree in any university previously.



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SUMMARY

There is a huge increase in maritime trade volume in recent decades, and in particular, most of these traded commodities are transported by seaborne containers. Forecasting of maritime container demand in the context of international trade has always been of importance to government and policy makers so that countries and regions can plan ahead (in terms of infrastructure development or policies) to remain competitive. Numerous efforts have been made in the literature to forecast container demand but most of these studies have either adopted an economic approach or the transportation perspective and few have actually considered the forecasting of maritime container demand from an integrative economic trade-transportation modelling perspective. This thesis therefore presents the development of a quantitative demand forecasting approach that is capable of predicting future seaborne container demand in the global context. The integrated forecasting framework follows the conventional four step approach that is used in modelling demand for passenger transport (i.e. generation, distribution, modal split and assignment).

Under this framework, freight flow generation and distribution are combined using a computable general equilibrium (CGE) model, which is based on microeconomic and macroeconomic theories. The amount of bilateral trade flow between countries can be forecasted under various economic conditions. The thesis also proposed the use of mode choice models to determine the amount of seaborne trade between countries. Time-series models were also developed to determine commodity value-to-weight ratio and allow the conversion of commodity traded monetary value into physical weight carried.

Conversion factors derived from expert opinions and international port data were used to determine the container volume carried between countries.

The developed framework is then applied to study container demand trends along mature trade routes (for example, the United States-European Union trade route, the European Union-China trade route, the United States-China trade route) under different economic conditions. Application of the developed model are extended along different trade routes between developing countries, where trade data are mostly incomplete. It was found that the developed model framework is capable to simulate global maritime trade and container demand and can be a useful tool for planners in formulating relevant macroeconomic trade and maritime transport policies.

One major contribution of this thesis is to provide an alternative approach to investigate global transport demand as expressed by containerized flows. This form of unit expression is much more readily usable by transport stakeholders, as compared to the common output of trade monetary value. This would aid in making decisions such as port infrastructure expansion, enhancing trade relations via free-trade agreement and others. Another contribution of this thesis is to integrate the modelling techniques from economic expertise and transportation aspect in predicting the global transport demand. This integrated approach augment the traditional economic or transportation modelling approach to a combined efforts which provides a full development of global monetary trade forecasting from a robust economic modelling to physical traded quantity via multi-layered transportation modelling techniques. The approach provides more confidence in predicting traded amount or quantities than using traditional approaches alone. Furthermore, this thesis investigates the maritime

transport demand in a global context where very limited work in literature was found. As economies become increasingly globalised, it would not be enough to examine imports and exports of one country or region. In this thesis, an overall picture in depicting the changing in global trade flow under different economic conditions is advocated. It presents the impact of single country/region's economic changes to the economies of rest of the world, thus providing policy maker an indicator how the market changes in their trading partner could affect their own country's industry and international trade.

CHAPTER 1 INTRODUCTION

As markets become increasingly globalised, shipping volumes soar and has increased tremendously over the past decades. Since the 1950s, international trade has been rapidly growing at an average annual rate of 6%, while economic activity as measured by the global Gross Domestic Product (GDP) has increased by only 3% per annum (Maribus, 2010). Even after the contraction in world trade volume during the global financial crisis in 2008 and the subsequent economic depression from 2008 to 2012, the global trade sectors are expected to recover with the continual establishment of free trade zones (FTZs) between different economies (Herrmann, 2009; United Nations, 2010).). Due to the rapid rise of trade vis-à-vis economic growth, world trade has more than trebled since the 1950s to 45% of the global GDP (Maribus, 2010). For international commodity trade, the majority of goods flow between countries or continents is transported either by sea or air. Cargos are carried mainly by sea, although increasing quantities of manufactured goods are being forwarded by air. In general, the choice of transport mode which the goods will be carried by depends on the (relative) transportation costs and the value-to-weight ratio of the goods – the higher the value per unit of weight, the less significant the cost of transportation. Punctuality and reliability are considered more important for valuable commodities. However, due to the relatively cheaper freight rate by sea, most of the traded goods (in terms of volume or weight) are carried by sea. Due to this importance of international maritime trade, policy makers and infrastructure planners are often keen to know, understand and predict future trade demand trends with trading partners so that appropriate maritime trade legislations can be established or future maritime infrastructure development be

planned for. With this purpose in mind, this thesis aims to provide a systematic approach to forecast global maritime container demand.

1.1 Rise in Freight Transport Research

Freight research has received increasing attention in recent years, primarily due to the increased trade and volumes carried by different transport modes and the potential impact freight transport can have on economic development. Researchers are also keen to understand the influence of trade and transport policies on maritime commodity trade. Even with increasing attention on freight transport (especially maritime container transport), freight research receives relatively lesser attention as compared to passenger transport research (which has always been dominant in the transportation academia). This can be attributed to several reasons (Ben-Akiva *at al.*, 2013; Tavasszy and De Jong, 2014; De Jong *at al.*, 2015; Meersman *at al.*, 2015):-

- Freight movement tends to be more complex when compared to passenger movement, as there are more decision makers involved in the process of freight movement (De Jong *at al.*, 2015). This includes *firms* where goods are produced or received, *shippers* which organised shipments, *carriers* which undertake the movement. Several other factors such as the presence of a transshipment hub and the location of distribution centres can also affect freight movement. The differences in decision making behaviours of different players in the logistic chain and the linkages between them make freight demand prediction much more complicated than passenger movements (Ortúzar and Willumsen, 2011).
- There is a lack of publicly available detailed freight information, compared to passenger transport (Nuzzolo *et al.*, 2013). Typically trade

databases (such as UN Comtrade database the Eurostat International Trade database, international trade data published in World Bank, International Monetary Fund, etc) only report trade data in terms of value and weight, and to some extent, container volume information measured in terms of number of twenty-foot equivalent units (TEU) (CI, 2013; Eurostat, 2014; UN Statistic Division, 2015). However, there is little clue on the actual volume carried within a container and the amount of empty container along a given route. Information on container content is available to the carriers and to some extent the customs through bill of lading. Moreover, this information is not further processed and hence not readily usable. Other than the physical composition of goods within a container, attributes such as perishability, time sensitivity, freight rate, security and level of service are commercially confidential and are privy to the individual shipping company.

- Information on transshipment container and empty container movement is unavailable. Such information is confidential to the liner companies and is not publicly revealed.

In recent years, there has been a growth in interest to understand how trade can increase the volume of maritime transport. Markianidou (2012) investigated the relationship between trade and container flow and derived the volume of maritime transport from publicly accessible trade databases using linear and non-linear mixed modelling. Other than the work performed by Markianidou (2012), numerous organisations, both national and international, had published a number of statistics and analyses regarding to the trade volume and maritime transport flows. This includes the annual descriptive review on

maritime transport by the United Nations Conference on Trade and Development (UNCTAD, 2014), region-specific container flow updates by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP, 2013), and the annual report and quarterly statistics on European ports by the European Seaport Organisation (ESPO, 2014a, 2014b). According to a report by the Organisation for Economic Co-operation and Development (OECD) in 2013, international trade plays an extremely important role in a country's economy (OECD, 2013). International trade has increased more than five-fold to reach about 15 trillion US dollars in 2008 over the last 20 years (Nicita and Tumurchudur-Klol, 2011). The ratio of international trade of certain countries with respect to their own GDPs has increased over the past few years. For some countries, international trade even accounted for over 90 per cent of its own country's GDP, indicating its importance to some economies.

After the 2008 economic crisis and the 2009 collapse of world trade, most regions have embarked on the path of recovery since 2010. In particular, global freight volume transported by both sea and air was observed to have bounced back strongly and reached a new high above the pre-crisis peak in 2008 (ITF, 2012). World seaborne trade, in terms of tons loaded, grew 7% to 8.4 billion tons in 2010, which was actually 2% above the pre-crisis in 2008, whereas air freight transport grew over 20% to 172 billion freight tonne-kilometres which was 8% above the pre-crisis peak in 2007 (ITF, 2012; UNCTAD, 2012).

1.2 Development and Significance of Freight Transport Research

Maritime transport plays a prominent role in international trade. Over 80% of the world cargo in terms of volumes and more than 70% of the world cargo by

monetary value was carried by sea (ITF, 2012). According to the “Review on Maritime Transport” by the United Nations Conference on Trade and Development (UNCTAD, 2014), international seaborne trade continued to grow along with developments in the world economy and global merchandised trade and the total volume of commodities loaded worldwide is well over 8 billion tons. In particular, world container port throughput increased by around 45% from 472 million TEUs in 2009 to over 684 million TEUs in 2014 (UNCTAD, 2015). Around 24% of total world container throughput is dominated by Chinese mainland ports, such as Shanghai, Shenzhen and Ningbo, which are among the top ten container ports in the world (CI, 2013).

As trade rebounds after the economic crisis, global demand for freight transport has also grown rapidly, bringing business opportunities to liner shipping companies and challenging them to optimize their profit through marketing strategy reform or shipping route modification. For port authorities and policy makers, the growth in freight transport demand provided business chances as well as challenges. In facing the rise in demand for port utilization and possible trading opportunities, authorities are keen to understand the trade flow pattern between their own ports or countries and their trading partners. However, unlike shipping companies which recorded their shipment information in detail (e.g. attributes of traded commodities, origin and destination information of cargos, and shipping routes adopted), policy makers do not have the resource to analyse freight demand from a microscopic point of view. Since policy makers are interested to improve freight demand at a macroscopic level, policy makers often seek to understand the relationship

between international trade and economic growth with the limited macroscopic information on hand.

For long, port authorities or governments have employed commercial consultancy firms to help them forecast future freight flow across borders. Table 1.1 shows the selected shipping or maritime trade consultancies and their major research products or publications. These consulting firms had developed their own trade databases by processing trade data collected from selected shipping companies and government authorities. Using their in-house databases, they also provided different types of trade forecast and shipping market review. However, their models were not disclosed due to confidentiality, and leaving no clue for academic researchers nor government agencies to examine and validate their trade models.

Shipping companies may also cooperate with research centres or institutes to help them in forecasting future trading business prospects. In doing so, they had to disclose their internal shipment details, allowing the development of tailor-made trade forecasting model. While these studies allow shipping companies to set their business directions, it could not be used by other interested parties as the model is often not transferable.

To assist in the maritime transportation planning process, efficient and reliable freight demand forecasting models are required to predict short- and long-term freight demand, freight's impact on transportation network operations and the future planning for infrastructure development. Public agencies need to forecast future transport needs for both people and commodities in order to provide the infrastructure and human resources that make such movement possible. The private sector needs forecasts of demand

for transportation services to anticipate, among others, future financial requirements, equipment acquisition and labor requirements.

Table 1.1 List of Maritime Trade Consultancies and Their Publications

Consultancies	Publications	Content
Ocean Shipping Consultants ¹	East Asian Containerport Markets to 2025	<ul style="list-style-type: none"> • Container handling demand analysis • Forecast containerport demand to 2025 • Forecast containerport capacity to 2020
	North European Containerport Markets to 2025	<ul style="list-style-type: none"> • Container demand forecast (including transshipment) • Container demand development by port • Forecast containerport demand to 2025
	World Containerport Outlook to 2015	<ul style="list-style-type: none"> • Container handling demand analysis • Total container port demand • Container transshipment demand
Drewry Shipping Consultants Limited ²	Multipurpose Shipping Market Review and Forecaster	<ul style="list-style-type: none"> • Trade demand forecast • Freight rates and carrier financials • Overview on charter market
	Container Forecaster	<ul style="list-style-type: none"> • World container trade and port volumes • Trade route analysis • Global demand and supply forecast
MDS Transmodal ³	MDST World Cargo Database	<ul style="list-style-type: none"> • Comprehensive world trade database updated quarterly
	Container Trade Forecasts	<ul style="list-style-type: none"> • Long-range forecasts of containerised and non-containerised maritime trade • Estimates on volumes of loaded and empty containers along trade route • Forecast on bulk and break-bulk commodities
Clarkson Research Services Ltd. ⁴	Shipping Intelligence Network	<ul style="list-style-type: none"> • Review on dry bulk trade • Monthly report on container trade and throughput • Shipping market analysis

¹ Ocean Shipping Consultants official website: <https://www.royalhaskoningdhv.com/en-gb/services/port-and-shipping-studies-and-nautical-services/79>

² Drewry Shipping Consultants Limited official website: <https://www.drewry.co.uk/>

³ MDS Transmodal official website: <https://www.mdst.co.uk/>

⁴ Clarkson Research Services Ltd. Official website: <http://www.clarksons.com/services/research/>

For policy planners and authorities who deal with multiple maritime players, it may be more feasible to model trade at the strategic planning level to forecast demand. In general, traditional research studies on trade demand forecasting are grouped into two categories: trade economics approach and freight transportation approach. Trade economists are concerned on the impact of economic activity on trade growth and the impact of the establishment of trade policy between countries and trading partners on international trade. They tend to focus on overall trade (mostly in monetary value) which include both services and merchandise trade on all transport modes among interested parties at the national, regional and international levels (Mizutani *et al.*, 2006; Strutt, 2008; Ariyasajjakorn *et al.*, 2009; Sharma and Kallummal, 2012). On the contrary, logistics and transportation researchers were particularly interested in the amount of commodity flow, specifically, number of container movements between an origin and destination at regional and international levels and the number of truck movements at national and provincial levels (Abdelwahab and Sargious, 1992; Jiang *et al.*, 1999; Veenstra and Haralambides, 2001). Often logistics experts had to make assumptions on the amount of containers generated at the origin and attracted at destination when studying on the amount of containers carried along a particular trade route (Veenstra and Haralambides, 2001; UNESCAP, 2007). Recognising that there exists a decoupling of trade and transportation in past research and the potential deficiencies of such decoupling, this thesis aims to develop a coupled maritime trade demand forecasting model that can estimate transportation demand in terms of TEU, monetary value and volume.

1.3 Objectives of Study

With the aim to forecast maritime container demand from an integrative economic trade-transportation modelling perspective, the objectives of this research are:

- To develop a quantitative demand forecasting approach to predict future seaborne container demand in the global context.
- To investigate on freight mode choice behaviour at the strategic planning level and to predict modal share given a set of origin-destination based commodity trade flows.
- To investigate the relationship between value, weight and TEU and to use the relationship to predict TEU flow between countries.
- To apply the model to study maritime container trade along selected international trade routes.

1.4 Organization of Thesis

The thesis is organised as follows:

Chapter 1 provides the background and the rationale behind this research as well as highlights the research objectives.

Chapter 2 delivers a review on the existing literature on freight transport demand forecasting with an explicit focus on maritime container transport. It explores the suitability of existing forecasting models to be directly usable by final users in the maritime transport industry and policy makers. Research gaps are identified and the scope of work defined.

Chapter 3 proposes a method to forecast container demand using a coupled trade economics-transport modelling approaching. It provides the

underlying theories in developing the integrated framework and the design of this approach.

Chapter 4 presents the development of the global trade demand forecasting model. Computable General Equilibrium (CGE) model is adopted and the theories and model mechanism are presented. Trade demand forecast between selected studies areas were modelled under different economic scenarios settings.

Chapter 5 presents the development and modelling on freight mode choice. Binary logit and binary probit models were developed to study global freight mode choice. The amount of trade carried by maritime transport (in monetary value) can be determined from the models proposed in the chapter.

Chapter 6 presents the development and modelling on value-to-weight-to-container conversion factors to transform the predicted maritime traded values from the previous modules into number of container boxes. Autoregressive-Moving Average with exogenous terms (ARMAX) models were developed using import and export related indices as explanatory variables.

Chapter 7 provides a practical implementation of the suggested framework in mature trading routes (i.e. Trans-Pacific trade and Trans-Atlantic trade) and developing trading routes (i.e. Intra-Asian trade routes). Three economic scenarios were studied to demonstrate the feasibility of the framework to estimate global maritime freight demand.

Chapter 8 summarizes the major findings achieved from this research study and provides recommendations for further research.

CHAPTER 2 LITERATURE REVIEW

The chapter shall present a review of the literature on the methods listed in freight forecasting. First, an overview on freight demand forecasting are discussed and past research efforts on commodity trade flow modelling are presented. Then the traditional four step freight transport planning method that is derived from the passenger transport modelling literature is described. Different models utilized in each step of the four-step procedure are further reviewed in depth. Apart from viewing freight demand forecasting as a transportation problem, trade economists also attempt to forecast freight demand resulting from economic activities or implementation of trade policy. Approaches adopted by trade economists and related applications on trade demand modelling are also reviewed in this chapter.

2.1 Overview on Freight Demand Forecasting

International freight transport demand is a derived demand as it is generated from business transactions involving goods between regions. (Ogden, 1977; Mizutani *et al.*, 2006; Deardorff, 1998; Campbell *et al.*, 2012) Therefore, it is appropriate for international freight transport demand forecasting to be performed during the stage of forecasting the amount of trade between origin and destination, and then followed by calculating volume of freight flows corresponding to the trade between origin and destination. Past studies have found that trade amount between regions and countries are affected by a number of factors, such as population, employment, macroeconomic indicators, consumption power and exchange rate (Fite *et al.*, 2002; Janssens *et al.*, 2003; Fosgerau and Kveiborg, 2004; Kockelman *et al.*, 2005; Novak *et al.*, 2011). Unlike science and engineering experiments where factors can be tested in a

physical experiment, such factors in world trade and commodity flow cannot be experimented within the framework of a real economy. In order to simulate the amount of trade generated from a region or to predict the amount of trade under various circumstances (for example, changes in business market decisions, changes in trade policy and economic growth or decline), one can only build theoretical or empirical models which attempt to mimic the real world and assess the influence of these parameters under different hypothetical scenarios.

Past studies on transport planning were mainly focused on passenger-based transport. As such, freight transportation planning models are typically not as well-developed as that of the passenger-based transport field (Holguín-Veras and Patil, 2008; Giuliano *et al.*, 2007; De Jong *et al.*, 2004). This is mostly due to the presence of multiple agents involved in freight transport decision-making and the limited availability of freight data. Despite the relative lack of freight research in the literature, the freight industry as a whole contributes considerably to a country's GDP, as shown in the OECD Factbook (2013) and also in the recent review by UNCTAD (2014). For example, out of the 34 member states in the OECD, 12 of them including Austria, Belgium, Ireland, Luxembourg, Korea, Japan, Netherlands, and others, reported that import and export trades contributed to more than 50% of their own GDP from 2006 to 2011 (OECD, 2013). Recognising this importance, researchers started to put more emphasis in the past two decades to model goods movement and investigate the causality of cargo movements (Leitham *et al.*, 1999; Polder and Van Meijeren, 2000; Marzano and Papola, 2004; Shen *et al.*, 2009; Juri and Kockelman, 2004; Shibasaki and Watanabe, 2011).

2.2 Past Studies on Freight Demand Forecasting

Freight transport models can be categorised by their scope and modelling approach. For instance, freight transport models can be classified according to geographical levels (such as urban, national, regional and international level). Sorratini and Smith (2000) estimated freight truck flow within the state of Wisconsin by means of the input-output model. Du and Kockelman (2011) employed the random-utility-based multi-regional input-output model to examine the national freight truck and rail flow within the U.S. Shibasaki and Watanabe (2011) forecasted the future amount of trade and cargo flows in the Asia-Pacific Economic Cooperation (APEC) region by adopting the computable general equilibrium model.

Freight transport models can also be developed with the use of freight data, which may be either commodity-specific or vehicle-specific (i.e. freight movements can be measured as flows of commodities or number of vehicles). Key differences between commodity and vehicle based models involve the origin during demand generation and mode split stages, as well as the type of input variables employed to generate flows (FHWA, 2007). Vehicle-based models use employment, socio-economic, and household data to estimate trip rates. These models presume that the mode and vehicle selections had already been performed and modal split would not be required in later stage. For example, Su (1998) and Lin (2000) combined traditional linear regression with neural network and fuzzy regression methods to forecast the total volume of Taiwan containerised cargos. On the other hand, commodity based models tend to use economic models (e.g. input/output models) to generate tons or value per commodity type. Commodity-based freight models estimate or forecast

commodity flows between origins and destinations (OD matrices) and modal split has to be included in later stage (Shabani *et al.*, 2012). Lyk-Jensen (2011) developed a commodity-based gravity model to forecast international freight flows for the European Union 15 together with Switzerland and Norway.

Freight demand models can also be categorised based on the modelling approach, i.e. transportation-based models, economic-based models, and integrated models. Transportation-based models use transportation-based theories as their basis and includes regression model, gravity model, and conventional four-stage model, where transportation theory is the basis of the demand modelling approach (Fite *et al.*, 2002; Levine *et al.*, 2009; Holguin-Veras *et al.*, 2011; Cantillo *et al.*, 2012). Economic-based trade models, which employ economic theory as the basis or involve economic indicators in the model variables, includes regression analysis based on economic indicators, gravity model analysing trade flows, and input-output model (Marzano and Papola, 2004; Brocker *et al.*, 2011; Bagighni, 2012). The integrated modelling approach combines both transportation-based and economic-based models to simulate and predict the amount of trade flow or in seaborne trade, the amount of container flow. This approach includes random utility based multi-regional input-output model, spatial computable general equilibrium model, and others (Du and Kockelman, 2011; Sharma and Kallummal, 2012).

2.2.1 Freight Research Studies by Geographical Area and Location

Most local governments and logistic companies tend to be concerned on freight demand forecasting and commodity flow at the urban level. In general, urban freight transport is mainly related to road transport modes, i.e. commodity carried by truck or rail. Under this finer geographical scope, past research

studies tend to focus on freight transport problem at the tactical and operational levels, i.e. either to study the logistic chain of a company or to study traffic impact of new logistic development on the existing transport network.

Anand *et al.* (2012) presented a comprehensive review on city logistics modelling for urban freight analysis. The authors identified four major factors which the modelling selection process for urban freight transportation, i.e. (1) stakeholders' involvement, (2) objective of modelling, (3) defining criteria, and (4) perception for achieving objective.

When public sector stakeholders (such as traffic authorities, infrastructure authorities and railway terminal/port authorities) are involved in the modelling attempt, the modelling technique tends to achieve system optimisation without considering the behaviour or attributes of stakeholders such as shippers, carriers and receivers. Hunt and Stefan (2007) developed a tour-based micro-simulation model of urban commercial movements for city of Calgary in Canada for better freight transportation planning. The model permits to test wide variety of responses to network changes possible scenarios related to traffic, policy and employment and its effect on commercial vehicle traffic. A modelling approach presented by Muñuzuri *et al.* (2009) appears to be useful for better planning of urban freight activities. The model can be applied to analyse urban freight traffic, identify traffic corridors, plan new infrastructure, analyse logistics policies and impact on environment.

On the contrary, when private sector stakeholders' behaviours are considered in the model, the model objectives tend to be more concerned on profit/loss optimization rather than on analysing the impact on traffic system. A modelling framework developed by Hensher *et al.* (2005) to investigate how

stakeholders in retail supply chain might interact more effectively to reduce the costs of urban freight distribution. The authors termed this as “economic-behaviour-based freight model” and believed that the system is capable of identifying initiatives that will increase the likelihood of cooperative outcomes in a supply chain while reducing the level of traffic congestion in cities. In another example, van Duin *et al.* (2007) describes a model where different carrier-agents negotiate in an auction for logistic contract. The model attempts to provide insight on the interaction dynamics of bidding behaviour among carriers and shippers through distributed intelligence.

Annad *et al.* (2012) observed that freight transport models at urban scale are mostly expressed in vehicle trip or truck trip level, with little or no attention paid on the types of commodities being transported. At strategic level, it is important to know the types of commodities being transported so as to establish appropriate trade policy or infrastructure planning.

Gonzalez-Feliu *et al.* (2012) proposed a novel approach to simulate the impacts of urban goods transport on road occupancy by combining inter-establishment movement (IEM) and end-consumer movement (ECM) together using Lyon, France as a case study. The IEM estimation module is a bottom-up behavioural-based statistical model of which meta-modelling characteristics using the data collected from three extensive surveys covering the logistic behaviour, such as number of pickups or deliveries, and size and nature of shipment. The ECM estimation module is developed similarly to the IEM module except that the required data is not so extensive, only the consumer trips related to small proximity retailers and big stores are included. The forecasted truck trips from the IEM module and the vehicle trips generated from the ECM

modules are aggregated together to assess the road occupancy in the study area. Four scenarios were examined: (1) Reference situation in 2050 forecasted based on economic trend and existing freight trip pattern in 2006 data, (2) Population density increase in central areas while remains steady in periphery, (3) Changes in retailing activities, and (4) Growth in e-commerce which changes the pattern in end-consumer shopping activities. The study showed the importance of simulating both inter-establishment and end-consumer's movements but this is significant only if all the establishments of the urban area were taken into account (and not only the retailers). The framework was found to be able to simulate the impacts of location policies (for both households and establishments) and organizational aspects (mainly on e-commerce) on urban goods movement flows. However, this type of framework is mainly useful at tactical/operational level for shippers and carriers but not at strategic level for planners. Furthermore, extensive data has to be collected and this can be extremely costly should the scope be extended to the global context.

Nuzzolo and Comi (2014) evaluated the impacts of future freight traffic on current transportation network at urban scale in the inner area of Rome so as to improve the sustainability of city logistics. The authors presented a modelling approach which incorporates the existing relations among city logistics measures, actors and choice dimensions. This modelling approach comprises three models to quantify the freight flow between origin and destination in three dimensions, i.e. (1) transport service type (e.g. retailer-owned transport, wholesaler-owned transport, and other carrier), (2) delivery time period, and (3) distribution tour type with combined features of vehicle type and delivery time. This study was supported by surveys carried out in 2008 which included traffic

counts in the study area, about 600 interviews of truck drivers for obtaining information for freight distribution, and about 500 interviews of retailers for collecting information for retail trade. This modelling system takes into account the influence of economic characteristics of a traffic zone on attracted freight traffic, the localization of freight centres on freight traffic generated for each zone, the characteristics of shops with related depots and the shipment size on the choice of service type and vehicle type. Delivery pattern according to freight type, origin and destination zone accessibility, vehicle type, shipment size and capacity of the zone attraction was captured. However, in order to develop such a comprehensive model in a global extent, it may not be easy to capture detailed shippers' and carriers' information.

In order to assess national transportation infrastructure capability for freight flow, researchers tend to disaggregate the entire country into different study zones to analyse freight flow among zones within the country.

Vold and Jean-Hansen (2007) built a spatial computable general equilibrium (SCGE) model for Norway, PINGO, and using detailed national commodity flow survey from the Ministry of Transport in Norway as well as freight cost prediction from other transport models. The authors categorised freight into 10 commodity groups and divide Norway into 19 regions according to Norwegian counties and a single region to represent all foreign countries in the model for prediction of regional and interregional freight flow. Four case scenarios, i.e. (1) growth in labour force in single region, (2) growth in labour force in all regions, (3) increase in price of all imported goods, and (4) increase in price on particular imported goods, are being tested and the case studies show various changes on the freight flow between regions. Results show that the

model behaves qualitatively appropriate but modifications are needed to adequately represent import activity. Commodity flow is presented in monetary value and do not provide any insight on the physical volumes of goods carried. Also, transport modes were not considered in their study.

Meijeren *et al.* (2009) used the TRANS-TOOLS model, a European transport network model covering all transport modes and commodity groups, to produce a long term forecast on rail freight transport in the Netherlands. The authors incorporated the information on expected development of the rail freight market from current stakeholders into TRANS-TOOLS to simulate the traffic network with new infrastructure developments. The model takes a base year of 2007 and use GDP growth as the sole indicator in economic growth, changes in freight costs as indicator in transport development to forecast the rail freight in the Netherlands until 2040. Three case scenarios were modelled: (1) low economic growth with moderate development in transport market, (2) moderate economic growth with moderate development in transport market, and (3) high economic growth with further development in transport market. The results from the simulation provided a good insight on the potential growth of freight transport volume as well as the rail freight transport market share in the Netherlands. However, the TRANS-TOOLS model can only simulate freight flow within Europe and between Europe and other countries, but not simulating global commodity flow.

Shen *et al.* (2009) applied various econometric time series models to model road and rail freight demand in the United Kingdoms and presented a comprehensive comparison of the performance of these econometric forecasting models. The authors built commodity-specific freight demand models using

annual road and rail commodity demand data in UK for the period of 1974-2006, macroeconomic data as well as industrial production indicators. The estimation results showed that industrial production generally offers a good explanation on both road and rail freight demand in UK but performance of models varies across different commodity groups. Although this study provides a good estimation on demand forecasting within the country, it does not provide insight on freight flow (i.e. freight distribution) within the country.

Russo and Assumma (2005) developed a trade demand model at the international level for the Mediterranean basin. Commodity freight flow in the Mediterranean basin is simulated with particular reference to the Euro-Mediterranean free trade zone and to trade with rest of the world. The model basically consists of three modules, i.e. (1) generation module: to estimate commodity generation and attraction using regression model with socio-economic data as independent variables, (2) distribution module: to distribute the amount of goods generated from origin to destination using multinomial logit model, (3) to simulate the transport demand split between various transport modes (i.e. container, solid bulk, liquid bulk and roll-on-roll-off) using multinomial logit model. This model sets a good example in traditional transport modelling technique. However, in the generation module, regression model performs within the range of calibrating data and lacks the prediction power when variables are out of the range.

Al-Azzawi (2010) developed a multimodal freight transport model to study the freight flow pattern in Scotland while including flows between Scotland and the UK and 14 other international regions and countries. The author collected detailed macroeconomic data as well as demographical data to

build a comprehensive land use and network database as the backbone of the model, then applied the conventional four-step approach to forecast up to year of 2025 (in tonne-miles by various transport modes).

Nuzzolo *et al.* (2011) established a sequence of models to estimate international import and export freight flows between Italy and the rest of Europe using a partial share approach. Similar to works done by Russo and Assumma (2005), the presented models contained mainly three steps: (1) regression models with employment information and GDP as regressors for generation and attraction model, (2) logit model with employment information, GDP, distance between origin and destination, and population density as input variables for freight distribution model, and (3) logit model with travel costs as input variables for modal split. The modelling system is capable to characterise import and export commodity flows, time period, commodity type, and transportation mode, through easy-to-capture variables (especially for its forecasting use) represented by level-of-service attributes and aggregate socio-economic variables, such as GDP and number of employees. This study provided a good demonstration on the conceptual flow of forecasting framework. However, the developed regression model is not representative enough for forecasting purposes.

2.2.2 Commodity Flow Studies Categorised by Freight Data Type

Commodity flow modelling can be classified according to the types of output freight data, i.e. (1) freight in monetary value (Ham *et al.*, 2005; Nealer *et al.*, 2011), (2) freight in physical quantities (tonnage or volume) (Zhou and Dai, 2012; Zhang *et al.*, 2015), and (3) number of trips (mostly found in road transport) (Nuzzolo and Comi, 2014; Tsekeris, 2016).

Ham *et al.* (2005) predicted interregional commodity shipments by roads and railways among regions within the US using a combined model of interregional, multimodal commodity shipments while incorporating regional input-output relationships and their associated transportation network flows. The combined model integrates the Leontief-Strout-Wilson interregional commodity shipment model with transportation network model. Export and import (in terms of value) for each region were obtained from the regional input-output models while the transportation network model is used to predict the shipments (in terms of weight) by commodity between each origin-destination (O-D) pair. The authors applied an exogenous ratio based on historical data that converts commodity shipment from value to weight and the predicted weight flow can be apply into the transportation network model. The integrated model predicts value of commodity shipments by sector for each O-D pair as well as physical flow by transport modes (road and rail). This combined model integrated the traditional four-step sequential model, which includes generation, distribution, mode choice, and assignment, into a single procedure. This study is one of the few research studies in the literature that has attempted to integrate an economic model with the transport model to predict freight flow in both monetary value and physical quantities.

2.2.3 Commodity Flow Models using Different Modelling Approaches

Commodity flow studies can be classified by several modelling approaches, i.e. (1) Trip-based models (Gonzalez-Feliu and Routhier, 2012), (2) Commodity-based models (Havenga and Van Eeden, 2011), (3) Shipment-based models (Hui *et al.*, 2014), (4) Hybrid models (Russo and Comi, 2010), and (5) Bottom-up statistical behavioural models (Travasszy *et al.*, 2012).

Trip-based models are less used at international level than at urban level, due to the fact that urban trips are included on multi-destination routes (Zhou and Dai, 2012). These models are direct applications of the four-step transport planning model and require specific survey data for calibration and censorial information for variable definition. Gonzalez-Feliu and Routhier (2012) commented that the general trip-based models are popular in urban context. These approaches mostly follow the conventional four-step model and estimate the number of trips generated by each zone or area and then deducing an origin-destination matrix for the goods. A conversion rule of tons transported per vehicles is either assumed as a constant number or formulated through historical data. It was noted that this approach does not provide information on types of goods produced or demanded in each area and transported between areas. As a result, researchers such as Havenga and Van Eeden (2011) advocate the use of commodity-based models to overcome this specific shortcoming of trip-based models.

Commodity-based models are considered to be the most popular category in freight modelling. These models use classical trip generation techniques (Ortúzar and Willumsen, 2011) and propose gravity approaches (Brocker *et al.*, 2011) or discrete choice frameworks (Washington *et al.*, 2011) for trip distribution and modal choice. Havenga and Van Eeden (2011) developed a commodity-based model taking into consideration the underlying drivers of containerisation in their forecast of container demand in South Africa. The authors applied quantitative analyses coupled with qualitative evaluation via the input-output (I/O) approach to determine the future supply and demand for each commodity group. The I/O model was used to calculate the output per

sector by taking into account the interrelationships in the economy and was disaggregated into 356 zones and 65 commodity groups for the purposes of freight flow analysis. The forecasted demand which was expressed in monetary terms were converted to volumetric terms using an assumed rand-per-ton ratio. Gravity models were then applied to determine freight flows between zones within the study area and the number of future containers was calculated. In this approach, there are several assumptions made which may or may not be valid (for example, a constant value-to-ton ratio, future percentage containerisation from experts and assumed constant ton-to-TEU ratio). Nevertheless, this is by far the most complete flow of modelling framework available to-date.

Researchers also developed hybrid models which are combinations of the trip-based model and commodity-based model (Chow *et al.*, 2014). It possesses the benefits of generating commodity flow based on zonal characteristics as well as converting commodity flow into traffic flow in terms of vehicle trips or shipments using commodity attributes. Russo and Comi (2010) proposed a two-level urban freight transport modelling framework. The first level (commodity level) concerns on the estimation of quantity flows between regions. The authors derived an attraction macro-model for end-consumer demand using general socio-economic data (such as number of residents, number of employees, etc.) as the input variables to predict the quantity of goods demanded by end-consumers (household) in different zones. On the other hand, an acquisition macro-model was developed from the retailer's standpoint using the quantity of goods required by retailer as input to deduce the flows of goods within or outside the study area. At the second level (vehicle level), the service macro-model was developed to estimate the number of vehicles needed to carry

goods for each zone using the predicted commodity flow from the macro-model. Then, the path macro-model estimated the departure/arrival time of vehicles and proposed the path to be adopted.

Bottom-up statistical behavioural models are built using historical data to anticipate the future freight demand and commodity flow. In these models, a typology of establishments was proposed, and the number of movements (defined as number of pickup and/or delivery operations) was estimated for each establishment using a generation function. This function was estimated using experimental modelling techniques and they do not produce direct O/D pairs.

Tavasszy *et al.* (2012) provided a review on the state-of-art of freight transport demand models and identified approaches suitable for comprehensive international and regional transport modelling. The authors discussed the latest integrative approaches including (1) the integration of trade with regional demand and supply models into spatial computable general equilibrium models and multiregional input-output models, (2) the integration of mode and route choice decisions into supernetwork models and (3) the introduction of supply chains as structuring elements for freight flows and applying them in hypernetwork models. The authors recommended that the first integrative approach will be suitable in implementation and application for modelling international freight transport demand as this approach simulates international trade as a result from interregional economic activities while at the same time takes into account the transport-related impact resulted from amount of trade flow. The predicted freight flow are in both monetary value and physical tonnages. This type of approach is particularly suitable for modelling when trade and freight data is limited at aggregate level. The second and third

approaches are more suitable when detailed transport network is available (mostly at the urban level) where comprehensive shipper/carrier survey were carried out. The predicted commodity flow is mostly either in physical flow or in number of trips.

2.3 Transportation-Based Freight Transport Modelling

Most of the modelling concepts applied in freight transport forecasting literature were believed to be originated from passenger transport (Al-Azzawi, 2010; Ortúzar and Willumsen, 2011). However, there are some significant differences between freight transport and passenger transport, such as the diversity of decision makers and items being carried as well as limited availability of data in freight transport forecasting, thereby increasing the difficulties in freight transport modelling. In general, the four step approach in freight transport modelling includes: (1) generation and attraction, (2) distribution, (3) modal split, and (4) assignment (Cantillo *et al.*, 2012). In the first stage, quantities of goods being produced in origins and those being attracted in destinations are determined. Then these amount of goods are further translated into transport flows between origin and destination zones. The third step is to allocate these transport flows of goods into different transport modes while the last step is to assign these flows per mode to the transport network. Figure 2.1 presents the flow concepts of the classical four-step transportation approach. In the next subsections, these steps are discussed in greater depth.

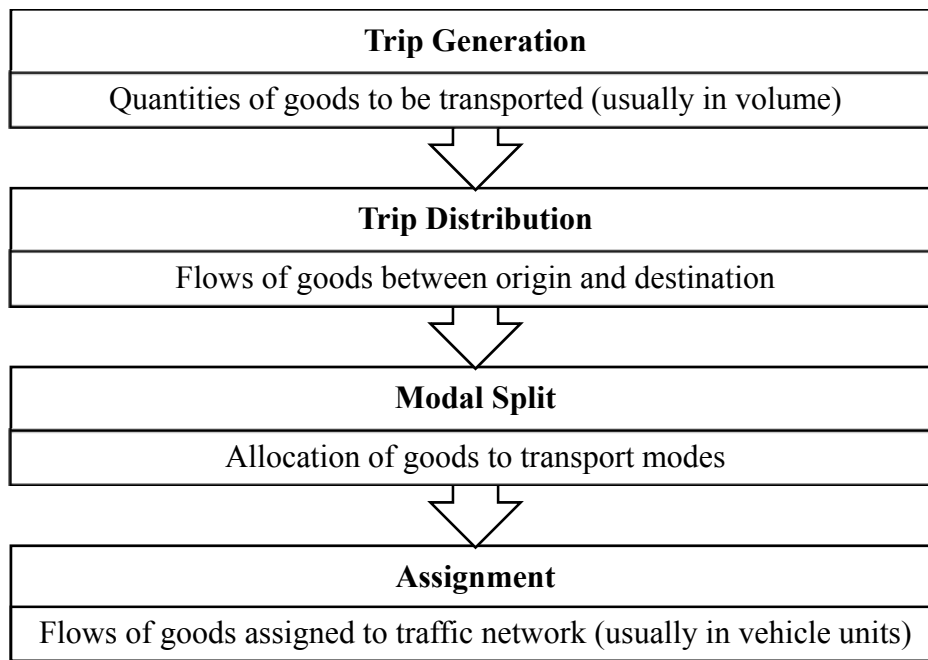


Figure 2.1 Conventional Four-Stage Freight Modelling

2.3.1 Models for Freight Generations and Attractions

Models for freight generation and attraction determine the quantities of goods transported between two regions (Garrido and Mahmassani, 2000; Cambridge Systematics *et al.*, 1997; FHWA, 1999; Leitham *et al.*, 1999). Regions can be defined as cities, regions within a country, countries or group of countries, depending on the area scope of the study. Common models and approaches are described as below and summarised in Table 2.1.

2.3.1.1 Trade Survey

One direct approach to estimate freight generation and attraction is to conduct a trade survey. The freight survey is usually a comprehensive questionnaire with questions related on production cycles, shipping cycles, freight rates, receivers' locations, etc. This could help in identifying the locations of manufacturing plants where goods are produced as well as raw materials are required. Besides, it also helps in identifying shippers' preference and their production cycles.

Lawson *et al.* (2002) have identified and reviewed four general approaches used to gather urban freight transport information from survey respondents, including (1) in-person interviews, (2) computer-aided telephone interviews, (3) mail-out/mail-back surveys, and (4) combinations of in-person, telephone interviews or surveys. They also highlighted the advantages and disadvantages of each approach. In-person interviews may provide detailed and direct information from interviewees and have a relatively high response rate resulting from purposeful sampling. However, it is much more time consuming than other methods and can become infeasible when a sample size is large. Computer-aided telephone interviews are conducted based on a scripted questionnaire and is comparatively less costly. Mail-out/mail-back surveys are considered to be the least costly method with larger and more representative sample but with typically lower response rates than other methods.

Havenga and Pienaar (2012) conducted universal questionnaire-based survey to road freight transport service providers in order to obtain road transport performance figures and understand the freight transport industry in South Africa. Hansen *et al.* (2014) compared the use of national freight transport model for Norway against a web-based survey of manufacturing industry representatives on the freight logistic patterns. Although the response rate of their survey was relatively low (only 6.8%), this survey method could still reflect logistics cost components when compared against the freight transport model which might not have covered all logistics cost components. Ambrosini and Routhier (2004) conducted an international comparison on urban freight transport surveys and found that quantitative surveys with qualitative interviews and discussion groups are efficient but this method is suited for localised studies.

2.3.1.2 Time Series Models

Time series models exist in a wide range, from simple growth factor models to complex autoregressive moving average models (ARMA). Time series model is different from regression analysis because a trend of a particular explanatory variable is described in the former while a certain value of the explanatory variable is forecasted in the latter. Some common time series models are described in this subsection.

The Partial Adjustment (PA) model has been used extensively in modelling macroeconomic data as a lagged effect or an adaptive expectation process, with its specification as:

$$y_t = \alpha + \sum_i^I \beta_i x_{it} + \varphi y_{t-1} + \varepsilon_t \quad (2.1)$$

where $0 \leq \varphi < 1$, y_t is the dependent variable, x_{it} is the i th explanatory variable, I is the number of explanatory variables, α and β_i are the coefficients that need to be estimated empirically, ε_t is normally and independently distributed error term. The adjustment parameter, $1-\varphi$, measures the speed of adjustment. The closer the adjustment parameter is to 1, the faster is the speed of adjustment (Dargay and Hanly, 2002).

The Reduced Autoregressive Distributed Lag Model (ReADLM) starts with a general ADLM model with specifications shown in Equation 2.2. Then insignificant variables are removed from the equation and the reduced model is re-estimated. This process is repeated until all the remaining coefficients of the variables are statistically significant and have the correct signs (Song *et al.*, 2003).

$$y_t = \alpha + \sum_i^I \sum_j^J \beta_{ij} x_{i,t-j} + \sum_j^J \varphi_j y_{t-j} + \varepsilon_t \quad (2.2)$$

where y_t is the dependent variable, $x_{i,t-j}$ is the i th explanatory variable with j th lag length, I is the number of explanatory variables, J is the lag length determined by the type of data used, α , β_{ij} and φ_j are the coefficients that need to be estimated empirically, ε_t is normally and independently distributed error term.

The Time Varying Parameter (TVP) model relaxes the constancy restriction on the parameters by allowing them to change over time, with specifications as below (Li *et al.*, 2006).

$$y_t = \beta_{0t} + \sum_i^I \beta_{it} x_{it} + \varepsilon_t \quad (2.3)$$

$$\beta_{it} = \beta_{it-1} + u_t, i = 0, 1, \dots, I \quad (2.4)$$

where y_t is the dependent variable, x_{it} is the i th explanatory variable, β_{it} is assumed to be adaptive in nature and is modelled in Equation (2.3) as a random-walk. ε_t and u_t are normally and independently distributed random errors with zero mean and constant variances.

The Structural Time Series Model (STSM) can capture movements not explained by explanatory variables through incorporating time-varying components in the regression equation, with specification as follow (Harvey, 1989):

$$y_t = \mu_t + \sum_i^I \beta_i x_{it} + \varepsilon_t \quad (2.5)$$

$$\mu_t = \mu_{t-1} + \beta_{t-1} + \eta_t \quad (2.6)$$

$$\beta_t = \beta_{t-1} + \xi_t \quad (2.7)$$

where y_t is the dependent variable; u_t and ε_t are the trend and irregular components, respectively; x_{it} is the i th explanatory variable, β_i is its unknown parameter to estimate, and η_t and ξ_t are normally and independently distributed.

Shen *et al.* (2009) compared the performance of these time series models in forecasting road and freight rail demand in the Great Britain using historical road and rail freight demand data for the period 1974-2006. It was suggested that STSM is more suitable for forecasting for short-term (i.e. one year ahead) and medium-term (i.e. three year ahead) but the PA model and ReADLM perform best at longer horizon (i.e. five year ahead).

2.3.1.3 Regression Models

Regression analysis is a statistical process to examine and understand the relationships between independent variables and dependent variables. In freight transport generation stage, the dependent variable may be the number of vehicle trips generated or amount of commodities produced whereas a wide range of possible independent variables including commodity characteristics (such as physical characteristics, modes of transport used, prices, production and consumption, seasonality), logistics (distribution network), projections of production and consumption, export and import statistics. For instance, productivity of labour, wages of labour, and size of plant may be considered as explanatory variables when developing models at the shipper companies level whereas gross domestic product, foreign exchange rate and population may be considered for models at the regional or national level from the government's perspective (Fite *et al.*, 2002; Novak *et al.*, 2011; Campbell *et al.*, 2012).

The most common regression model is the simple linear regression model which is defined as:

$$y_i = \beta_0 + \sum_j \beta_j x_{ij} + \varepsilon_i \quad (2.8)$$

where y_i refers to dependent variable, x_{ij} refers to i th observation of the j th independent variable, β_j refers to estimated parameters, and ε_i refers to the

random error term (Montgomery and Runger, 2013). Linear regression models assume the dependent variable is linearly related to the regressors. However, this assumption may not be always true, and thus non-linear regression models may be used. Non-linear regression model assumes that the observational data can be modelled by a function which is a nonlinear combination of model parameters and depends on one or more independent variables. Possible types of non-linear regression model are listed in the following:

$$y = \alpha e^{\beta x} u \quad (2.9)$$

$$y = \alpha X^{\beta} u \quad (2.10)$$

where α and β are estimated coefficients, x refers to independent variables and u refers to random error term. For simplicity and computational efficiency, users tend to transform the variables to achieve linearity (i.e. transforming nonlinear regression to linear regression model) (Montgomery and Runger, 2013).

Fite *et al.* (2002) attempted to predict freight volume (in terms of truckload) for a trucking company in the U.S. by analysing the relationship between freight volume provided by that trucking company and other 107 economic indicators from the US Department of Commerce respectively in three different levels of scope, i.e. national, regional and industrial levels. The stepwise multiple linear regression approach was adopted to select significant variables for the models. The results showed that the regression models were unique at each level of scope and were not transferable. One setback is that this study relied solely on freight data from a carrier and the results could not be extended to other carriers.

Bagighni (2012) constructed regression models to analyse freight generation and attraction of commodity groups for counties in 48 U.S. The models followed the division of traffic analysis zone proposed in the Federal Analysis Framework version 3 database (FAF3). The models were constructed from cargo flows between zones from the 2007 Commodity Flow Survey which is national freight database for the U.S. and also and also various socio-economic variables (as the independent variables) available from the U.S. Census Bureau and Department of Labor for freight volume estimation. The models successfully related the amount of commodity flow with socio-economic variables of origin and destination counties and found that different commodity groups were statistically related to different sets of independent variables, i.e. the flow model is commodity and OD specific.

Campbell *et al.* (2012) compared two different industry classification systems used in freight trip generation modelling, i.e. Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) by applying both linear regression and multiple classification analysis technique. The authors obtained detailed shipment information including transport cost, origin and destination information, and others through surveys to carriers and receivers in Manhattan, Brooklyn and New Jersey, USA. Three linear regression models per commodity classification system were developed based on (1) constant freight rate per establishment (or company), (2) trip rate per employee, and (3) trip rate per employee with intercept. The result shows that regression model built with NAICS classification showed a better fit in freight trip generation. However, temporal effect of the model validity and the predictive power of the models were not examined. Moreover, only land

transport mode was being examined in this study, leaving a doubt to its applicability to maritime freight transport.

Other than using regression models for freight forecasting studies other modelling approaches were adopted in the literature. Su (1998) and Lin (2000) used traditional regression analysis combined with revised neural network and fuzzy regression to forecast the total volume of Taiwan containerised import and export cargoes. Other researchers have applied fuzzy regression analysis to estimate the amount of freight volume in the air transport. For example, Chou and Liang (2007) applied fuzzy regression modelling to predict international cargo volume transporting to and from Taiwan. They integrated the fuzzy regression and linear regression analysis to reduce the residual resulted from uncertainties. Principal variables such as economic growth rate, foreign exchange rate and the gross domestic product (GDP) of Taiwan were applied. It was found that GDP alone is the major factor influencing Taiwan's air export cargo volume (Chou *et al.*, 2011). It was noted that this study is only limited to international air cargo flow based in Taiwan and might not be transferable to other countries or globally.

Applying regression analysis in the context of freight transport modelling has various benefits. It requires a limited amount of data as even a simple regression model can be built with only one independent variable (Chou *et al.*, 2011). Besides, the relationship between the dependent and independent variables can be easily understood from the functional form. Most studies only consider cross-sectional data when developing the regression model and do not consider the possible temporal or spatial effects on the resulted model (Oliveira-Neto *et al.*, 2012). In overcoming these shortcomings, panel data models were

developed and applied. (Baltagi, 2008; Hsiao, 2003). However, the forecasting power of such models remains in doubt since its predictive power is only valid within the range of observation values.

2.3.1.4 Input-Output (I/O) Models

Input-Output model was pioneered by Wassily W. Leontief in the early 1950s (Isard, 1960). IO models were considered to be a helpful tool by central planners of communist regimes and since then became popular for economic impact analyses throughout the world (Marzano and Papola, 2004; Kockelman *et al.*, 2005; Nealer *et al.*, 2011). IO analysis is basically a macroeconomic approach focused on a single region's industries interactions through business expenditure patterns. In the IO model, a detailed IO database is essential. This database records down detailed expenditure transactions among industries in monetary units and includes the final demand by consumers, import and export (De Jong *et al.*, 2004). National IO tables have been developed for many countries, mostly by the government statistics department. The IO table can be extended to include spatial effects and forming spatial input-output or multiregional input-output table. With this modification, the original IO model becomes a spatial IO model and includes flows of goods across regions. This type of analysis is driven by exogenous demand for regional goods (e.g., exports). Spatial IO analysis is an extension of the classical IO model that includes spatial disaggregations (Isard, 1960; Leontief and Strout, 1963). Entropy concepts were proposed to establish a connection between spatial IO models and often entropy-maximizing theory and random-utility theory are used as to incorporate the concept of entropy (Wilson, 1970; Anas, 1984).

In addition to the IO table which provides detailed transaction data of a region, the IO model is built based on the underlying theory that for an economy having M industry sectors, the basic IO model identifies the movement of goods and services x^{mn} expressed in value between producing sector m and purchasing sector n where $(m, n = 1, 2, \dots, M)$. The total output of any given sector of the economy, X^m , is given by:

$$X^m = \sum_n x^{mn} + Y^m \quad \forall m \quad (2.11)$$

where Y^m is the final demand for (or export of) sector m 's output. Besides, the direct purchase can be expressed as:

$$x^{mn} = a^{mn} X^m \quad \forall m, n \quad (2.12)$$

where a^{mn} is a technical coefficient representing the amount of sector m required to produce per single unit value of sector n product.

This model assumes that equilibrium between total supply and total demand occurs and substitution across inputs to production does not occur (i.e., one cannot substitute one input for another in producing any output; they are used in fixed ratios). The production technology does not change rapidly and is assumed to be constant over the period of model application.

IO models are widely applied in the evaluation of impact of changes in industrial trading patterns. The IO models possesses several advantages:

- Useful tool for impact analysis with detailed sectoral information
- Provides a complete accounting of all monetary flows into, out of, and throughout an economy.
- Combination of freight generation and distribution as it incorporates zonal characteristics in its model formulation.

Although there are a number of advantages brought forth through the use of IO models, there are several shortcomings:

- Data is cross-section in nature and thus it may not be useful in forecasting.
- IO models are designed to assess the economy-wide effects of a change in final demand. Extensive modifications must be made if other policy effects such as taxation were to be analyzed.
- There is no supply constraint on the IO model and this is not realistic.

Marzano and Papola (2004) proposed a multi-regional input-output model with consideration on elasticity of trade coefficients and a consignment model choice model with random utility to simulate national freight demand in Italy. This model allowed the simulation on quantity of goods produced and traded among regions via an explicit representation of the interdependence of different economic sectors. However, the study only considered freight trade within Italy with various land transport modes and would not be applicable to an international context.

Nealer *et al.* (2011) also applied a method similar to that used by Marzano and Papola (2004) to investigate the production of goods and services in the U.S. The authors first mapped the commodity freight data from the Commodity Flow Survey to the IO table benchmarked by the Bureau of Economic Analysis and then investigated on the mode choice model to investigate the transport intensity (i.e. demand) of different commodity groups. It was observed that the model required detailed freight transportation data (such as amount of freight carried by different modes) which can get extensive when applied to global demand forecasting.

Table 2.1 Modelling Approaches for Freight Generation and Attraction

Type of approach	Advantages	Disadvantages	Variables
Trade survey	Primary information obtained from industry feedback	Relatively costly; Sample size may not be representative	N/A
Time series	Limited data requirements but for many years	Little insight into causality and limited scope for policy effects; not perfectly suitable for long term forecast	Mostly GDP
Regression analysis	Designed to illustrate causal effects	Difficult to find the proper functional form	Macroeconomic variables
I/O model	Link to economy; give land-use interactions; reflect policy effects	Need I/O table; restrictive assumptions in fixed coefficients	Sectoral transaction; final demand; imports; exports

2.3.2 Models for Freight Distribution

Freight distribution is the second step in the four-step freight transport modelling. It refers to the determination of flows of goods transported between origins and destinations. Trip distribution is usually modelled using the gravity approach or the IO approach (De Jong *et al.*, 2004).

2.3.2.1 Gravity Models

Gravity model was first developed based on Newton’s law of gravity, stating that “any two bodies attract one another with a force that is proportional to the product of their masses and inversely proportional to the square of the distance between them” (Rodrigue *et al.*, 2009) and is expressed by the following equation:

$$X_{ij} = M_i M_j / d_{ij}^2 \quad (2.13)$$

where X_{ij} represents the gravitational force between i and j , M_i and M_j represent the mass of i and j respectively, and d_{ij} represents the distance between them.

When applying the gravity model to the international trade context, bilateral trade flows between two regions can be predicted based on their economic sizes and distances between them (Tinbergen, 1962; Bergstrand, 1985; Deardorff, 1998). Besides, it can also be modified to the regional or urban level, depending on the level of disaggregation in the database. In general the formulation for the gravity model is:

$$T_{ij} = AM_iM_j/d_{ij} \quad (2.14)$$

where T_{ij} refers to the amount of trade flow between i and j , M_i and M_j represent the mass of i and j respectively usually referring to the GDP, population, plant size, number of employees, and others, and d_{ij} represents the distance between them (it does not always mean the physical distance between them but may also include the associated transport cost between them) (Kepaptsoglou *et al.*, 2009).

Implementation and application of gravity models for predicting international trade (i.e. freight flows between large geographical zones) is a well-established research domain, with a research literature spanning as early as the 1960s (Tinbergen, 1962; Linneman, 1966). Kepaptsoglou *et al.* (2009) developed a commodity-based gravity model to investigate the effect of the free trade agreement on countries' freight distribution in the Mediterranean region. Transportation cost across zones was used as the impedance variables instead of using physical distance between zones in developing the gravity model. The results indicated that transportation cost has a dominant effect on trade.

Gallo *et al.* (2012) incorporated parametric (i.e. ordinary least square OLS regression and related generalisations) and non-parametric (i.e. kernel regressions and regression trees) log-linear gravity models for the purpose of reproducing international trade between Italy and 13 world economic zones

from a panel estimation dataset. The mass variable used in this gravity formulation was the GDP of each zone whereas the impedance variables took into explicit account both transport cost and custom duties/tariffs. This gravity models built were commodity-specific and OD-specific.

Brocker *et al.* (2011) adopted the gravity model to predict commodity-specific interregional trade flows in Europe. The driving forces considered when estimating trade flows were economic growth, reduction of trade barriers and the change in commodity trade composition. Satisfactory results were obtained but the model was extremely data intensive especially when the number of regions and commodity groups involved were to be extended.

Polder and Van Meijeren (2000) employed gravity model to forecast annual intra-EU12 bilateral trade flows. The authors modified the original gravity model by Tinbergen (1962) through (1) using disaggregate trade flows with respect to commodity groups, (2) using degree to which production or consumption of a country contributes to international trade to account for the domestic market sizes, and (3) adding additional variables such as export and import ratios of exporting and importing countries. One issue with their study is that not all models developed could adequately predict bilateral trade flows between countries.

Lyk-Jensen (2011) modelled long-term dynamic physical trade flows and estimated a dynamic panel data model for physical trade between EU-15⁵, Switzerland and Norway for the period between 1967 and 2002. A three-way-effects gravity model with both temporal and spatial effects was developed.

⁵ EU-15 refers to Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and United Kingdom.

Panel data was obtained from the CHELEM database⁶ which provided bilateral trade data in monetary values, GDP, population, GDP deflators and real exchange rates from 1967 to 2002. Although the model had attempted to include temporal and spatial effects in freight forecasting model, only several regions were considered. Moreover, the amount of trade from business transactions or economic activities were not considered in their model development.

Gravity model has been widely recognised in transportation research due to its applicability in presence of limited data requirement. Besides, transport policy can be modelled through the transport cost component within the model and the effects of policy changes can be evaluated fairly easily.

2.3.2.2 Multiregional I/O Models

It is possible to adopt the multiregional IO model for freight demand forecasting. It models the first two steps (i.e. generation and distribution) of the four-step transport planning approach (De Jong *et al.*, 2004; Du and Kockleman, 2011).

Picard and Nguyen (1988) employed the I/O model to estimate the interregional freight flows. The developed I/O model composed as part of the integrated freight transportation model for Canada. The developed models simulated the Canadian regional and industrial interrelationships under different scenarios related to changes in transportation costs and final demands. The data collection efforts was still manageable when it is within region. However, data collection efforts would be extremely exhausting when the model extended to the global context.

⁶ CHELEM database refers to Comptes Harmonisés sur les Echanges et L'Economie Mondiale, (Harmonized Accounts on Trade and World Economy) and is constructed by CEPII (a French research centre in international economics which produces studies, research, databases and analyses on the world economy and its evolution) (CEPII, 2015).

Lee and Yoo (2016) analysed the economic impacts of four transportation modes (i.e. rail, road, water, and air transportations) using input-output analysis, with specific application to Korea. The authors assessed the impacts of production-inducing effects, supply shortage effects, sectoral price effects, forward linkage effects, and backward linkage effects to the transportation sectors. The results of this study provided useful insights for formulating transportation policies in Korea. However, it did not specify any potential impacts on freight transportation.

Table 2.2 Modelling Approaches for Freight Distribution

Type of approach	Advantages	Disadvantages	Variables
Gravity model	Limited data requirements; model policy effect via transport cost function	Heavily determined by the explanatory variable chosen; may not fully reflect	Transport cost
IO model	Link to economy; give land-use interactions; reflect policy effects	Need IO table; restrictive assumptions in fixed coefficients	Sectoral transaction; final demand; imports; exports

2.3.3 Models for Freight Modal Split

Modal split distributes the flow of goods carried into different types of transport modes (for example, sea, land and air). Freight mode choice can be using elasticity-based models, aggregate approach, disaggregate approach, neoclassical economic approach. (Carrillo, 1996; Beuthe et al., 2001; Oum, 1989; Reynaud and Jiang, 2000).

2.3.3.1 Elasticity-based approach

Elasticity-based models reflect the impacts in changing a single variable (such as the cost of particular transport mode). The elasticities used are usually derived from other models (such as econometric model) or expert domain

knowledge (i.e. expert judgement on the change in mode choice behaviour) (Zhao and He, 2011). Such models are often used as a first approximation (followed by more detailed analysis using other model forms) to determine the mode choice behaviour or in situations where data are limited or incomplete (Carrillo, 1996; EXPEDITE, 2002).

As reported in the EXPEDITE (2002), freight flow pattern for different transport modes can be directly obtained from other models. The EXPEDITE meta-model simulates only the impact (in terms of tonnes and tonne-kilometres) of changes in policy variables (such as the transport time and cost by modes) on the freight transport system in Europe.

2.3.3.2 Aggregate approach

Aggregate modal split models make use of limited data to estimate the modal share via a binomial or multinomial logit approach. They are used to estimate the market share of a transport mode but not the absolute amount of traffic (in tonnages or vehicles). Shen and Wang (2012) adopt a binary logit model to study cereal grains movement by truck and rail in the United States using the publicly available freight and highway data, and compared their results against that of a linear regression model. The logit model was found to outperform the linear regression model and is comparable to the actual modal split only when a high level of freight data (for example, commodity weight and value, transport time, and distance) is available.

2.3.3.3 Disaggregate approach

Disaggregate approach incorporates data from surveys of shippers, commodity surveys or state preference surveys in model development. These models are generally multinomial logit (MNL) or nested logit (NL), which for disaggregate

observations can be based on random utility maximisation theory (De Jong *et al.*, 2014). This approach is considered as a bottom-up methodology as it incorporates disaggregate information from shippers' preference and experts' opinions in model development. However, conducting survey is extremely costly especially when the work scope of study is extensive.

De Jong *et al.* (2014) developed a stated-preference MNL model for freight transport in Netherlands to study impact of freight value of time (VOTs) and value of reliability (VORs) on shippers' and carriers' freight mode choice behaviour. Surveys were conducted among over 800 shippers and carriers in 2010 to collect views on VOTs and VORs from shipper's and carrier's perspectives. It was found that VOTs were greatly affected by transport cost while VORs were mostly influenced by the cargo components. Such surveys are often expensive if a global perspective were to be adopted.

2.3.3.4 Neoclassical economic approach

Neoclassical models originates from the economic theory of a firm. Transport mode demand function can be derived using a cost function with transport services as one of the inputs. This approach explains the preference of freight transport mode at the firm's perspective as transport cost is incorporated in the total production cost function. However, budget share of transport mode in the total cost is the explanatory variable and it is hard to combine these models in the traditional four-step transport modelling system. Ferrari (2014; 2015) developed a freight modal split model in Europe using dynamic cost functions of different transport modes. In contrast to conventional transport cost function which remain static over time (Dalla *et al.*, 2008; Masiero and Rose, 2013), the author proposed a dynamic transport cost function which would evolve and

changed over time as a consequence of the overall freight flow increase, and thus determined the modal split by cost comparison. This model is suitable in analysing cargo transport cost of a single company at the operational level. However, it might not be useful to be applied by policy maker at strategic planning level due to extensive collection of cost data.

Table 2.3 presents a summarized features of different freight mode choice models.

Table 2.3 Modelling Approaches for Freight Modal Split

Type of approach	Advantages	Disadvantages	Variables
Elasticity-based approach	Limited data requirements; fast in application	Elasticities may not be transferrable	Freight transport flows
Aggregate approach	Limited data requirements	Little insight into causality and limited scope for policy effects	Market share of mode
Disaggregate approach	Potential to include many causal variables and policy measures	Need disaggregate data from surveys	No limitation as long as related to shippers' behaviors in choosing transport mode
Neoclassical economic approach	Limited data requirements; theory-based approach	Difficult to integrate in four-step transport planning model	Budget share of transport mode in total production cost

2.3.4 Models for Freight Assignment

Assignment concerns the selection of routes (alternative called paths) between origins and destinations in transportation networks. It allocates the amount of goods or vehicle trips in the transportation network through the use of mathematical optimization models. In practice, many freight forecasting models do not incorporate separate assignment step to the transportation network. Most only focus on cargo or trip assignment to road network (De Jong *et al.*, 2004).

Christianesen *et al.* (2004) summarised the applications of mathematical modelling on ship scheduling and routing at different planning levels (i.e. strategic planning, tactical planning and operation planning level)

Lin and Tsai (2014) developed a mixed integer mathematical program to investigate the ship routing and freight assignment problem for daily frequency operation of liner shipping. However, this approach is primarily valid at operational level as it only concerns on the operation strategies in a single shipping company.

Zhang *et al.* (2015) developed a freight transport optimization model that simultaneously incorporated multimodal infrastructure, hub-based service network structures and the various design objectives of multiple actors in Netherlands. This models had been used to study hinterland container transport of the Netherlands while taking into account CO2 emission pricing, terminal network configuration and hub-service networks. This model is capable of reflecting the impacts of different policies on freight transportation. However, due to complexity in extending the scope, this model may not be suitable to examine freight flow in the global context.

Tsekeris (2016) proposed a decision support framework for the strategic planning of freight transport hub network in Greece. The development of this framework takes into account the optimal number, location and geographical covering of hubs through network analysis of interregional trade, based on original survey data for road freight in Greece during 2004 to 2012. This study offered insights into the hierarchical structure of local traffic network and related infrastructure investment priorities. However, this method may not be suitable to be employed to a global context due to the difficulties in data

collection from various countries and complexities in identifying their infrastructure investment policies.

2.4 Economic-Based Freight Transport Modelling

Other than the transportation-based freight modelling approach, land-use and economic models were also applied to estimate potential freight demand (Chow *et al.*, 2010). Various methods have been used in the literature to understand the factors affecting freight generation and to estimate the demand (Karlafitis and Vlahogianni, 2011). Some of the factors explored in freight trip generation analyses include: employment, industry segment (Bastida and Holguín-Veras, 2009), building area (Kawamura *et al.*, 2008), type of vehicle, land use and commodity type (Iding *et al.*, 2002). Methods used to estimate freight demand include: regression analysis (Holguín-Veras *et al.*, 2002), input/output (Sorratini and Smith, 2000), neural networks (Al-deek, 2001), and general computable equilibrium model (Hertel, 1997). Some of the modelling techniques are discussed in this section.

2.4.1 Regression Analysis

Similar to the transport-based freight model, regression analysis methods are also widely used in economic-based freight model. Regression are fit for short-term and mid-term forecast. They have been applied in many fields, such as analysis of data groups, estimation and statistics tests, analysis of relationships between influential factors and prediction target values, and the study of the accuracy of forecasting results (Feng, 2006). There are different types of regression analyses, such simple linear regression (SLR), multiple linear regression (MLR), and nonlinear regression (NLR) (Kleinbaum *et al.*, 1988; Sen and Srivastava, 1990; Draper and Smith, 2000; Bowerman *et al.*, 2004).

General formulations of different regression models have been discussed in Section 2.3.1.3.

Russo and Assumma (2005) employed the linear regression model with socio-economic data such as GDP, population, inflation, commercial energy production and commercial energy consumption as regressors and export of goods (in monetary values) as the dependent variable to predict the amount of export generated from a country. It was found that certain independent variables such as GDP, energy production and energy consumption were significant in explaining the amount of goods exported. Although the study determined the relationship between export and some socio-economic variables, the prediction ability of linear regression is valid only within the range of observation values.

Oliveira-Neto *et al.* (2012) attempted to apply linear regression models to examine the significance of state payroll in the freight production and attraction at the state level within the U.S. Unlike Bagighni (2012), the authors tended to provide aggregate trade flow information obtained at U.S. state-level. The results indicated that the payroll alone could explain the volume of freight production and attraction across states. However, the models might not be suitable for freight prediction as the Thiel's inequality coefficients (an indicator for examining the prediction ability of regression models) were close to 1, meaning the forecast is no better than a naïve guess (Pindyck and Rubinfeld, 2000).

Lim *et al.* (2014) used the data obtained from the Federal Highway Administration's Freight Analysis Framework (FAF) database to develop linear regression models to describe the relationships between commodity-based freight trip productions/attractions to specific economic variables. The models

are applied to predict year 2015 commodity outputs in California. The results from the developed model established a link in the growth (or decline) in employment in certain categories with the corresponding growth (or decline) in the commodities that these “employers” produce and attract.

Yang (2015) applied regression forecast methods to predict the freight transportation demand in Shanghai. Regional freight transportation demand forecast models were constructed using multiple linear regression model (MLR), nonlinear regression model (NLR) and simple linear regression (SLR) models based on the gross domestic product data and fixed investment data in Shanghai. The authors have compared the performance of the models and observed that SLR outperformed others with superior fitting efficiency. However, this study only focused on comparing the performance of the models without examining the predictability of these models.

2.4.2 Input-Output (I/O) Model

As discussed earlier in Section 2.3.1.4, Input-Output model was actually pioneered by Wassily W. Leontief in the early 1950s (Isard, 1960). I/O models were considered to be a helpful tool by central planners of communist regimes and since then became popular for economic impact analyses throughout the world (Marzano and Papola, 2004; Kockelman *et al.*, 2005; Nealer *et al.*, 2011; Ivanova, 2014).

Random Utility-Based Multi-Regional Input-Output (RUBMRIO) model is an extension of the traditional single region IO model by including multiple regions and was first proposed by Isard (1960). Multiple regions are incorporated through the introduction of a spatial dimension:

$$X_i^m = \sum_j x_{ij}^m \quad \forall i, m \quad (2.15)$$

where X_i^m is the total output of any given sector m of region i , x_{ij}^m is the flow of sector m from region i to region j . With the consideration of final demand, the functional form becomes:

$$\sum_i X_{ij}^m = \sum_n a_j^{mn} \sum_k x_{jk}^n + Y_j^m \quad \forall j, m \quad (2.16)$$

where a_j^{mn} is the set of technical coefficient for production processes and Y_j^m expresses the final demand of sector m in region j .

Random utility are considered to allow the behaviours of industrial sectors and household in input purchase via a cost minimising or utility maximising approach. For example, trade volume could be determined using the following disutility function (Ben-Akiva and Lerman, 1979):

$$-u_{ij}^n = b_i^n + d_{ij}^n + \varepsilon_{ij}^n \quad \forall i, j, m \quad (2.17)$$

where u_{ij}^n is the utility of purchasing one unit (one dollar) of sector n 's goods from region i for use as inputs in region j , b_i^n is the price of producing a unit of n in region i , d_{ij}^n is the transportation cost of moving a unit of n from i to j and ε_{ij}^n is the random error term. If ε_{ij}^n are IID (independent and identically distributed), and follow the Gumbel distribution (McFadden, 1974), trade volume of sector n from i to j can be expressed as:

$$x_{ij}^m = \sum_i x_{ij}^n \frac{\exp(\lambda^n v_{ij}^n)}{\sum_k \exp(\lambda^n v_{kj}^n)} \quad \forall i, j, n \quad (2.18)$$

where λ^n is a dispersion parameter and v_{ij}^n represents the systematic utility i.e. $(b_i^n + d_{ij}^n)$.

Kockelman *et al.* (2005) derived the RUBMRIO model from IO-type productive dependencies across economic and social sectors and also developed a nested logit model of input origin (upper nest) and transportation mode choice (lower nest) to model truck and rail freight flows in Texas. Production and trade

patterns of 18 social-economic sectors (including households and government) across Texas' 254 counties were considered. Random utilities were added into the model for input purchase decisions and this requires computing the utility of acquiring commodity m from every possible provider zone i , via rail, highway or any other permitted modes. The utility function was a calibrated function of transport distance (or travel cost, depending on the data used for calibration) and commodity sales price at the origin as shown in Figure 2.2. Calibration on the parameters of mode- and origin-choice by industry was performed with the 1997 Commodity Flow Survey data (United States Census Bureau, 2015). Juri and Kockelman (2004) extended the model to further include land-use constraints, domestic demand and network congestion. Trade impedance was represented by the cost of travel within the transport network and was iteratively updated to reflect congestion C as show in Figure 2.2.

Du and Kockelman (2011) further developed a national RUBMRIO model for USA using their work on Texas as the basis (Kockelman *et al.*, 2005). This model differed from their earlier models by modifying the utility function of purchasing commodity m for both domestic trade flows (i.e. from counties i to j) and export trade flows (i.e. from counties i to export zone k) through the addition of population size in origin zone i and replacement of distances with travel time and cost. The functions are shown below :

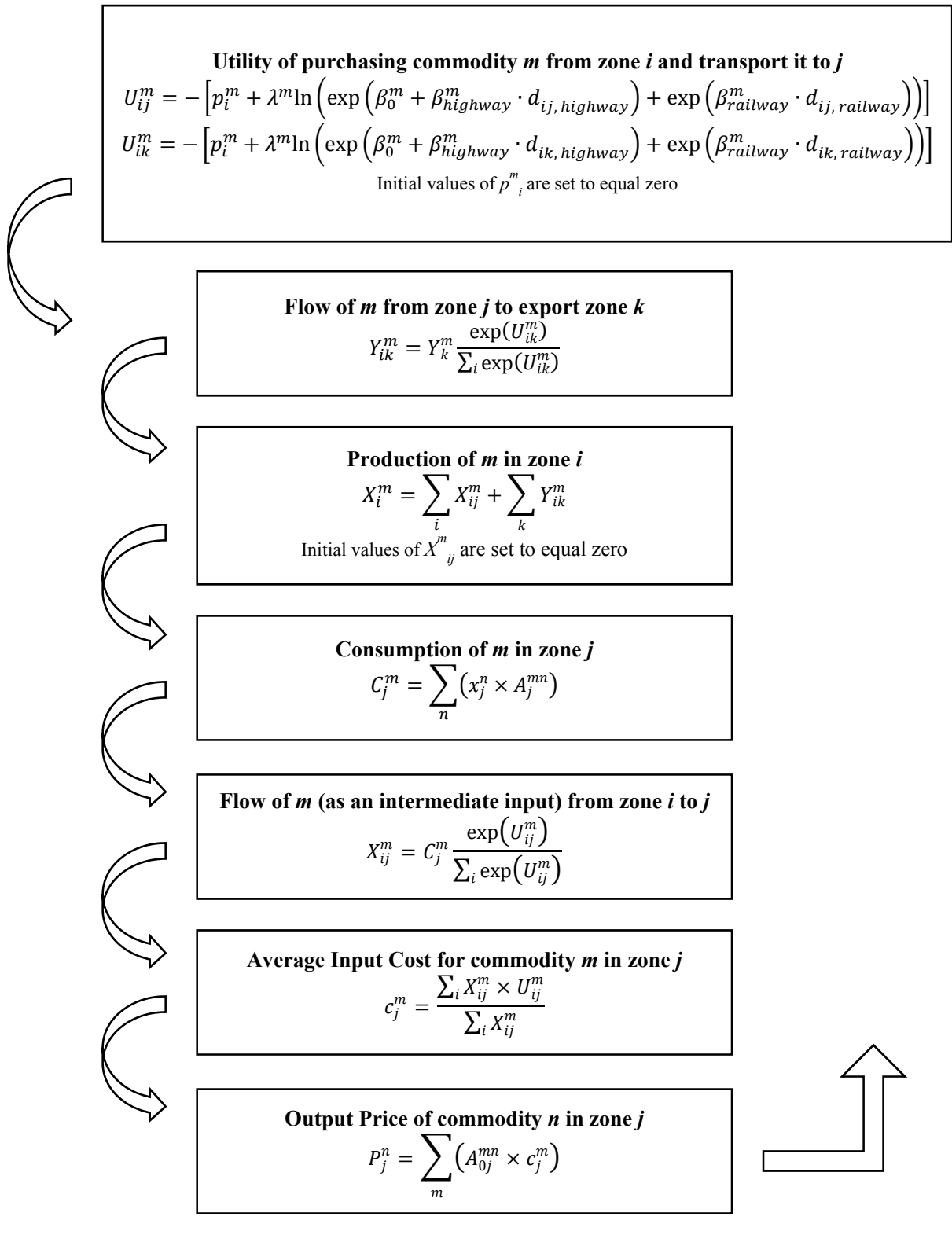
$$U_{ij}^m = -p_i^m + \gamma^m \ln(pop_i) + \lambda^m \ln[\sum_t \exp(\beta_{0,t}^m + \beta_1^m \cdot time_{ij,t} + \beta_2^m \cdot cost_{ij,t})]$$

(2.19)

$$U_{ik}^m = -p_i^m + \gamma^m \ln(pop_i) + \lambda^m \ln[\sum_t \exp(\beta_{0,t}^m + \beta_1^m \cdot time_{ik,t} + \beta_2^m \cdot cost_{ik,t})]$$

(2.20)

where i, j are indices for zones/counties; k is the index for export zones and m, n stand for economic sectors; p_i^m denotes sales price; pop_i refers to population; $time_{ij,t}$ and $cost_{ij,t}$ represent the travel time and costs by mode t (i.e. highway or railway). γ^m, λ^m and β^m are logit model parameters. While this RUBMRIO model can provide detailed on commodity flow between regions, there is a lack of consideration to other macroeconomic data such as employment, GDP and productivity. Moreover, the model could only be applied to regional or national level due to exhaustive data collection from all zones or regions.



Note: i, j are indices for zones/counties; k is the index for export zones and m, n stand for economic sectors; $\lambda^m, \beta_0^m, \beta_{highway}^m$, and $\beta_{railway}^m$, are the logit model parameters; A_j^{mn} and A_{0j}^{mn} are the technical coefficients with and without import considerations respectively; $d_{ik, railway}$ and $d_{ik, highway}$ are the distances between counties.

Figure 2.2 The RUBMRIO Model
(Juri and Kockelman, 2004)

2.4.2 Artificial Neural Network (ANN) Model

The concept of neural networks (NNs) is based on the structure of the human brain (Lam, 2004). It simulates the way how the brain works in learning from the environment and thus improve their performance (Gosasang *et al.*, 2011). In general, there are three layers inside the models: (1) the input layer, (2) the hidden layer, and (3) the outer layer, as shown in Figure 2.3. Each layer is connected by neurons which are simple processing elements connected by weights. Each of them receive a weighted input from other neurons and then sends its output to neurons in succeeding layer. However, a huge amount of data is required for machine training and this makes ANN model development challenging and expensive.

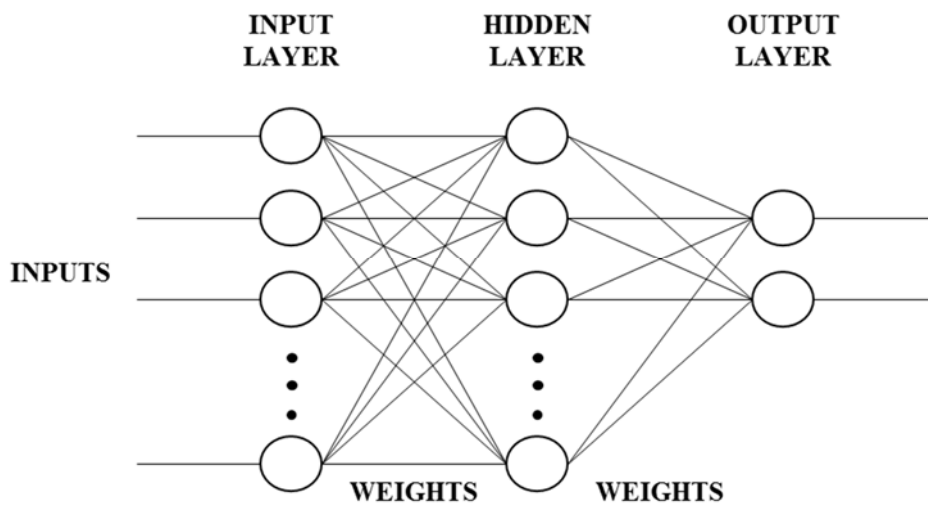


Figure 2.3 Artificial Neural Network Model

Celik (2004) applied the ANN model to model the freight distribution between 28 continental states in the US and compared the results against those estimated from Box-Cox regression. It was found that ANN models can provide better improvement in estimation when compared to the Box-Cox model.

Karlarftis and Vlahogianni (2011) present a discussion on the differences and similarities between statistical methods and neural networks on

applications in transportation research. They found that when modelling complex datasets with possible nonlinearities or missing data, neural networks are often regarded to be more flexible than statistical models. In particular, the constraint free form of neural network is frequently preferred over the explanatory power of statistics.

Garcia *et al.* (2014) applied the ANN models to study the possible traffic growth and infrastructure requirement in container port planning. The authors used port characteristics and traffic from 33 ports around the world between 2003 and 2011 as input to the ANN model and forecasted the future port traffic in the event of lack of future infrastructure investment as well as the infrastructure gap for future growth.

Chen and Chen (2010) demonstrated the use of genetic programming to forecast monthly container throughputs at major Taiwan ports. This study attempted to create an optimal predictive model for container throughput by using genetic programming, decomposition approach, and seasonal auto regression integrated moving average models. It was found that genetic programming provided the best forecast but such methods were data-intensive.

Liu (2012) adopted the Back Propagation (BP) neural network to forecast the port throughput of Qin Huang Dao, China. Gosasang *et al.* (2011) compared the forecasted monthly container throughput at Bangkok port from neural network model and traditional regression analysis and observed that neural network model outperformed traditional regression methods. Although ANN-based forecasting models can approximate to any function, particularly nonlinear ones, they have difficulties in the non-convex problem of network training errors, explaining black-box operations, can easily be trapped in local

minima, have time-consuming training procedures, and have subjectivity in selecting an ANN model architecture. In addition, the training of an ANN model requires a large amount of training samples and port throughput and related indicators often have limited datum.

2.4.3 Computable General Equilibrium (CGE) Model

The concept of general equilibrium originates from Walras' law (Burfisher, 2011). General equilibrium is a set of relationships that determine all prices of goods and services and the returns (i.e. salary and rents on capital) on factors of production by implementing the market clearance constraint. It is an economy-wide model capable of capturing the motivations and behaviour of all producers and consumers in an economy as well as the linkages among them (Burfisher, 2011). Figure 2.4 shows a simplified circular flow of income and spending within a country.

Theoretical general equilibrium models have been used to help planners to investigate different economic questions (Ballard *et al.*, 1985; Narayana *et al.*, 1991; Uppal, 1993; Gillespie *et al.*, 2002; Smets and Wouters, 2010). However, the parameters were typically manually assigned and not calibrated from data. In view of this shortcoming, researchers put forth another model, namely the computable general equilibrium (CGE) model (Hertel, 1997). CGE models differs from theoretical general equilibrium models in that parameters are given numeric values which had been estimated from the different underlying functions and were calibrated at a reference year.

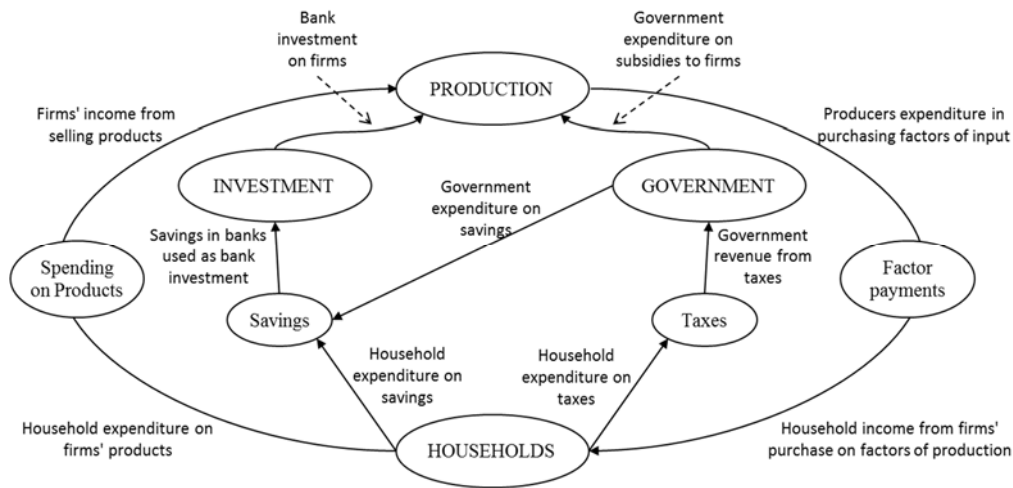


Figure 2.4 Simplified Circular Flow of Income and Spending in a Country

The beauty of the CGE approach lies in the fact that it simultaneously encompasses all economic activity and is able to quantify the effects of economic policy change on an economy. In general, two essential components in the CGE approach is the economic model itself and a calibrated database which captured all economic activities within the region(s) concerned. The CGE model is a system of equations derived from both microeconomics and macroeconomics theory that describe an economy as a whole and the interactions among its parts. They are solved for the set of prices at which supply and demand are in equilibrium. In order to facilitate the model, an economic “shock” which is actually a disturbance to the equilibrium state is enforced on the model so as to perturb the initial state of the model.

CGE models consist of a set of theoretical equations that are designed to determine the economic behaviours of consumers, producers and governments, and to model corporate, household and government financial decisions and simulate the national economy via a mathematical framework of theoretical general equilibrium models (Charney and Vest, 2003). For instance,

the Cobb-Douglas production function for input factors is usually adopted to characterise the production sector and a simplified Cobb-Douglas function is shown in Equation (2.14):

$$Q = \alpha L^\beta K^\gamma I^\delta \quad (2.14)$$

where Q is output, L is labour input, K is capital input, I represents other possible inputs of production, and α , β , γ and δ are parameters in which $\beta + \gamma + \delta = 1$, denoting a constant returns to scale in production. Other than input factors, production sectors have to maintain their revenue and this is considered by introducing a profit equation to each sector:

$$P = p(Q) - wL - rK - iI \quad (2.15)$$

where P = profit, p = price of good produced in this sector, w = wage rate of labour used, r = rate of return on capital and i = rate of return on other inputs.

In addition to the CGE model, a comprehensive database, also known as the social accounting matrix (SAM), records down complete information of economic activities in terms of monetary values within a national economy including bilateral trade information among regions. It is considered to be the backbone of the CGE model as it compiles of a full list of economic accounts: 1) activities, 2) commodities, 3) factors of production, 4) participating agents (i.e. households, government, the Rest of World, etc.), including an aggregate savings-investment account (Tebeke *et al*, 2009). This database contains the complete information of economic activities (in terms of monetary values) within a national economy as well as bilateral trade information between regions (Breisinger *et al.*, 2009). The model has the advantage to capture economy as a whole and describes the interactions between various sectors and regions.

After introducing the underlying fundamentals of CGE approach, the advantages and disadvantages of this modelling approach are discussed. This approach has been widely used not only because of its capability in capturing the flow of income and expenditure among different sectors or parties within the country but also of its possibility in evaluating the implementation of a policy reform and its distributive effects within the economy at different levels of disaggregation (Charney, 2003). In other words, it could help to deliver a quantitative analysis on policy changes rather than providing a qualitative analysis. This allows the linkage between economic output and transportation demand. Conversely, this modelling technique has a few drawbacks. It is extremely data demanding and time consuming when building the SAM or CGE database. Collecting up-to-date multi-regional data, building SAM and calibrating a CGE model consume a lot of effort, resource and time. Besides, the model and database are calibrated for a specific time period, thus the estimated parameters within the model is technically only suitable for the stated time frame. Fortunately, this drawback can be overcome by reformulating the behavioural equations embedded in the model to effectively reflect the temporal impact of economic shocks on the expense of increasing complexity of the model and data collecting efforts. Nevertheless, CGE modelling is still considered one of the state-of-the-art techniques in predicting the economy-wide effect of policy changes or economic growth.

The CGE models had been adopted by trade economists to analyse impact on economic activity/growth of free trade agreements (FTAs). Sharma and Kallummal (2012) applied the CGE model to analyse the impact of the

BRICS (i.e. Brazil, Russia, India, China and South Africa) free trade agreement on economic welfare and industrial production output.

In a similar manner, Strutt (2008) adopted a dynamic CGE model to quantitatively assess the impact of the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)-Japan FTA on macroeconomic indicators, economic welfare and trade among regions.

Mizutani *et al.* (2006) developed a quasi-dynamic spatial CGE model which combined equilibrium model and capital flow model to investigate the trade flow between Japan and its trading partner under different hypothetical scenarios.

Other studies were also made to investigate the impact of FTAs between Association of Southeast Asian Nations (ASEAN) and their trading partners to the regional economies (Ariyasajakorn *et al.*, 2009). While these studies have allowed the modelling of the effects of trade policies or economic growth on regional economies, they do not provide insight on how such agreements or economic growth can affect maritime trade and commodity flow.

Researchers had also attempted to combine CGE model together with econometric methods to simulate the maritime container flows across regions. Shibasaki and Watanabe (2011) proposed a conceptual framework using a spatial-CGE model to predict the future cargo flow within the Asia-Pacific Economic Cooperation (APEC) region assuming that APEC trade liberalisation was to occur. The authors employed the CGE model to simulate the impact of APEC trade liberalisation on the bilateral commodity trade flow within the region. Then the authors extracted the amount of maritime trade from the total trade flow and used constant ratios to convert the money trade flow into number

of container based on historical trade data, port data and also customs data. However, the authors did not extract maritime trade from total trade by developing statistical or econometric method. Besides, the authors also did not consider the fluctuations of commodity value-to-container conversion over time.

Shibasaki's team is actually one of the pioneering team in assessing the impacts of trade policy on maritime container trade by applying CGE model combining with statistics efforts. For instance, Lee *et al.* (2011) also took a similar approach in evaluating the impact of the Economic Cooperation Framework Agreement (ECFA) between Taiwan and China on seaborne trade volume. Cheong and Cho (2013) modified the methodology used by Lee *et al.* (2011) to investigate the impact of free trade agreements between Korea and its major trading partners on Korean maritime trade.

Tanabe *et al.* (2016) developed a freight traffic network assignment model combining with the global general equilibrium model to analyse the impacts of infrastructure development on regional economy and trade in Central Asia. The impacts of improvement in border-crossing services on international transportation costs and trade flows were assessed. Results showed that improvements in border-crossing service significantly decreased international transportation costs and promoted trade flows in and out of Central Asia in short run. However, regional trade growth caused traffic congestion, leading to an increase in international transportation costs. This increase in costs could reduce trade volume to and from Central Asia in the long run.

However, these studies mainly focused on modelling the effect of implementing various trade policies on regional maritime trade, rather than providing policy makers a long term forecast on future seaborne trade. Although

these studies attempted to forecast the container trade in the international level, they mostly relied on the statistics published by their statistics department to calculate the share of maritime containerised cargos rather than proposed any mode choice model to investigate the modal split of freight.

2.5 Other Freight Forecasting Frameworks

Other than the research literature presented in the earlier sections, government and consultant agencies had developed different in-house trade modelling frameworks to predict or forecast trade flows in terms of value or volumes from both economic aspect and transportation perspective. Table 2.4 illustrates various frameworks developed for government agencies to predict trade flows.

Table 2.4 List of Trade Modelling Frameworks

Name	Regions Involved	Methodology	Features
IMPLAN (IMPLAN, 2015)	U.S. national level down to district level and approximately 40 OECD countries	Input-Output models	Economic assessment tools including data and software which comes with a in-depth economic picture of regional economies.
MEPLAN (Abraham, 1998)	Urban levels in different countries	derived from Lowry model	Lowry-based land use model but considered more comprehensively the housing market nad its influence on the location of the population
SMILE - Strategic Model for Integrated Logistic and Evaluations (Van Der Vlist <i>et al.</i> , 1996)	Netherlands	Make-use tables and a logistic module for location of distribution centres	Sequential decision model comprising of regional production, inventory and transportation modules
STAN - Strategic Planning of National and Regional Freight Transportation (Crainic <i>et al.</i> , 1990)	17 countries by 50 organizations	Mathematical optimisation	Integrated-graphic planning tool which helps shippers and carriers to evaluate the effect of major changes in the transport infrastructure, government policies and demand patterns on their performance measures such as cost, time, reliability etc.
SWIM2 - Oregon Statewide Integrated Model (Parsons Brinckerhoff, 2011)	Oregon, U.S.A. and adjacent counties	Spatial input-output model in production allocations and interaction module	Comprehensive integrated model capturing the interactions between land use, economy, and transportation systems.
TRANS-TOOLS - TOOLS for TRansport Forecasting ANd Scenario testing (Burgess <i>et al.</i> , 2008)	European based	Spatial computable generalized regional equilibrium model	European transport network model covering passengers and freight, as well as intermodal transport
TRANUS - Integrated Land Use and Transport Model (TRANUS, 2015)	National down to detailed urban levels in different countries	Spatial Input-Output model	Integrated model of passenger and freight movements including location of activities, land use and transport system.
WORLDNET - Worldwide Cargo Flows (Newton, 2009)	European based	Combination model from DG-TREN research projects, ETIS-BASE and TRANSTOOLS)	Refinement of the European transport network model regarding freight and intermodal transport to and from the rest of the world based as supplementary to the TRANSTOOLS

2.5.1 SMILE – Strategic Model for Integrated Logistic Evaluation

SMILE is considered to be the first aggregated freight model developed to account for the routing of flows through distribution centres (Tavasszy, 1998). It was developed to understand the interaction between socioeconomic trends and performance of logistics and transport systems, to investigate methods to measure the performance of systems for analysing policy options, and to act as a decision support system to governments. The SMILE model consists of three layers: (1) production layer, which was heavily relied on the availability of make/use table, (2) inventory layer, which optimal distribution locations were obtained and choice of channel was chosen from a multinomial logit model using inventory and transport costs as inputs and (3) transport layer, where freight transport mode share was determined using shortest route approach (Chow *et al.*, 2010).

2.5.2 STAN – Strategic Planning of National and Regional Freight Transportation

STAN is an interactive graphic planning tool used for strategic planning of national and regional freight transportation. The STAN software was originally developed to analyse the freight flow in Brazil and has been applied successfully for scenario analysis and planning in 18 countries including European countries and China. It is a comprehensive representation of a multimodal transportation system and serves as an analysis tool for planned or forecast scenarios and policies concerning modifications in infrastructure development, technology enhancement, change in socio-economic characteristics of the region, and government policy establishment (Crainic *et al.*, 1990; Crainic *et al.*, 2008). It simulates and predicts flow volumes by commodity and transportation mode on

a transport network system. This framework consists of three main components: (1) supply modelling to represent the transportation modes and infrastructure capacities, (2) demand modelling to capture the commodity production, consumption, zone-to-zone distribution volumes, and mode choices for transportation, and (3) assignment of multi-commodity flows (from the demand model) to the multimodal transportation network (the supply representation).

2.5.3 SWIM2 – Oregon State-wide Integrated Model

SWIM2 is an integrated transport-land use models launched by Oregon Department of Transportation and contained 10 different modules for predicting future economic production levels, land development decisions, passenger travel trips, freight transported quantities and costs (Parsons Brinckerhoff, 2011). In particular, the Production allocations and Interaction (PI) module of the SWIM2 model determines commodity quantity & price in all exchange zones under market clearance assumption, including the location of businesses and households.

2.6 Commercial Available Forecasting Tools/Analysis

Various forecasting solutions have been proposed by commercial entities and these solutions are mostly based on in-house forecasting models where their methodologies/approaches are not disclosed.

2.6.1 MDS Transmodal®

MDS Transmodal (MDST) is a consultancy which provides analysis and advice on strategic, commercial and economic issues mainly related to freight transport and logistics, based on the development and maintenance of a unique and comprehensive set of databases and transport models as well as the expertise of their consultants (MDS Transmodal, 2013). With in-house World Cargo

Database and Containership Databank, MDST provides analysis on the transport supply-demand balance and container shipping economics for global trade lanes.

The UK Department for Transport commissioned MDS Transmodal to develop forecasts of UK port traffic to 2030 to assist them in their review of ports policy in 2006 (MDS Transmodal, 2006). They developed the model based on underlying trends and factors in the domestic economy that drove port traffics. Three forecasting scenarios for container traffic were simulated, i.e. central forecast as baseline scenario, low case with slower export rate than central forecast, and high case with higher export rate than central forecast. Forecasted import volumes in 2030 under baseline, low case and high case were doubled, 1.3 fold, and tripled the 2004 import volume respectively. Non-containerised port traffic were also predicted to grow by 8% up to 2030. Their results implied an urgent need for additional port handling facilities to accommodate the vast growing in port traffic.

The European Commission Directorate-General MOVE also funded MDS Transmodal and other collaborators to study the medium and long term perspectives of inland waterway transport in the European Union (CE Delft *et al.*, 2012). A quantitative forecast on the expected transport performance of inland waterway transport (IWT) was developed based on a business-as-usual (baseline) scenario for 2020 (medium-term) and 2040 (long-term). Results showed a growing market for IWT services due to rising demand from infrastructure along the waterway and suggested corresponding authorities various measures to promote the IWT services.

Although MDS Transmodal had performed studies on strategic freight transport planning perspective, underlying working mechanism of such forecasting models are not revealed.

2.6.2 Drewry - Container Forecaster

Similar to MDST, Drewry (2015) is one of the leading research and advisory consultancy for the maritime sector. With in-house database and undisclosed models, Drewry's Container Forecaster delivers quarterly reports on 3-year forecasts across a whole range of demand, supply, rate and cost issues, including world container trade and port volumes, global supply and demand, analyses on major East-West and North-South trade routes, freight rates and carrier financials information, and sales purchases and the charter market. Detailed descriptions of this forecasters can be found on its official website (Drewry, 2015).

Many studies deploy the surveyed and forecasted data by Drewry in their work. Veldman *et al.* (2011) used the cost data from Drewry to study the determinants of port choice behaviour in Spain. Feng and Chang (2008) employed the container supply and demand data from Drewry to investigate the empty container reposition problem for intra-Asia liner shipping. Verny and Grigentin (2009) verifies the technical and economic feasibility of regular container transport along the North Sea Route by comparing the transport costs for the Europe-Far East ship route. Sames and Köpke (2012) estimated the potential CO₂ emissions of container world fleet based on the sales & purchases information of vessels from Drewry. Schulze and Prinz (2009) forecasted the container transshipment volume in Germany using the Seasonal Auto-Regressive Integrated Moving Average (SARIMA) model and the Holt-

Winters exponential smoothing approach, taking into account of the seasonal behaviour of the quarterly data obtained from Drewry. Cho (2014) investigated empirically internal capabilities and external environments of logistics costs and traffic volumes in individual container ports with the cost data obtained from Drewry. Luo *et al.* (2009) performed econometric analysis for the fluctuation of the container freight rate due to the interactions between the demand for container transportation services and the container fleet capacity which were deduced from world fleet data by Drewry. Cariou and Wolff (2013) collected over 500 liner operator data and over 5000 vessel data to investigate the profitability of chartering over owning vessels.

It could be observed that Drewry acts as a data provider while academic researchers tend to use the information from Drewry to perform further valuable research.

2.6.3 IHS - World Trade Service

IHS (2014) is a leading business consultancy which provides comprehensive global market, industry and technical expertise. Through their unique in-house combination of information, analytics and expertise, IHS also provides consultancy services ranging from day-to-day business operations to long term investments for service subscribers. In particular, they provides over 120 different industry products and solutions related to the maritime industry, from shipping operational performance improvements to global macroeconomic analysis. The IHS World Trade Service provides not only extensive historical trade data but also annual forecasts for bilateral trade between over 100 countries and regions, across over 160 commodities and 16 key indicators including value, weight and number of containers along particular trade routes.

Similar to Drewry Container Forecaster (Drewry, 2015), past literature tends to use the trade data provided by IHS in their studies. Laxe *et al.* (2012) used the world containership fleet movement data provided by IHS to analyse and rank the global and local importance of various large ports as well as emerging ports in 2008 and 2010. Valentine *et al.* (2013) observed a shift in the geography of trade, with developing countries increasingly driving growth in the world economy and seaborne trade, and becoming important players in global value chains, based on the information provided by IHS. Tanebe *et al.* (2015) used the cargo flow information from the IHS database to develop a freight traffic network assignment model based on the user equilibrium principle, combined with a global general equilibrium model to analyse the impacts of infrastructure development on regional economy and trade. CPCS (2015) analysed the impact of the growth in future bulk commodity flow on the Canadian transportation system based on the forecasted data by IHS.

It could be observed that, similar to Drewry, IHS – World Trade Service (IHS, 2014) acts as a data provider while academic researchers tend to use the information obtained to perform further valuable research and studies.

2.7 Limitations of Existing Research on Global Maritime Freight Demand Forecasting

Based on the review of existing literature presented in the previous sections, there are several limitations on existing research on global maritime freight forecasting.

- Existing freight demand models mostly focus at the urban or national level (Hensher *et al.*, 2005; van Duin *et al.*, 2007; Meijeren *et al.*, 2009; Muñuzuri *et al.*, 2009; Anand *et al.*, 2012) and only a few studies such

as Al-Azzawi (2009) and Nuzzolo *et al.* (2011) attempted to investigate commodity trade flow in the international level .

- Freight demand is obtained from detailed freight flow survey which can be extremely costly when applied to the global context (Vold and Jean-Hansen, 2007; Lawson *et al.*, 2002; Havenga and Pienaar, 2012).
- Freight models (Holguín-Veras *et al.*, 2002; Sorratini and Smith, 2000; Novak *et al.*, 2011; Al-deek, 2001) examines the relationship between trade flow and regional socio-economic information but does not provide any causality relationship between them.
- Freight transport demand is a derived demand from business transactions but only few studies (such as Sharma and Kallummal (2012), Strutt (2008), Mizutani *et al.* (2006), and Ariyasajakorn *et al.* (2009)) generated freight demand based on economic activities
- Physical trade flow between countries is rarely investigated from the economic perspective (such as Chen and Chen (2010) and Garcia *et al.* (2014)). Most are studied from the transportation perspective instead (such as Russo and Comi (2010), Havenga and Van Eeden (2011), Gonzalez-Feliu and Routhier (2012), Travasszy *et al.* (2012), and Hui *et al.* (2014)).
- There is a lack of research effort in the literature that combining trade economics and transportation modelling on freight demand modelling at the global context.

2.8 Research Needs and Scope of Work

From the discussion on limitations of existing research literature on freight demand modelling in previous section, it can be observed that existing studies

cannot fully forecast the commodity flow (especially container flow) between countries in a global context with the support of economic theories as well as transportation design technique.

International trade, while highly complex, do have beneficial or adverse impacts on domestic economies and foreign economies. Existing freight demand models are mostly focused on analysing impacts at domestic country-level while neglecting the need to approach the commodity flow forecasting from a global context. Therefore, this thesis extends the study area to a global context and include mature trading routes and emerging trading routes.

Commodity trade is actually a “product” resulting from economic activities and transportation activities. Economic activities contribute to the generation of commodity demand and supply, while transportation activities facilitate the physical flow of goods from one place to another. In previous studies mad in the literature, researchers focus on either the generation of commodity demand from economies aspects (Chow *et al.*, 2010; Karlarftis and Vlahogianni, 2011) or the movement of goods from the transportation point of view (Gonzalez-Feliu and Routhier, 2012; Hui *et al.*, 2014), while missing out the linkage between these two aspects. Therefore, this study aims to develop an integrated commodity flow forecasting framework that takes into account both economic theories and transportation models.

The following scope of work are defined in this thesis:

- To develop a systematic framework for forecasting maritime freight demand in terms of number of containers.

- To generate freight transport demand based on economic theories. A computable general equilibrium (CGE) model is used to predict trade flow between countries for all transport modes.
- To develop a freight mode choice model that is suitable for global freight demand forecasting at the strategic planning level. This model shall be capable of performing modal split based on limited commodity characteristics data and determine the share of total trade flow between countries carried by maritime transport (especially containerised cargo).
- To develop transformation functions which are capable of converting monetary trade value into physical freight volume. This model shall be able to capture the fluctuation in commodity value-to-weight relationship as well as to convert physical weight into volume and quantity of container flow between countries.
- To apply the developed framework to study global maritime freight demand especially on mature and some emerging trade routes.

CHAPTER 3 METHODOLOGY

In this chapter, the methodology to forecast global maritime container demand is proposed. First, the overview of the global maritime container forecasting framework is illustrated, introducing the three modules under this framework, i.e. (1) Modelling Global Trade Demand, (2) Freight Mode Choice Modelling, and (3) Commodity Value to Container Transformation. Then efforts on data collection are described. Last, the approaches adopted in each module are described.

3.1 Overview of the Global Maritime Container Forecasting Framework

Based on the literature presented in Chapter 2, it was noted that past research studies were focused on the demand modelling at the urban-level or national-level (Abdelwahab and Sargious, 1992; Fite *et al.*, 2002; Juri and Kockelman, 2004; Lyk-Jensen, 2011). There were comparatively limited studies on demand forecasting at the international level studies on demand forecasting at the international level (de Jong *et al.*, 2004; Brocker *et al.*, 2011). Moreover, the models developed in the literature were based on microscopic data involving shippers and carriers delivery or trade route information. Such models were built to provide a robust analysis or prediction at the interest of the relevant firms or organisations, and could not be applied historically to the government or port authorities. Furthermore, it was observed from the literature as described in Chapter 2 that economists and logistic experts had approached global container demand forecasting using different approaches, and there is little connection between the two approaches. Therefore, an international maritime

freight demand forecasting framework at the strategic planning level that adopts both economic and transportation theories is presented here.

The overall framework for global maritime container demand forecasting is shown in Figure 3.1. The modelling framework is composed of three main models: trade demand forecasting model, mode choice model and value-weight-container transformation model. The trade demand forecasting model employs computable general equilibrium (CGE) modelling technique to predict the amount of bilateral trade flow in monetary value between countries using economic theories. Discrete choice models were employed for transport mode choice modelling to determine the amount of goods carried by each transport mode. Since the goal of our study is to provide a systematic modelling framework to predict the future maritime container demand along trade routes, a transformation function which is capable of converting commodity traded value into corresponding number of containers was developed.

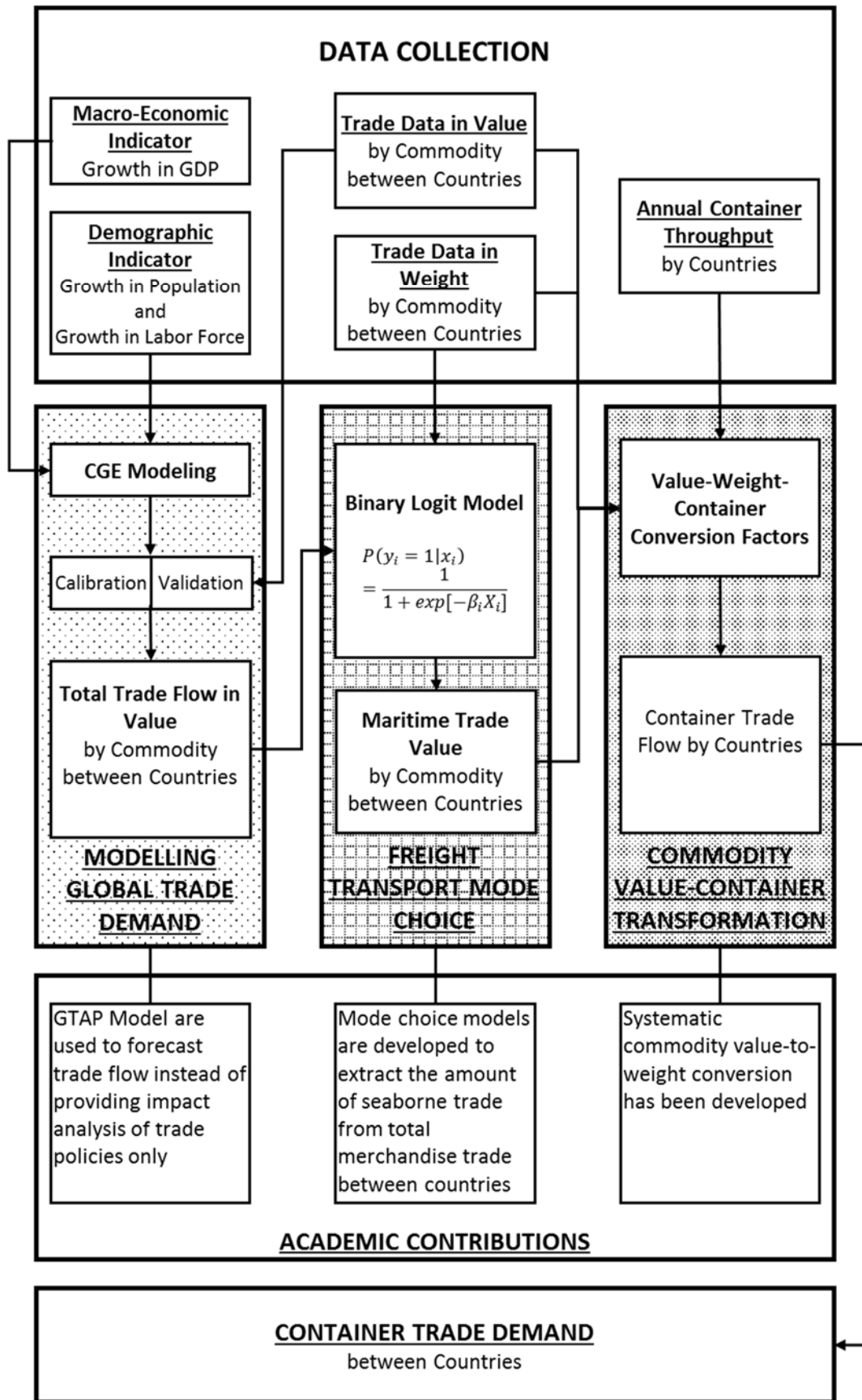


Figure 3.1 Global Container Demand Forecasting Framework

3.2 Data Collection

As indicated in the flowchart shown in Figure 3.1, the first step involves data collection of socio-economic data and commodity trade data. The following subsections shall introduce the various database employed in this study.

3.2.1 Socio-Economic Data

Socio-economic data which can reflect country's economic and demographic characteristic are useful in building the economic-based trade forecasting model. It was known that global trade is highly correlated to major economic and demographic indicators (IMF, 2007; The World Bank, 2015). Country's gross domestic product (GDP) is commonly used as a measurement of economic activities and also used to determine the economic performance of such country. Production capability and consumption ability of the country can be implicitly reflected by GDP, so is the demand for trade. Similarly, population can also reflect the potential production and consumption of goods (both domestic and imported goods) in a country, thus contributing to the supply and demand of goods. On the other hand, employment population is normally indicative to the production capacity of a country, i.e. the larger the work force is, the larger the production capacity a country owns. This contributes to production capability in the country as considered in our model development. It is therefore necessary in this study to ensure that indicators such as country's GDP growth rate, population growth rate and employment rate are obtained. Several publicly available international socio-economic databases could be used for the purpose of acquiring such information for building our framework, as discussed in the following sub-sections.

3.2.1.1 The World Economic Outlook Database

The World Economic Outlook Database was developed by the International Monetary Fund (IMF) with the aim to provide macroeconomic data on national accounts, fiscal indicators and others (IMF, 2014). The database provides data on national accounts, inflation, unemployment rates, balance of payments, fiscal indicators, trade for countries and country groups (aggregates). Data are available from 1980 to the present and is updated twice a year in April and September/October. Besides, a short-term projection for the next two years is available for selected indicators.

3.2.1.2 The World Population Prospects Database

The World Population Prospects is published by the United Nations biannually (United Nations, 2012). It contains demographical information including population of each country or region according to age groups, gender, fertility rate, and others. It provides data from 1950 to the present. Similar to the World Economic Outlook Database, it also provides projections for selected indicators up to 2100.

3.2.1.3 The Global Economic Prospects

The Global Economic Prospects is published twice a year with the purpose of examining growth trends for the global economy and their effects on developing countries (World Bank, 2013). The reports provide the GDP growth information and also include three-year forecasts on global economy, covering the context in financial markets, trade, commodities, and inflation.

3.2.2 Trade Data

In addition to the socio-economic data which are used in model development, trade data is another crucial element in trade model development. It depicts the

international trade situation between countries and provides detailed import and export information (such as commodity type, value, original country, destination country, etc.)

To date, there is no single comprehensive publicly available database which records all essential commodity characteristics information for global maritime trade demand forecasting. These include information like commodity trade values (in dollars) and weights (in metric ton), amount of commodity moved by transportation mode (sea, air or land), number of twenty-footer equivalent unit (TEU) moved between origin and destination, and others. A few publicly available databases (such as USA Trade Online®, Eurostat, United Nations Commodity Trade Statistics) contain snippets of information such as trade values, weights and volumes (in terms of TEU) separately but there is none that can provide all necessary data as a single database. Other than that, missing quantities in the trade flow databases often exists mostly due to incomplete information provided by the reporting countries, especially in the physical dimension (i.e. weight). Noticing this fact, Ong *et al.* (2013) proposed a stochastic imputation approach to resolve the issue of incomplete physical commodity trade data. The various available databases required in the research are discussed in the following subsections.

3.2.2.1 The USA Trade Online® Database

The USA Trade Online® (U.S. Census Bureau, 2014) records monthly trade information between USA and its trading partners. It provides current and cumulative U.S. export and import data on more than 9,000 export commodities and 17,000 import commodities at Harmonized Schedule (HS) codes from 2-digit up to 10-digit level and also in North American Industry Classification

System (NAICS) codes. It reports trade value, shipping weight and method of transportation in U.S. port, district and state level.

3.2.2.2 The Eurostat – International Trade Database

The International Trade Database provided by the Eurostat (Eurostat, 2014) tracks the monthly and annual trade value (in Euro) and quantity of goods (in 100kg) traded between European Union (EU) Member States (intra-EU trade) and between Member States and non-EU countries (extra-EU trade) using different product nomenclatures (such as HS codes, Standard International Trade Classification (SITC), and Combined Nomenclature (CN)). It also reports the modal share of traded goods by transportation modes. Similar to the USA Trade Online® database, it does not report any commodity trade information among non-EU countries.

3.2.2.3 The United Nations Commodity Trade Statistic Database

The United Nations Commodity Trade Statistics Database (UN Comtrade) records annual international trade statistics reported by approximately 200 reported countries (UN Statistic Division, 2015). It reports commodity import and export trade values (in dollars) with respect to its partner countries. To date, it is one of the few free and publicly available international databases which capture the trade statistics among countries. However, it provides limited information on the volume of trade among countries.

3.2.2.4 The Containerisation International Database

The Containerisation International (CI) database (CI, 2013) provides the past five years (2007-2011) port throughput in terms of TEU, tonnage, values (in dollars) along with empty containers and transshipment data by port. It is noted that the number of empty container and transshipment data may not be complete

for certain ports (CI, 2013) and it does not provide any information on the origin or destination ports or countries of the traded cargo.

3.2.2.5 Other Trade Databases

The International Transport Forum conducts transport survey over the OECD member states and their major trading partners annually and records statistical data on passenger and freight movements for all modes including inland freight transport, container transport, coastal shipping, and inland passenger transport and road accidents from 1970 to 2010 (ITF, 2012). However, the data only reflects traded cargoes in origin countries and does not reveal the destination countries.

The OECD – International Trade by Commodity Statistics shows monthly trade data including value and quantity of goods over the OECD member states and their major trading partners along trade routes. Besides, the database reports the corresponding trade data in both HS and SITC codes, dated back from 1988 to 2011 (OECD, 2010). However, it does not provide any information regarding to the transport modes in which goods are carried by.

The OECD – Statistics on International Trade in Service Volume reports annual services trade data which includes transportation services, communication services, financial services, and government services over the OECD member states and their major trading partners along trade routes (OECD, 2012). The service trade is reported in the Extended Balance of Payments Services (EBOPS) Classification of transactions between residents and non-residents which was developed by OECD and Eurostat in consultation with the International Monetary Fund (IMF), aiming to provide a detailed classification for the OECD members (UNITS, 2011).

3.2.2.6 Summary of Trade Databases

A summarised description of available trade databases is presented in Table 3.1. From the table, it can be observed that none of the trade databases is capable of providing comprehensive trade data in different dimensions (i.e. commodity value, weight, and volume) and in disaggregate country-level (i.e. from origin country to destination country). Therefore, it is necessary to adopt suitable methods to link all these dimensions together and to build a complete trade database for this research study.

Table 3.1 Summarised Descriptions of Available Trade Databases

Trade Database	Data	Countries	OD information	Year	Commodity Classification
USA Trade Online® (US Census Bureau, 2014)	Monthly trade data including trade value, shipping weight and method of transport in U.S. port, district and state level	the U.S. and its trading partners	OD pairs	1992 ~ present	HS codes NAICS codes
Eurostat - International Trade (Eurostat, 2014)	Monthly trade data including trade value and quantity of goods in country level	EU and its trading partners	OD pairs	1988 ~ present	HS codes SITC codes CN codes NST/R codes*
Containerisation International (CI, 2013)	Annual port-level throughput data in terms of TEU, tonnage, values, empty containers and transshipment data	Worldwide	Origin only	latest five years (2007-2011)	N/A
UN COMTRADE (UNSD, 2015)	Annual trade data in terms of value, weight and quantity	Worldwide	OD pairs	1962 ~ present	HS codes SITC codes
ITF - Trends in Transport Sector (ITF, 2012)	Annual global statistical data on passenger and freight movements for all modes including inland freight transport, container transport, coastal shipping, inland passenger transport and road accidents	OECD member countries and its trading partners	Origin only	1970 ~ 2010	N/A
OECD - International Trade by Commodity Statistics (OECD, 2010)	Monthly trade data including trade value and quantity of goods in country level	OECD member countries and its trading partners	OD pairs	1988 ~ 2011	HS codes SITC codes
OECD - Statistics on International Trade in Service Volume (OECD, 2014)	Annual international trade data in services including transportation, communication services, financial services, and government services	OECD member countries and its trading partners	OD pairs	1970 ~ 2011	EBOPS codes**

3.3 Modelling Global Trade Demand

After understanding the types of data needed for model building in this study, the methodology used in the first module in this entire framework, i.e. the Global Trade Demand Forecast, will be described in details in this section.

In this study, the computable general equilibrium (CGE) model is adopted. Although the principles of CGE modelling have been known for the past two decades (Hertel, 1997; Burfisher, 2011), its applicability in economic modelling is only possible in recent years due to the advances in computational power. Fundamentals of CGE modelling with its advantages and disadvantages shall be discussed in this section and followed by detailed description on a specific CGE model – the Global Trade Analysis Project (GTAP) model in the later sub-sections. In order to incorporate the GTAP model in the forecasting framework shown in Figure 3.1, the GTAP model is calibrated against actual trade flow data from the UN COMTRADE at the base year (i.e. 2007) and validated over a three-year horizon (2008-2011).

3.3.1 Computable General Equilibrium (CGE) Modelling

Computable General Equilibrium (CGE) modelling has been widely used in studying economic behaviour and has been used by economists and policy makers (Kim et al., 2002; Strutt, 2008; Shibasaki and Watabane, 2011). It is an economy-wide model capable of capturing the motivations and behaviour of all producers and consumers in an economy as well as the linkages among them (Burfisher, 2011). It describes the circular flow of income and expenditure from the purchase of resources and labour of firms, which in turn translates to household income and becomes household spending on products, which goes back to become earnings of firms. The economic activities between producers and households, effects of government on taxation, investor spending and also inter-country trade are simulated. It should be noted that these types of relationships compose to the accounting equations of the model, stating that the total expenditure of all sectors must equal the total income of all sectors without

any existence of excess supply or demand as defined by the Walras' Law (Barron et al., 2006).

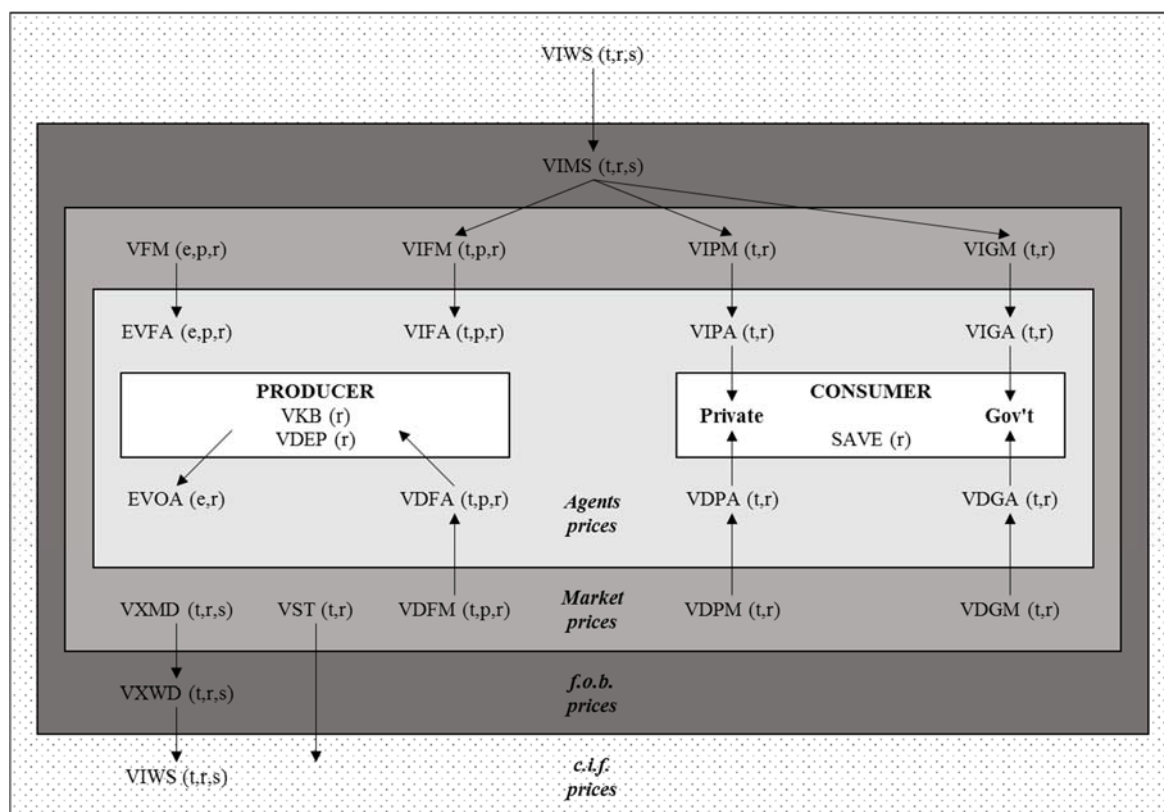
3.3.2 Global Trade Analysis Project (GTAP) Model

The Global Trade Analysis Project (GTAP) was first developed in 1992 and was continually to be updated (GTAP, 2012). The aim of the GTAP project is “to improve the quality of quantitative analysis of global economic issues within an economy-wide framework” (Hertel, 1997). The GTAP consists of mainly two components: (1) the GTAP model (economic model) and (2) the GTAP database (SAM). The standard GTAP model is a multiregion, multisector, computable general equilibrium model assuming perfect competition and constant returns to scale. The latest GTAP model version 6.2 was released in 2007.

The GTAP model is based on the research work at the Australian Industry Commission on the SALTER Project (Hertel, 1997). The underlying theory of GTAP is captured in two types of equations: (1) behavioural equations (based on microeconomic theory) of different agents in the economy, and (2) accounting relationships which ensure the receipts and the expenditure of all the agents (i.e. producers, private households, governments and savings) are balanced. Full details of the GTAP model are documented in the seminal work by Hertel (1997).

In this section, an overview of the GTAP model is described with a graphical exposition of the agents (i.e. producers, private households, governments and savings) under different price spaces presented in Figure 3.2. This figure shows how the price from each agent differs at various price space.

Detail description on the price relationship will be discussed in the following subsections.



Note: e = endowment commodities/sectors; p = produced commodities/sectors; t = trade commodities / sectors; r = regions; s = regions (destinations);
 Notation: V ~ Value; O ~ Output; D ~ Domestic; I ~ Import; P ~ Private Household; G ~ Government; F ~ Firms; E ~ Endowments; A ~ Agent prices; M ~ Market prices; W ~ World prices.

Figure 3.2 Overview of the Agents in the GTAP Model

3.3.2.1 Different Price Spaces in the GTAP Model

Price space is used to define the price of commodity with particular type of tax (such as import tax, export tax, income tax, domestic tax, etc.). Four different price spaces are involved, namely (1) agents prices, (2) market prices, (3) world prices free-on-board (*f.o.b.*) which means that the cost of movement of goods (including local freight and domestic taxes) on board of ship is borne by the seller at loading port only, and (4) world prices at incoterms cost-insurance-freight (*c.i.f.*) which means that the seller to arrange for the carriage of goods

by sea to a port of destination (including export taxes from origin countries and freight cost).

The differences among these four price levels are taxes (including import taxes per sector, source-generic import taxes, output taxes, export taxes per sector, destination-generic export taxes, income taxes, primary factor taxes on firms, and commodity taxes on households and firms), and transportation margins between free on board (*f.o.b.*) and cost, insurance and freight (*c.i.f.*). In the seller market, agent's price denotes seller price whereas market price denotes seller price with taxes. However, in the buyer market, agent's price refers buyer price which is tax-included whereas market price denotes buyer price less taxes. For example, *VIFM* (i.e. value of purchases of imported tradable commodity t by firms in sector p of region r at market price) differs from *VIFA* (i.e. value of purchases of imported tradable commodity t by firms in sector p of region r at agent prices) by import taxes. On the other hand, world prices *c.i.f.* refers to world prices *f.o.b.* with inter-regional transportation costs. For instance, *VXMD* (i.e. value of exports of tradeable commodity t from source r to destination s at world *f.o.b.* prices) differs from *VIWS* (i.e. value of imports of tradable commodity t from source r to destination s evaluated at world *c.i.f.* prices by the transportation margins (or costs), *VST*.

3.3.2.2 Accounting Relationships in the GTAP Model

The first set of accounting relationships in the GTAP model starts out with the market clearing conditions listed from Equation (3.1) to (3.8). Equation (3.1) assures that total output of trade commodities (VOM) equals the sum of domestic use (VDM), exports to global transportation services (VST) and also exports to other regions (VXMD).

$$VOM(t, r) = VDM(t, r) + VST(t, r) + \sum_s VXMD(t, r, s) \quad (3.1)$$

Within the import side as stated in Equation (3.2), total imports (VIM) is distributed to private consumption (VIPM), government consumption (VIGM) and intermediate input for all production firms (VIFM).

$$\begin{aligned} VIM(t, r) &= \sum_s VIMS(t, r, s) \\ &= VIPM(t, r) + VIGM(t, r) + \sum_p VIFM(t, p, r) \end{aligned} \quad (3.2)$$

On the domestic production side, Equation (3.3) distributes the total consumption of domestic output (VDM) to domestic private consumption (VDPM), domestic government consumption (VDGM) and domestic intermediate use for all production firms (VDFM).

$$VDM(t, r) = VDPM(t, r) + VDGM(t, r) + \sum_p VDGM(t, p, r) \quad (3.3)$$

Equation (3.4) takes care of the market clearing condition for the endowment commodities such that total supply of endowments ($VOM_{e,r}$) must be equal to total demand of endowments used in production (VFM).

$$VOM(e, r) = \sum_p VFM(e, p, r) \quad (3.4)$$

Equation (3.5) ensures that the private expenditure (PRIEXP) is determined by the regional income (INCOME) less savings (SAVE) less government expenditure (VGA).

$$PRIVEXP(r) = INCOME(r) - SAVE(r) - \sum_t VGA(t, r) \quad (3.5)$$

Income denotes the total value added (i.e. factors of production) plus all tax revenues and are stated in Equation (3.6). Value added is determined as the total value of output of endowment commodities ($VOA_{e,r}$) less depreciation

(VDEP). Tax revenues refers to the sum of output taxes (i.e. VOM less VOA), taxes on endowments (VFA less VFM), taxes on imported intermediate inputs (VIFA less VIFM), taxes on domestically produced intermediate inputs (VDFA less VDFM), domestic taxes on imports for private consumption (VIPA less VIPM), taxes on domestically produced commodities for private consumption (VDPA less VDPM), taxes on imports for government consumption (VIGA less VIGM), taxes on government consumption of domestically produced commodities (VDGA less VDGM), export taxes or subsidies (VXWD less VXMD) and import tariffs (VIMS less VIWS). Other than the tradable commodities, capital stock at end of year (KE) must equal the capital stock at the beginning (KB) plus net investment which is regional investment less depreciation (REGINV – VDEP) as stated in equation (3.7). Equation (3.8) states that the sum of savings in each region (SAVE) equal the sum of net investment (REGINV – VDEP).

$$\begin{aligned}
& \text{INCOME}(r) \\
&= \sum_e \text{VOA}(e, r) - \text{VDEP}(r) + \sum_p [\text{VOM}(p, r) - \text{VOA}(p, r)] \\
&+ \sum_e \sum_p [\text{VFA}(e, p, r) - \text{VFM}(e, p, r)] \\
&+ \sum_p \sum_t [\text{VIFA}(t, p, r) - \text{VIFM}(t, p, r)] \\
&+ \sum_p \sum_t [\text{VDFA}(t, p, r) - \text{VDFM}(t, p, r)] + \sum_p [\text{VIPA}(p, r) - \text{VIPM}(p, r)] \quad (3.6) \\
&+ \sum_p [\text{VDPA}(p, r) - \text{VDPM}(p, r)] + \sum_p [\text{VIGA}(p, r) - \text{VIGM}(p, r)] \\
&+ \sum_p [\text{VDGA}(p, r) - \text{VDGM}(p, r)] \\
&+ \sum_t \sum_s [\text{VXWD}(t, r, s) - \text{VXMD}(t, r, s)] \\
&+ \sum_t \sum_s [\text{VIMS}(t, r, s) - \text{VIWS}(t, r, s)]
\end{aligned}$$

$$KE(r) = KB(r) - VDEP(r) + REGINV(r) \quad (3.7)$$

$$\sum_r SAVE(r) = \sum_r [REGINV(r) - VDEP(r)] \quad (3.8)$$

In general equilibrium, if all markets are once clear, then the omitted market will clear by default as defined in the Walras' Law stating that the total value of goods and money supplied equals that of goods and money demanded (Hertel, 1997). The savings-investment relation is chosen as the omitted market and when checking the equilibrium state (i.e. whether Walras' Law is fulfilled), the supply ($WALRAS_{SUP}$) and demand ($WALRAS_{DEM}$) computed in Equation (3.9) and (3.10) respectively has to be compared in Equation (3.11). If the slack variable ($WALRASSLACK$) in equation (3.11) is zero, Walras' Law holds and general equilibrium is obtained.

$$WALRAS_{SUP} = GLOBALCGDS \quad (3.9)$$

$$WALRAS_{DEM} = \sum_r SAVE(r) \quad (3.10)$$

$$WALRASSLACK = WALRAS_{sup} - WALRAS_{dem} \quad (3.11)$$

Following the market clearing conditions are the price linkages that determine the prices for all commodities in the model. These equations serve to link the prices in different markets taking into account taxes or subsidies (such as import taxes, source-generic import tariffs, output taxes, export taxes, destination-generic export subsidies, income taxes, primary factor taxes on firms, commodity taxes levied both on households and firms).

Equation (3.12) links the supply price from producers (PS) to the market price (PM) by adding an output tax (TO).

$$PS(n, r) = PM(n, r) \cdot TO(n, r) \quad (3.12)$$

Equation (3.13) and (3.14) serve to link the market price for endowment commodities (PM and PMES for sluggish endowments, i.e. land and natural resources) and the price paid by firms (PFE) by taking taxation on primary factors (TF) into account.

$$PFE(es, p, r) = PM(es, p, r) \cdot TF(es, p, r) \quad (3.13)$$

$$PFE(es, p, r) = PMES(es, p, r) \cdot TF(es, p, r) \quad (3.14)$$

Equations (3.15) to (3.17) include the commodity taxations (TPD means taxation for private household, TGD means taxation for government, and TFD means taxation for firms) to translate the market price for domestically produced goods (PM) into the prices paid by private households (PPD), by government (PGD) and by firms for domestic intermediates (PFD).

$$PPD(t, r) = PM(t, r) \cdot TPD(t, r) \quad (3.15)$$

$$PGD(t, r) = PM(t, r) \cdot TGD(t, r) \quad (3.16)$$

$$PFD(t, p, r) = PM(t, p, r) \cdot TFD(t, p, r) \quad (3.17)$$

Similarly, Equations (3.18) to (3.20) specify the same relationships in the case of imports (PIM) as that in the domestic products previously.

$$PPM(t, r) = PIM(t, r) \cdot TPM(t, r) \quad (3.18)$$

$$PGM(t, r) = PIM(t, r) \cdot TGM(t, r) \quad (3.19)$$

$$PFM(t, p, r) = PIM(t, p, r) \cdot TFM(t, p, r) \quad (3.20)$$

The linkage between *c.i.f.* prices (PCIF) and domestic prices (PMS), in which tariff rates is taking into account, is specified in equation (3.21) in the GTAP model. There are two types of import tariff, (1) an ordinary *ad valorem* tax rate (TMS) which is commodity- and OD-specific and (2) a source-generic import levy (TM) which is commodity- and origin-specific.

$$PMS(t, r, s) = PCIF(t, r, s) \cdot TM(t, r) \cdot TMS(t, r, s) \quad (3.21)$$

Likewise, similar relationships are applied between domestic market prices (PM) and *f.o.b.* export prices (PFOB) by taking into account the specific export taxes on separate trade flows (TXS) and destination-generic export taxes/subsidies (TX) in Equation (3.22).

$$PFOB(t, r, s) = \frac{PM(t, r)}{TX(t, r) \cdot TXS(t, r, s)} \quad (3.22)$$

3.3.2.3 Behavioural Equations of Different Agents in the GTAP Model

After defining the accounting relationships and the endogenous price linkages in the GTAP model in Sections 3.3.2.1 and 3.3.2.2, the behaviour of different agents are next defined. In the GTAP model, the producer behaviours follow the Armington structure (Armington, 1969; Hertel, 1997) which states that products traded internationally are differentiated by country of origin, i.e. horizontal product differentiation. The Armington structure, as presented in Figure 3.3, makes use of a nested consumption structure to define the composite goods of intermediates and factors of input consumed by firms.

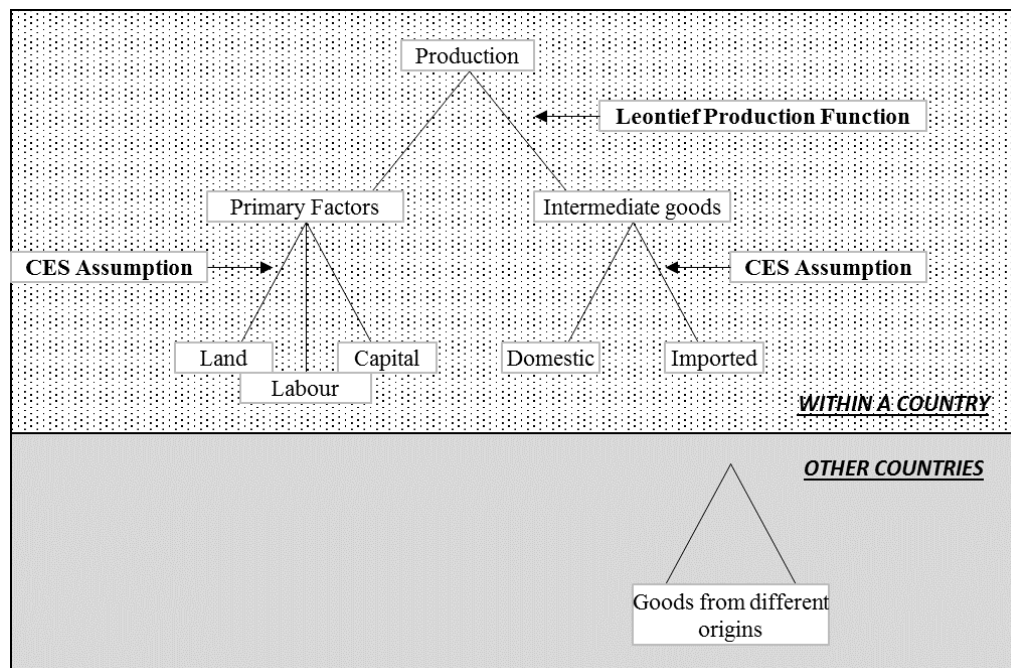


Figure 3.3 Armington Production Structure in the GTAP Model

At the lowest nest (i.e. from import from other countries), firms first decide on the sourcing of their imports and then determine the aggregated composite import price using the Constant Elasticity of Substitution (CES) function. CES function is a particular type of aggregator function which combines two or more types of consumption, assuming these consumptions exhibits constant elasticity of substitution. After that, the optimal mix of imported and domestic goods are chosen under the same CES functional form and the composite amount of intermediate goods is determined. Similarly, at the nest on the left hand side (i.e. aggregate choice for primary factors), firms aim to maximise their profit by choosing the optimal mix of primary factors independently of the prices of intermediate inputs. At the highest nest (i.e. the aggregate choice of primary factors and intermediate goods), the Leontief production function is adopted in order to ensure limited substitutability between primary factors and intermediated inputs.

The general form of CES production function is stated below:

$$Q = F \cdot \left[\sum_{i=1}^n \alpha_i X_i^{\frac{(s-1)}{s}} \right]^{\frac{s}{(s-1)}} \quad (3.23)$$

where,

Q = production output level,

F = efficiency parameter with $F > 0$,

α_i = share parameter of input i with $\sum \alpha_i = 1$,

x_i = input levels i , and

s = constant elasticity of substitution

In addition, Leontief production function is a production function that implies that factors of production are utilised in fixed proportions and no substitutability is allowed between factors. Hence, employing this production

function at the upper nest states that the primary factors of production could not be substituted by the intermediate goods from other industries. Its functional form is defined as the following:

$$Q = \min(a_1x_1, a_2x_2, \dots, a_nx_n) \quad (3.24)$$

where,

Q = production output level,

a_i = share parameter of input i with $\sum a_i = 1$, and

x_i = input levels i

Production functions adopted in the GTAP model follows a nested production structure. Equation (3.25) determines the market price of composite input (PIM) by the CES function in which the elasticity of substitution (ESUBM) is exogenous. Then the derived demand in quantity (QXS) is determined by Equation (3.27).

$$PIM(t, s) = \left[\sum_r MSHRS(t, r, s) \cdot [PMS(t, r, s)]^{1-ESUBM(t)} \right]^{\frac{1}{1-ESUBM(t)}} \quad (3.25)$$

$$MSHRS(t, r, s) = \frac{VIMS(t, r, s)}{\sum_r VIMS(t, r, s)} \quad (3.26)$$

$$QXS(t, r, s) = QIM(t, s) \cdot MSHRS(t, r, s) \cdot \left(\frac{PMS(t, r, s)}{PIM(t, s)} \right)^{-ESUBM(t)} \quad (3.27)$$

In similar manner, Equation (3.28) determines the composite price (PF) for the intermediates including both domestic and imported goods with another elasticity of substitution (ESUBD), and the corresponding derived demand for domestic intermediates (QFM) and for imported intermediates (QFD) are determined as shown in Equations (3.30) and (3.31).

$$PF(t, p, r) = \left\{ \begin{array}{l} FMSHR(t, p, r) \cdot [PFM(t, p, r)]^{1-ESUBD(t)} \\ + [1 - FMSHR(t, p, r)] \cdot [PFD(t, p, r)]^{1-ESUBD(t)} \end{array} \right\}^{\frac{1}{1-ESUBD(t)}} \quad (3.28)$$

$$\text{FMSHR}(t, p, r) = \frac{\text{VIFA}(t, p, r)}{\text{VFA}(t, p, r)} \quad (3.29)$$

$$\text{QFM}(t, p, r) = \text{QF}(t, p, r) \cdot \text{FMSHR}(t, p, r) \cdot \left(\frac{\text{PFM}(t, p, r)}{\text{PF}(t, p, r)} \right)^{-\text{ESUBD}(t)} \quad (3.30)$$

$$\text{QFD}(t, p, r) = \text{QF}(t, p, r) \cdot [1 - \text{FMSHR}(t, p, r)] \cdot \left(\frac{\text{PFD}(t, p, r)}{\text{PF}(t, p, r)} \right)^{-\text{ESUBD}(t)} \quad (3.31)$$

Likewise, for the value-added nest (QFE) for endowment commodities is determined in similar manner as the composite price for intermediate goods, as shown in Equations (3.32) to (3.34).

$$\text{PVA}(p, r) = \left[\sum_e \text{SVA}(e, p, r) \cdot \left[\frac{\text{PFE}(e, p, r)}{\text{AFE}(e, p, r)} \right]^{1-\text{ESUBA}(p)} \right]^{\frac{1}{1-\text{ESUBA}(p)}} \quad (3.32)$$

$$\text{SVA}(e, p, r) = \frac{\text{VFA}(e, p, r)}{\sum_e \text{VFA}(e, p, r)} \quad (3.33)$$

$$\text{QFE}(e, p, r) = \frac{\text{QVA}(p, r)}{\text{AFE}(e, p, r)} \cdot \text{SVA}(e, p, r) \cdot \left(\frac{\text{PFE}(e, p, r)}{\text{PVA}(p, r) \cdot \text{AFE}(e, p, r)} \right)^{-\text{ESUBA}(p)} \quad (3.34)$$

Finally, the upper level nest in the production structure is represented from equation (3.35) to (3.38).

$$\text{QVA}(p, r) = \frac{1}{\alpha^{\text{va}}(p, r)} \cdot \frac{\text{QO}(p, r)}{\text{AVA}(p, r) \cdot \text{AO}(p, r)} \quad (3.35)$$

$$\alpha^{\text{va}}(p, r) = \frac{\text{VOA}^0(e, p, r)}{\sum_e \text{VFA}^0(e, p, r)} \quad (3.36)$$

$$\text{QF}(t, p, r) = \frac{1}{\alpha^{\text{f}}(t, p, r)} \cdot \frac{\text{QO}(p, r)}{\text{AF}(p, r) \cdot \text{AO}(p, r)} \quad (3.37)$$

$$\alpha^{\text{f}}(p, r) = \frac{\text{VOA}^0(e, p, r)}{\text{VFA}^0(t, p, r)} \quad (3.38)$$

As the Leontief function states that there must be zero substitution between value-added and intermediates and also constant input coefficients for individual intermediates, the value-added composite (QVA) and intermediate inputs (QF) are simply lumped together to determine output (QO), and is indicated in Equation (3.39).

$$\text{PS}(p, r) \cdot \text{QO}(p, r) = \sum_e \text{PFE}(e, p, r) \cdot \text{QFE}(e, p, r) + \sum_t \text{PF}(t, p, r) \cdot \text{QF}(t, p, r) \quad (3.39)$$

After describing the behaviour of firms in the GTAP model, equations describing the behaviour of consumers (i.e. private household, government and savings) are presented. In the GTAP model, the Cobb Douglas utility function is assumed to mimic consumer behaviour. A generalized Cobb Douglas utility function $U(x)$ is defined as follow:

$$\tilde{U}(x) = \prod_{i=1}^L x^{\lambda_i} \quad (3.40)$$

where,

$x = (x_1, x_2, \dots, x_L)$ representing quantities consumed of L types of goods

λ_i = demand elasticity of goods i

As constant elasticity of demand is assumed, sum of the demand elasticity is added to one:

$$\sum_1^L \lambda = \lambda_1 + \lambda_2 + \lambda_3 + \dots + \lambda_L = 1 \quad (3.41)$$

For private consumption, the Constant Difference of Elasticity (CDE) implicit expenditure function determines the optimizing behaviour of their final demand and is defined as Equation (3.42) in the GTAP model. The generalised CDE expenditure function is implicitly defined as:

$$G(z, u) = \sum_i^N B_i u^{e_i b_i} z_i^{b_i} \equiv 1 \quad (3.42)$$

where,

$G(\cdot)$ = minimum expenditure function,

B_i = Scaling factors,

u = utility function,

z_i = normalized prices of goods i ,

b_i = parameters determining substitution possibilities among commodities i in consumption,

e_i = expansion parameters appeared due to non-homotheticity in consumption.

Equation (3.43) denotes the aggregate utility (U) of regional household (i.e. aggregate household and government expenditures of a country/region) according to the Cobb-Douglas per capita utility function specified using three types of final demand: (1) regional savings (QSAVE), (2) government expenditures (UG), and (3) private household expenditures (UP).

$$U(r) = UP(r)^{\frac{PRIEXP(r)}{INCOME(r)}} \cdot \left(\frac{UG(r)}{POP(r)} \right)^{\frac{GOVEXP(r)}{INCOME(r)}} \cdot \left(\frac{QSAVE(r)}{POP(r)} \right)^{\frac{SAVE(r)}{INCOME(r)}} \quad (3.43)$$

If the demand functions for savings and government, i.e. Equation (3.44) and (3.45), are enforced, the value shares used on savings and government consumption will be constant with private expenditure as the residual. Since all value shares are constant, thus it is in compliance with the application of Cobb-Douglas utility function.

$$QSAVE(r) = \frac{SAVE^0(r)}{INCOME^0(r)} \cdot \frac{INCOME(r)}{PSAVE} \quad (3.44)$$

The utility for government consumption (UG) is computed using Equation (3.45) whereas the price index for government consumption (PGOV) is determined using Equation (3.46) and the government demand function for composite commodities (QG) is shown in Equation (3.47).

$$UG(r) = \frac{GOVEXP^0(r)}{INCOME^0(r)} \cdot \frac{INCOME(r)}{PGOV(r)} \quad (3.45)$$

$$PGOV(r) = \prod_t PG(t, r)^{\frac{VGA(t, r)}{GOVEXP(r)}} \quad (3.46)$$

$$QG(t, r) = \frac{VGA^0(t, r)}{GOVEXP^0(r)} \cdot \frac{PGOV(r) \cdot UG(r)}{PG(t, r)} \quad (3.47)$$

In order to obtain the price index and demand for government consumption, the government household price for composite commodities (PG), government household demand for aggregate imports (QGM) and government household demand for domestic goods (QGD) have to be determined in a similar way as the composite demand in the producer behaviour, and are shown in Equations (3.48) to (3.51).

$$PG(t, r) = \left\{ \begin{array}{l} \text{GMSHR}(t, r) \cdot [\text{PGM}(t, r)]^{1-\text{ESUBD}(t)} \\ + [1 - \text{GMSHR}(t, r)] \cdot [\text{PGD}(t, r)]^{1-\text{ESUBD}(t)} \end{array} \right\}^{\frac{1}{1-\text{ESUBD}(t)}} \quad (3.48)$$

$$\text{GMSHR}(t, r) = \frac{\text{VIGA}(t, r)}{\text{VGA}(t, r)} \quad (3.49)$$

$$\text{QGM}(t, r) = \text{QG}(t, r) \cdot \text{GMSHR}(t, r) \cdot \left(\frac{\text{PGM}(t, r)}{\text{PG}(t, r)} \right)^{-\text{ESUBD}(t)} \quad (3.50)$$

$$\text{QGD}(t, r) = \text{QG}(t, r) \cdot [1 - \text{GMSHR}(t, r)] \cdot \left(\frac{\text{PGD}(t, r)}{\text{PG}(t, r)} \right)^{-\text{ESUBD}(t)} \quad (3.51)$$

Likewise, a similar approach is used to determine the demand for private household consumption with an exception that CDE utility function is employed to determine the private household preferences on products (QP) as stated in Equation (3.52).

$$\sum_t B(t, r) \cdot \text{UP}(r)^{\text{EP}(t,t,r) \cdot \text{EY}(t,r)} \left(\frac{\text{PP}(t, r)}{\text{PRIEXP}(r)/\text{POP}(r)} \right) \equiv 1 \quad (3.52)$$

Similar to the government demand for composite commodities, the private household price for composite commodities (PP), government household demand for aggregate imports (QPM) and government household demand for domestic goods (QPD) are determined and indicated in Equations (3.53) to (3.58).

$$\text{PRIVEXP}(r) = \frac{\text{PRIVEXP}^0(r)}{\text{INCOME}^0(r)} \cdot \text{INCOME}(r) \quad (3.53)$$

$$QP(t, r) = \frac{B(t, r) \cdot EP(t, t, r) \cdot UP(r)^{EP(t, t, r)EY(t, r)} \left(\frac{PP(t, r)}{PRIVEXP(r)/POP(r)} \right)^{EP(t, t, r)-1}}{\sum_t B(t, r) \cdot EP(t, t, r) \cdot UP(r)^{EP(t, t, r)EY(t, r)} \left(\frac{PP(t, r)}{PRIVEXP(r)/POP(r)} \right)^{EP(t, t, r)}} \quad (3.54)$$

$$PP(t, r) = \left\{ \begin{array}{l} PMSHR(t, r) \cdot [PPM(t, r)]^{1-ESUBD(t)} \\ + [1 - PMSHR(t, r)] \cdot [PPD(t, r)]^{1-ESUBD(t)} \end{array} \right\}^{\frac{1}{1-ESUBD(t)}} \quad (3.55)$$

$$PMSHR(t, r) = \frac{VIPA(t, r)}{VPA(t, r)} \quad (3.56)$$

$$QPM(t, r) = QP(t, r) \cdot PMSHR(t, r) \cdot \left(\frac{PPM(t, r)}{PP(t, r)} \right)^{-ESUBD(t)} \quad (3.57)$$

$$QPD(t, r) = QP(t, r) \cdot [1 - PMSHR(t, r)] \cdot \left(\frac{PPD(t, r)}{PP(t, r)} \right)^{-ESUBD(t)} \quad (3.58)$$

In order to achieve general equilibrium, the slack variable (WALRASSLACK) in Equation (3.11) must be equal to zero. Hence, the equilibrium requirement as specified in the Walras' Law (i.e. the total value of goods and money supplied equals that of goods and money demanded (Hertel, 1997)) could be satisfied.

3.3.3 GTAP 8 Database

Besides the economic theories adopted in the GTAP model, another important component of CGE modelling – the social accounting matrix (SAM), also known as the GTAP database – is essential in model development. In general, SAM records down complete information of economic activities in terms of monetary values within a national economy including bilateral trade information among regions. It is considered to be the backbone of the CGE model as it compiles of a full list of economic accounts: 1) activities, 2) commodities, 3) factors of production, 4) participating agents (i.e. households, government, the Rest of World, etc.), including an aggregate savings-investment account (Tebekew *et al.*, 2009)

The GTAP database is a consistent representation of the world economy in the base year of the current version. The GTAP database is composed of national input-output tables, trade, macroeconomic, and protection data from several sources (Hertel, 1997). The GTAP working team collected the data which are heterogeneous in sources and reconciled the database to achieve consistency throughout the entire database. The objective of the GTAP database is to facilitate the operation of economic simulation models ensuring users a consistent set of economic facts.

GTAP database used in this study is GTAP version 8 which was released in March 2012. It is a fully documented, publicly available global database which contains complete bilateral trade information, transport and protection data characterizing economic linkages among regions, together with individual country input-output data bases which account for inter-sectoral linkages within regions. A total of 129 regions and 57 production sectors with 5 primary factors are included in this database as listed in Tables 3.2 to 3.4.

There are two types of primary factors (or commodity endowments): mobile commodity endowments (i.e. skilled and unskilled labour, and capital) which are allowed to move across industries within each region, and sluggish commodity endowments (i.e. land and natural resources) which are imperfectly mobile across industries within each region (Hertel, 1997).

Both manufactures (GTAP sector code 1-42) and services (GTAP sector code 43-57) sectors are included in this database and are used in this study. In this version, the database possesses two reference periods: 2004 and 2007.

Table 3.2 Primary Factors of Production in the GTAP Database

Factors of Production	
Mobile Endowments	Skilled Labor Unskilled Labor Capital
Sluggish Endowments	Land Natural Resources

Table 3.3 Number of Industrial Sectors included in the GTAP Database

No.	Code	Description	No.	Code	Description
1	PDR	Paddy rice	30	LUM	Wood products
2	WHT	Wheat	31	PPP	Paper products, publishing
3	GRO	Cereal grains nec	32	P_C	Petroleum, coal products
4	V_F	Vegetables, fruit, nuts	33	CRP	Chemical, rubber, plastic products
5	OSD	Oil seeds	34	NMM	Mineral products nec
6	C_B	Sugar cane, sugar beet	35	I_S	Ferrous metals
7	PFB	Plant-based fibers	36	NFM	Metals nec
8	OCR	Crops nec	37	FMP	Metal products
9	CTL	Bovine cattle, sheep and goats, horses	38	MVH	Motor vehicles and parts
10	OAP	Animal products nec	39	OTN	Transport equipment nec
11	RMK	Raw milk	40	ELE	Electronic equipment
12	WOL	Wool, silk-worm cocoons	41	OME	Machinery and equipment nec
13	FRS	Forestry	42	OMF	Manufactures nec
14	FSH	Fishing	43	ELY	Electricity
15	COA	Coal	44	GDT	Gas manufacture, distribution
16	OIL	Oil	45	WTR	Water
17	GAS	Gas	46	CNS	Construction
18	OMN	Minerals nec	47	TRD	Trade
19	CMT	Bovine meat products	48	OTP	Transport nec
20	OMT	Meat products nec	49	WTP	Water transport
21	VOL	Vegetable oils and fats	50	ATP	Air transport
22	MIL	Dairy products	51	CMN	Communication
23	PCR	Processed rice	52	OFI	Financial services nec
24	SGR	Sugar	53	ISR	Insurance
25	OFD	Food products nec	54	OBS	Business services nec
26	B_T	Beverages and tobacco products	55	ROS	Recreational and other services
27	TEX	Textiles	56	OSG	Public Administration, Defense, Education, Health
28	WAP	Wearing apparel	57	DWE	Dwellings
29	LEA	Leather products			

Table 3.4 Number of Regions included in the GTAP Database

No.	Code	Description	No.	Code	Description
1	AUS	Australia	66	NLD	Netherlands
2	NZL	New Zealand	67	POL	Poland
3	XOC	Rest of Oceania	68	PRT	Portugal
4	CHN	China	69	SVK	Slovakia
5	HKG	Hong Kong	70	SVN	Slovenia
6	JPN	Japan	71	ESP	Spain
7	KOR	Korea Republic of	72	SWE	Sweden
8	MNG	Mongolia	73	GBR	United Kingdom
9	TWN	Taiwan	74	CHE	Switzerland
10	XEA	Rest of East Asia	75	NOR	Norway
11	KHM	Cambodia	76	XEF	Rest of EFTA
12	IDN	Indonesia	77	ALB	Albania
13	LAO	Lao's	78	BGR	Bulgaria
14	MYS	Malaysia	79	BLR	Belarus
15	PHL	Philippines	80	HRV	Croatia
16	SGP	Singapore	81	ROU	Romania
17	THA	Thailand	82	RUS	Russian Federation
18	VNM	Viet Nam	83	UKR	Ukraine
19	XSE	Rest of Southeast Asia	84	XEE	Rest of Eastern Europe
20	BGD	Bangladesh	85	XER	Rest of Europe
21	IND	India	86	KAZ	Kazakhstan
22	NPL	Nepal	87	KGZ	Kyrgyzstan
23	PAK	Pakistan	88	XSU	Rest of Former Soviet Union
24	LKA	Sri Lanka	89	ARM	Armenia
25	XSA	Rest of South Asia	90	AZE	Azerbaijan
26	CAN	Canada	91	GEO	Georgia
27	USA	United States of America	92	BHR	Bahrain
28	MEX	Mexico	93	IRN	Iran, Islamic Republic of
29	XNA	Rest of North America	94	ISR	Israel
30	ARG	Argentina	95	KWT	Kuwait
31	BOL	Bolivia	96	OMN	Oman
32	BRA	Brazil	97	QAT	Qatar
33	CHL	Chile	98	SAU	Saudi Arabia
34	COL	Colombia	99	TUR	Turkey
35	ECU	Ecuador	100	ARE	United Arab Emirates
36	PRY	Paraguay	101	XWS	Rest of Western Asia
37	PER	Peru	102	EGY	Egypt
38	URY	Uruguay	103	MAR	Morocco
39	VEN	Venezuela	104	TUN	Tunisia
40	XSM	Rest of South America	105	XNF	Rest of North Africa
41	CRI	Costa Rica	106	CMR	Cameroon
42	GTM	Guatemala	107	CIV	Cote d'Ivoire
43	HND	Honduras	108	GHA	Ghana
44	NIC	Nicaragua	109	NGA	Nigeria
45	PAN	Panama	110	SEN	Senegal
46	SLV	El Salvador	111	XWF	Rest of Western Africa
47	XCA	Rest of Central America	112	XCF	Central Africa
48	XCB	Caribbean	113	XAC	South Central Africa
49	AUT	Austria	114	ETH	Ethiopia
50	BEL	Belgium	115	KEN	Kenya
51	CYP	Cyprus	116	MDG	Madagascar
52	CZE	Czech Republic	117	MWI	Malawi
53	DNK	Denmark	118	MUS	Mauritius
54	EST	Estonia	119	MOZ	Mozambique
55	FIN	Finland	120	TZA	Tanzania
56	FRA	France	121	UGA	Uganda
57	DEU	Germany	122	ZMB	Zambia
58	GRC	Greece	123	ZWE	Zimbabwe
59	HUN	Hungary	124	XEC	Rest of Eastern Africa
60	IRL	Ireland	125	BWA	Botswana
61	ITA	Italy	126	NAM	Namibia
62	LVA	Latvia	127	ZAF	South Africa
63	LTU	Lithuania	128	XSC	Rest of South African Customs Union
64	LUX	Luxembourg			
65	MLT	Malta	129	XTW	Rest of the World

There are a total of 57 industrial sectors in this database and this type of categorisation is a unique classification tailored for the GTAP model. The GTAP sector classification is aggregated from detailed commodity or service classification with reference to the Central Product Classification (CPC) and the International Standard Industrial Classification of All Economic Activities (ISIC) Revision 3. These classifications are slightly different from the conventional commodities classification such as the Harmonised Commodity Description and Coding System (HS) of tariff nomenclature (World Customs Organisation, 2013) and service trade classification such as the Extended Balance of Payments Services (EBOPS) classification (UN Statistics Division, 2010). Therefore, in order to make comparable between the results obtained from the GTAP model and the available international trade commodity database such as the United Nations commodity trade statistics database (UN Statistics Division, 2015), a correlation table has to be built and will be described in Chapter 4.

3.3.4 Procedures for Utilising the GTAP Model and Database in Global Freight Demand Modelling

In this study, as we rely on the GTAP model and database to develop the proposed commodity trade demand forecasting module and the major steps involved are listed below and shown in Figure 3.4.

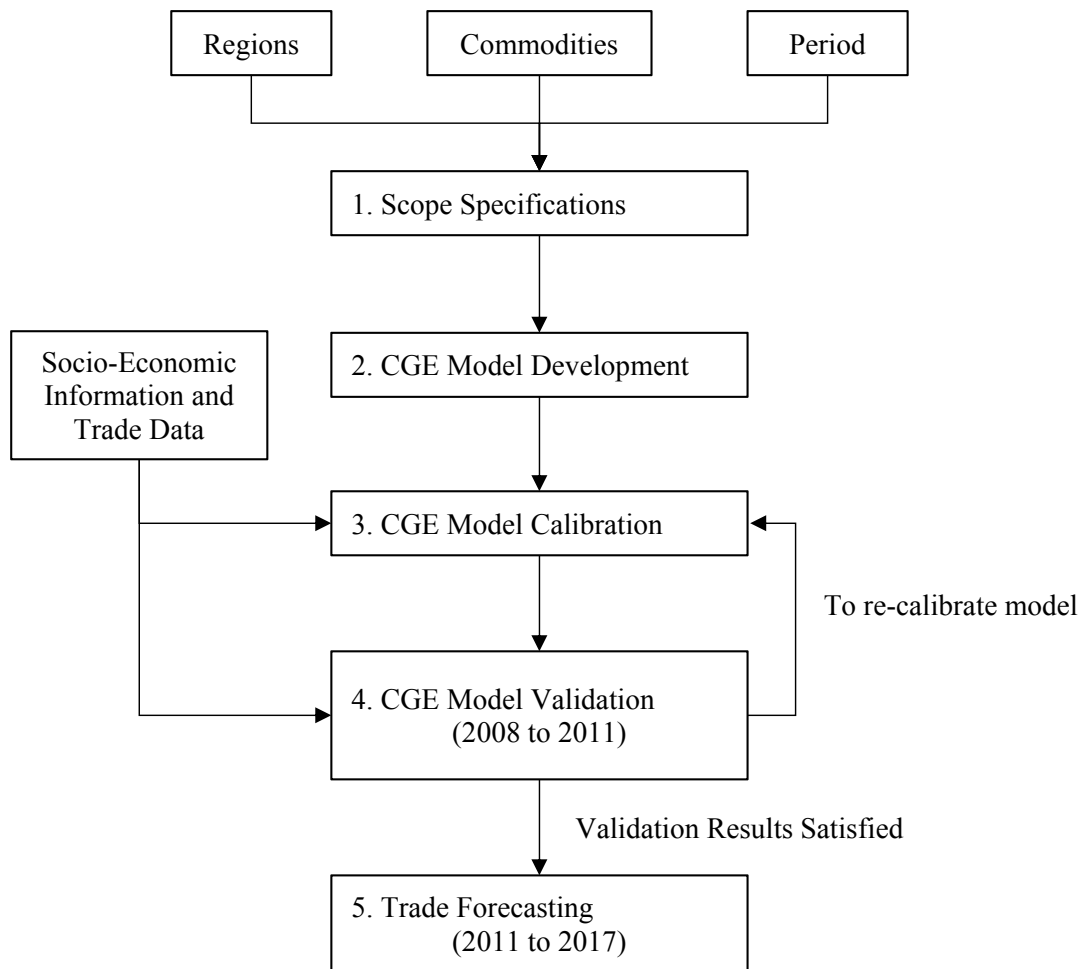


Figure 3.4 Major Steps in GTAP Modelling

1. Selection of countries and commodities group

Since the scope of work in this study involves global maritime freight demand forecasting, the number of countries involved are all the countries listed in the GTAP database, i.e. 129 countries or regions. Only commodities trade (i.e. GTAP sector code 1-42 as described in Table 3.7) are considered in the study and the rest (i.e. service trade) will be aggregated to the group “Others”. Hence, there will be a total of 42 industrial sectors together with an additional aggregated sector representing all services industry in the database.

2. Selection of forecasting period

Short-term as well as long-term forecast can be performed. However, this analysis period is heavily dependent on the availability of the forecasted input variables, such as the estimated GDP growth, prediction on population growth, and others. In this thesis, a medium-term forecasting period will be an annual forecast up to 2017.

3. Selection of input variables

As the final objective of this study is to forecast container trade flow between countries under forecasted economic growth, demographic growth information, such as population growth rate, labour force growth rate, and others as well as socio-economic growth information, such as gross domestic product (GDP) growth rate, population growth rate, employment rate, and others are taken into account.

4. Calibration of the GTAP database and model

The GTAP trade database are calibrated using the actual international trade reported in international trade database to ensure its accuracy. The parameters inside the GTAP model are calibrated using the socio-economic information collected to ensure the model works well with updated trade database.

5. Validation of the GTAP model

After calibrating the trade database, there is a need to validate the forecasting ability of the GTAP model. In this thesis, the validation period will be from 2008 to 2010. Since the base year of the GTAP database is 2007, a three-year horizon is chosen to validate the robustness of the model.

6. Forecasted results of the trade demand model

Last but not the least, the forecasted results of the GTAP model will be used in the next stage of the entire modelling framework. Since the GTAP model only delivers the monetary trade value between countries. This trade value includes not only the maritime commodity trade but also both land (for example, truck- and rail-transported goods) and air freight. In general, the bilateral trade value obtained is a combination of commodities transported by all available transport modes. However, as the goal of this study is to forecast the maritime container trade flow among countries, a comprehensive mode choice model should be developed to determine the value of seaborne cargo trade.

3.4 Freight Transport Mode Choice Model

From the first module of the proposed framework as shown in Figure 3.1, the amount of commodity flow between countries/regions by commodity group can be determined. However, this freight flow quantity is inclusive of all types of transportation mode, i.e. there is no specific transport mode differentiation. With our research objective focused on forecasting the amount of maritime container flow between countries, second module of the framework aims to estimate the amount or proportion of total commodity trade between countries that are being transported through maritime transport.

3.4.1 Model Description

At the strategic planning level, only limited trade commodity characteristics such as value and weight of commodity could be available (Yang *et al.*, 2014) whereas more detailed freight characteristics such as freight rates, speed, reliability, inventories, etc. would be available at shippers' level since most of

these data are commercial confidential (Norojono *et al.*, 2003; Rich *et al.*, 2009). Therefore, in order to determine the transport mode in which particular commodity is to be carried, a mode choice model with value-weight ratio as model parameters could be developed in analysing the mode choice behaviours.

In this thesis, discrete choice models are used to determine the transport mode share to carry particular commodities. Discrete choice models are widely used to describe, explain, and predict choices between two or more discrete alternatives (Carrillo, 1996; Beuthe *et al.*, 2001; Oum, 1989; Reynaud and Jiang, 2000). Discrete choice models specify the probability that an option is chosen among a set of alternatives.

The formulation of discrete choice model is based on a utility context with a linear function of variables that influences specific choice outcomes with an additional disturbance terms mostly used to account for the unobserved attributes or variables which are missing from the observation. The functional form T_{in} is stated as below:

$$T_{in} = \beta_i X_{in} + \varepsilon_{in} \quad (3.59)$$

where,

- β_i : vector of estimable parameters for mode choice i ,
- X_{in} : vector of the observable characteristics (or attributes) that determine the mode choice for observation n , and
- ε_{in} : disturbance term either following Type 1 extreme value distribution (logit model) or normal distribution (probit model).

3.4.1.1 Discrete Choice Models for Two Transportation Modes

For binary logit model, the form of formulation is written as follow:

$$P_n(i) = \frac{\exp[\beta_i \mathbf{X}_{in}]}{\exp[\beta_i \mathbf{X}_{in}] + \exp[\beta_j \mathbf{X}_{jn}]} = \frac{1}{1 + \exp[\beta_j \mathbf{X}_{jn} - \beta_i \mathbf{X}_{in}]} = \frac{1}{1 + \exp[-\beta_i \mathbf{X}_{in}]} \quad (3.60)$$

where T_{jn} can be conveniently assumed to be zero since the interest is on the relative mode share between modes i and j .

For a binary choice model (i.e. i equals either 1 or 2), the form of probit model can be stated as:

$$P_n(1) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{(\beta_1 X_{1n} - \beta_2 X_{2n})/\sigma} \text{EXP}\left[-\frac{1}{2}w^2\right] dw \quad (3.61)$$

where,

w : standard normal deviate which equals $\frac{X-\mu}{\sigma}$,

μ : mean,

σ : standard deviation which equals $(\sigma_1^2 + \sigma_2^2 - \sigma_{12})^{0.5}$,

σ_1^2, σ_2^2 : variance of observed characteristics X_{1n} and X_{2n} respectively,

and

σ_{12} : covariance of observed characteristics X_{1n} and X_{2n} .

3.4.1.2 Discrete Choice Models for Multiple Transportation Modes

In case of multiple transportation modes, the multinomial logit model (MNL) can be adopted. The formulation of MNL is developed in a utility context as shown in Equation (3.59).

Based on this specification, the choice probabilities is a generalised form of Equation (3.60) and is defined as follow:

$$\text{Prob}[i] = \text{Prob}[T_i > T_j], \forall j \neq k = \frac{\exp(\beta_i X_{in})}{\sum_{k=0}^I \exp(\beta_k X_{kn})}, i = 0, \dots, I \quad (3.63)$$

where,

n : index for observation

i, j, k : index for choices

T_i, T_j : utility functions of choice i and j respectively.

3.4.2 Testing on Model Effectiveness

In order to test the model effectiveness in predicting mode choice, various measures of performance can be developed. This includes the McFadden ρ^2 which measures the overall model fit, as defined in Eq. (3.64). The McFadden ρ^2 lies between 0 and 1, and a statistic close to one suggest that the model is predicting the outcomes with near certainty.

$$\text{corrected } \rho^2 = 1 - \frac{LL(\beta) - K}{LL(0)} \quad (3.64)$$

where,

$LL(\beta)$: log-likelihood function at convergence with parameter vector β ,

$LL(0)$: restricted log-likelihood with all parameters set to zero, and

K : number of parameters estimated in the model.

In order to understand the model effectiveness in its predicting power, observed values are compared against estimated values to assess robustness of the proposed approach to estimate future value. There are a number of measures that can be used to evaluate the estimation accuracy such as measures based on mean and percentage error over the validation. This includes root-mean-square error (RMSE) and root-mean-square percentage error (RMSPE) as defined in Equations (3.65) to (3.66).

$$RMSE = \sqrt{\frac{1}{n} \sum_{i=1}^n (O_i - P_i)^2} \quad (3.65)$$

$$RMSPPE = \sqrt{\frac{1}{n} \sum_{i=1}^n \left(\frac{O_i - P_i}{O_i} \right)^2} \quad (3.66)$$

where,

O_i : actual observations,

P_i : predicted values, and

N : number of observations.

3.5 Commodity Value-to-Weight-to-Container Transformation

From the second module of the entire framework as shown in Figure 3.1, the amount of maritime commodity trade between countries is determined. However, from a transportation perspective, global freight flow expressed in monetary term is not completely represented as it does not account for the physical aspect of international trade. Such physical aspects (for example, weight and volume) of commodities are important to the transportation and logistics industry because information on physical demand for commodity flow between regions and nations allows them to do advance planning at the strategic level as well as helps in identification of emerging markets and future commodity flow trends. Despite its importance, the use of physical unit such as weight, in addition to its monetary value, to represent physical commodity trade flow has always been limited. Many researchers have simply assumed a constant value-weight ratio to convert trade value into trade weight and use some other conversion factor(s) to further transform weight into TEU (Shibasaki and Watanabe, 2011; Lee *et al.*, 2011; Cheong and Cho, 2012; Markianidou, 2012). It is intuitive that value per unit weight for a particular commodity should vary with time and across different trade routes. To date, there has been limited attention on deriving useful relationships between value and weight for traded commodities.

This transformation procedure will be mainly divided into two parts: (1) value-to-weight conversion, and (2) weight-to-container conversion.

3.5.1 Value-to-Weight Model Description

In fact, commodity value per unit weight fluctuates across time due to various reasons, such as inflation, exchange rate, market condition, production condition, trading routes, etc. Recognizing the significance of value-weight ratios in international trade and transportation, time-series model is used to trends of commodity value-weight ratio between export-import country pairs using past trade flow data as well as other current indices.

In general, there are different types of time-series models, such as autoregressive (AR) model, vector-autoregressive (VAR) model, autoregressive integrated moving average (ARIMA) model, autoregressive moving average with exogenous terms (ARMAX) model and others.

Autoregressive model is a representation of a type of random process, and specifies that the output variable depends linearly on its own previous values and on a stochastic term (an imperfectly predictable term); thus the model is in the form of a stochastic difference equation. AR(p) indicates autoregressive model of order p and is formulated as shown in Equation (3.67):

$$y_t = c + \sum_{i=1}^p \gamma_i y_{t-i} + \varepsilon_i \quad (3.67)$$

where,

y_t is the dependent variable over time t ;

c is the constant

γ represents the calibrated parameters;

ε_t refers to the white noise process over t following normal distribution with zero mean and constant variance;

p is the order of the autoregressive term, or number of lagged dependent variable y_t ;

Vector autoregressive (VAR) model generalize the univariate autoregressive model (AR model) by allowing for more than one evolving variable. It is used to capture the linear interdependencies among multiple time series. All variables in a VAR are treated symmetrically in a structural sense and each variable has an equation explaining its evolution based on its own lags and the lags of the other model variables. VAR(p) indicates VAR model of order p and is formulated as shown in Equation (3.68).

$$Y_t = c + \sum_{i=1}^p \gamma_i Y_{t-i} + \varepsilon_i \quad (3.68)$$

where,

Y_t is vector of dependent variables over time t ;

c is vector of constants

γ represents vector of calibrated parameters;

ε_t refers to the white noise process over t following normal distribution with zero mean and constant variance;

p is the order of the autoregressive term, or number of lagged dependent variable y_t ;

Autoregressive integrated moving-average model integrated with order d and, ARIMA(p,d,q), is widely used in economics for predicting future trends from past experiences. (Shibasaki and Watanabe, 2012; Fite *et al.*, 2002; Levine *et al.*, 2009). ARIMA is a generalized form of autoregressive moving-average model, ARMA(p,q) but integrated with an initial difference of order. ARMA is only suitable in stationary series whereas ARIMA is capable of fitting non-stationary series by introducing difference d times first to transform the series

to be stationary. In fact, ARIMA(p,0,q) equals exactly ARMA(p,q). The general mathematical form is given by:

$$\Delta^d y_t = \mu + \Delta^d \sum_i^p \gamma_i y_{t-i} + \varepsilon_t + \sum_i^q \theta_i \varepsilon_{t-i} \quad (3.69)$$

$$\Delta y_t = y_t - y_{t-1} = (1 - L)y_t \quad (3.70)$$

where,

y_t is the dependent variable over time t ;

μ refers to the expectation of $\Delta^d y_t$;

γ, θ represent the calibrated parameters;

ε_t refers to the white noise process over t following normal distribution with zero mean and constant variance;

p is the order of the autoregressive term, or number of lagged dependent variable y_t ;

q is the order of the moving average term, or the number of lagged moving average terms;

L is the lag operator of y_t .

Autoregressive-moving average with exogenous terms (ARMAX) is having a similar structure to ARMA model but with exogenous terms (i.e. independent variables) in the model, as shown in Equation (3.71):

$$\Delta^d y_t = \mu + \beta' X_t + \Delta^d \sum_i^p \gamma_i y_{t-i} + \varepsilon_t + \sum_i^q \theta_i \varepsilon_{t-i} \quad (3.71)$$

where,

y_t is the dependent variable over time t ;

μ refers to the expectation of $\Delta^d y_t$;

X_t denotes the set of independent (or exogenous) variable over time t ;

β, γ, θ represent the calibrated parameters;

ε_t refers to the white noise process over t following normal distribution with zero mean and constant variance;

p is the order of the autoregressive term, or number of lagged dependent variable y_t ;

q is the order of the moving average term, or the number of lagged moving average terms;

3.5.2 Weight-to-Container Transformation

In contrast to the value-to-weight transformation, weight per container ratio is not always publicly available as not all government or port statistics will reveal this detail. In this study, a literature review on the commodity weight to container conversion and interviews with shipping industry experts are conducted to understand past practice from previous studies as well as the industrial practice on estimating the commodity weight per container. The conversion factors are therefore deduced from the data collected incorporating with insights from industrial experts.

3.5.3 Tests on Model Effectiveness

In order to understand the model effectiveness in its predicting power, observed values are compared against estimated values to assess robustness of the proposed approach in estimating future values. The testing approaches are the same as mentioned in the sub-section 3.4.2. This includes root-mean-square error (RMSE) and root-mean-square percentage error (RMSPE) as defined in Equations (3.65) to (3.66).

3.6 Summary

This chapter discuss the overall framework of the modelling approach adopted in this study. The framework can be divided into three parts, (1) modelling

global trade demand, (2) commodity mode choice model, and (3) value-to-weight-to-container transformation.

The first part of the chapter introduces the data collection effort of this study. Socio-economic data and international trade data are collected from various databases. It constitutes a high content of this study as the data collected is massive as it involves commodity trade data globally.

The second part presents the first module of the entire framework, i.e. the global trade demand model. In this thesis, GTAP model (which is a multi-regional CGE model) is used to predict the trade demand in the world. The underlying theory of the GTAP model is presented. It describes economic theories and the CGE model, presents the relationships of various agents (or stakeholders) in the model, and elaborates the interaction between agents (or stakeholders) using accounting equations and behaviour equations. Besides, description of the GTAP database (i.e. a comprehensive social accounting matrix) is also presented. This database is considered as the backbone of the CGE model and it records down complete information of economic activities in terms of monetary values within a national economy including bilateral trade information among regions. From this first module, the amount of trade flow (in terms of monetary value) among the study regions can be forecasted.

The third part of this chapter discusses on the second module of the modelling framework, i.e. freight transport mode choice. In this thesis, discrete choice models are adopted to perform the freight mode choice analysis in the global context. Discrete choice models have been widely accepted to use in transportation mode choice analysis. The formulations of binary logit, binary probit and multinomial logit models are presented respectively. Binary logit and

binary probit models are used when only two transportation modes are available while multinomial logit models are developed when more than two transportation modes are available. Tests on model effectiveness are also described.

The last part of this chapter discusses the third module of the forecasting framework, i.e. commodity value-to-weight-to-container transformation. In this thesis, the transformation is proposed to divide into two parts: (1) value-to-weight conversion, and (2) weight-to-container conversion. Time-series models are proposed to use in the commodity value-to-weight conversion. The formulations of autoregressive model, vector autoregressive model, and autoregressive integrated moving average model are presented. Commodity weight-to-container conversion is obtained from literature as well as through discussions with shipping industry partners. With this conversion approach, the ultimate goal of this study could be achieved, i.e. to forecast the amount of container trade between study regions.

CHAPTER 4 GLOBAL TRADE DEMAND MODELLING USING COMPUTABLE GENERAL EQUILIBRIUM (CGE) MODELS

As introduced in Chapter 3, this study mainly comprises of three modules. In this chapter, the development of the first module (Global Trade Forecasting Model) is presented. First, an introduction on the application of GTAP model in global trade forecasting is described and the geographical scope of this study is defined. Second, data compilation efforts for establishing the international trade database are discussed and model calibration and validation of trade models described. The model is then applied to a case study to demonstrate its effectiveness.

4.1 Introduction

The GTAP model predicts future bilateral trade between countries under various economic growth conditions. The GTAP model comprises behavioural equations describing the firms' properties in production cost minimisation, consumers' behaviour in utilities maximization under income and other constraints, regulating properties of the government in taxation and trade, and market clearance property in the general equilibrium of an economy. When multiple countries and regions are considered, trade flow is determined at equilibrium as import and export contributed to production and consumption parties. As discussed in Chapter 3, an advantage of this model is its ability to provide a complete assessment of trade liberalisation simultaneously by taking into consideration inter-industry and inter-country analysis and is built upon the neoclassical microeconomic theory of general equilibrium. As described in Section 3.3.3, GTAP trade database, which is robust global database containing detailed information on bilateral trade, factor endowment and governments'

trade interventions, is used in this study. As the database used by GTAP was slightly different from that used in conventional commodity classification systems such as the Harmonised Commodity Description and Coding System (HS) of tariff nomenclature, the GTAP sectoral classification has to be made compatible using correlation tables derived from the two databases, making it possible to convert between GTAP classification and HS classification. The following section will introduce the techniques used in compiling trade data to fit into the GTAP database.

4.2 Geographical Scope Definition

This thesis aims to develop a global container trade forecasting framework and hence the geographical scope has to cover the major trade routes around the globe, such as Trans-Pacific trade route, Trans-Atlantic trade route, and Intra-Asian trade route. Table 4.1 describes the selected regions in this study. Import and export trade among each country-to-country pair, region-to-region pair, or country-to-region pair are studied. It can be observed that this study includes the mature trade routes, i.e. among Australia, Europe, the United States, and major Asian countries. Besides, it also covers international trade with developing economies, such as China and the ASEAN region. Furthermore, it also assesses the trade development within the Asian region.

According to the International Trade Statistics 2015 published by World Trade Organisation (2015), the total intra- and inter-regional merchandise trade reached US\$18,494 billion while inter-regional merchandise trade accounted for US\$8,748 billion in 2014. The US-Europe trade was approximately US\$919 billion (i.e. 10.5 percent of the inter-regional trade) while the US-Asia trade and the US-Australia trade comprised US\$1,569 billion (i.e. 17.9 percent) and

US\$34 billion (i.e. 0.4%) respectively. Europe-Asia trade comprised US\$1,638 billion (i.e.18.7 percent) while Europe-Australia trade comprised US\$51 billion (i.e. 0.6%). Asia-Australia trade comprised US\$215.4 billion (i.e. 2.5%). It can be observed that these trade routes covers the world leading trade regions and this research shall focus on predicting and analysing the trading activities between these countries/regions. Figure 4.1 illustrates the coverage of overall trade routes studied and indicates their corresponding trade volume.

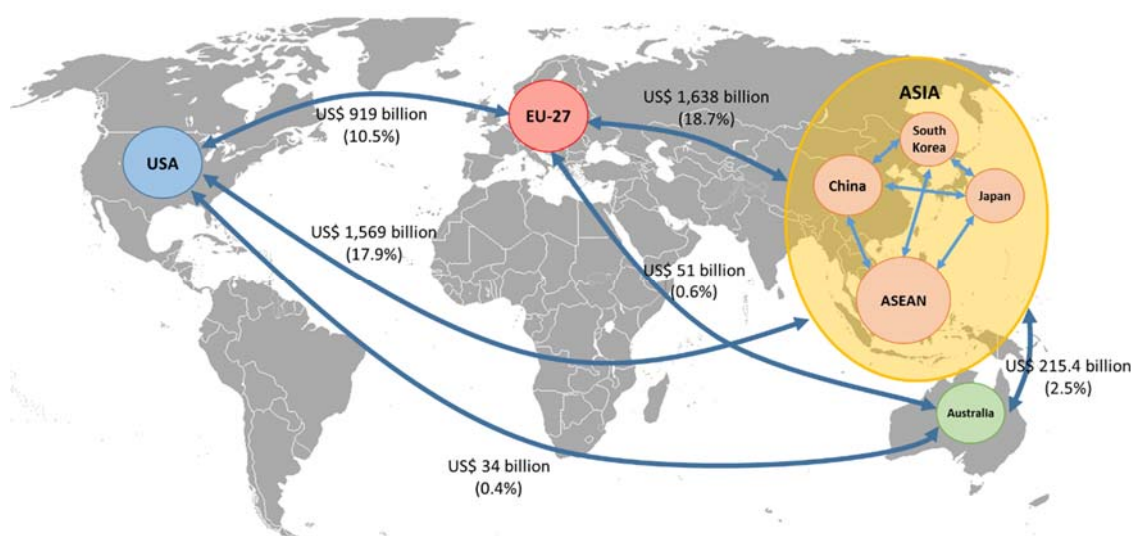


Figure 4.1 Inter-regional trade volume in 2014

Table 4.1 Countries and Regions Considered in this Study

Code	Regional Descriptions
AUS	Australia
CHN	China PRC
JPN	Japan
KOR	South Korea
USA	United States
ASEAN	ASEAN 10 – Cambodia, Brunei Darussalam, Indonesia, Lao People’s Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam
EU-27	European Union 27 - Belgium, Bulgaria, Czech Republic, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, Netherlands, Austria, Poland, Portugal, Romania, Slovenia, Slovakia, Finland, Sweden and United Kingdom

4.3 Data Collection for Trade Model Development

As discussed in Chapter 3, the GTAP model comes with a comprehensive multi-regional input-output database. This database (i.e. GTAP 8 database) is consolidated from various sources, including international organisations such as the United Nations (UNSD, 2015), the International Monetary Fund (IMF, 2014), the Organisation for Economic Co-operation and Development (OECD, 2014), customs data from various countries and input-output tables from researchers from various countries. The GTAP model adopts a unique commodity classification and to make it compatible to other international commodity classification, an algorithm to convert trade data between the GTAP classification and other international commodity classifications has to be developed.

4.3.1 Algorithm for Trade Data Conversion

As mentioned in Section 4.3, there is a need to develop an algorithm to convert the trade data in the GTAP classification format to other widely-used international commodity classifications. A two-stage data processing approach is developed to make this conversion possible, as illustrated in Figure 4.2.

The 57 GTAP sector codes are defined with reference to the Central Product Classification (CPC) version 1.0 (UNSD, 2014a). GTAP-CPC ver. 1.0 concordance table can be found in the Appendix I. Therefore, in order to make GTAP classification compatible to other commonly-used international commodity classifications, the first stage of data processing is to map the commodity group in GTAP classification to that corresponding commodity group in the CPC ver. 1.0 format. In general, each GTAP sector is aggregated from several commodity groups under the categorisation of CPC ver. 1.0 format,

as shown in Equation (4.1). To disaggregate the GTAP sector into corresponding CPC groups, it is assumed that each CPC commodity group shares the same proportion of the GTAP sector. The GTAP sector is equally divided among its corresponding CPC groups, as shown in Equation (4.2).

$$GTAP_i = \sum_j CPC_{j,i} \quad (4.1)$$

$$CPC_{j,i} = \alpha_j GTAP_i \quad \text{where } \alpha_j > 0 \text{ and } \sum_j \alpha_j = 1 \quad (4.2)$$

where j is the commodity under CPC classification corresponding to commodity i under GTAP classification.

It was noted that CPC ver. 1.0 is not widely applied as commodity classification in international trade data sources (Houghton, 1999). Therefore, a second stage of data processing was employed to map the CPC ver. 1.0 classification to commonly-used international commodity classification. In this study, the HS classification 2007 was chosen as it is widely used in international maritime trade for cargo declaration and customs clearance. The second stage of data conversion is similar to the first stage as CPC-to-HS conversion is also an one-to-many mapping. Similar assumption that each CPC commodity group is equally divided by its corresponding HS groups were made, as shown in Equation 4.3 and 4.4.

$$CPC_j = \sum_k HS_{k,j} \quad (4.3)$$

$$HS_{k,j} = \beta_k CPC_j \quad \text{where } \beta_k > 0 \text{ and } \sum_k \beta_k = 1 \quad (4.4)$$

where k is the commodity under HS classification corresponding to commodity j under CPC classification.

After the conversion, trade data in GTAP database is now compatible to HS classification and a check on the trade data accuracy can be performed.

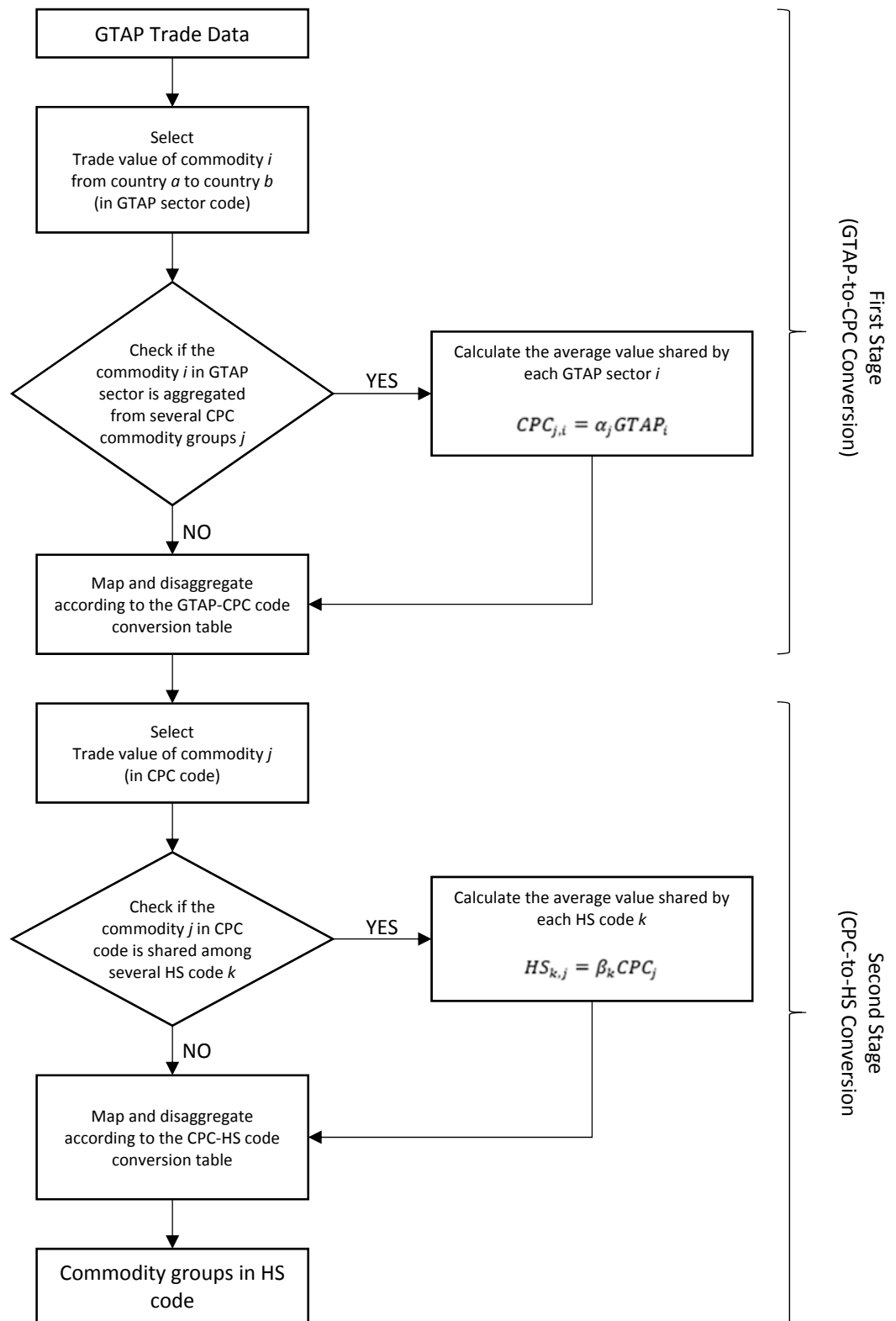


Figure 4.2 Two Stage Approach in Trade Data Conversion

4.3.2 GTAP Data vs UNCOMTRADE Data

After converting the trade data from GTAP classification to HS classification, data accuracy checking can be performed by comparing data from the GTAP database against other existing international trade databases. Discrepancies was noted to exist in the trade data for existing international commodities database and the GTAP database (Gehlhar, 1996). In order to investigate this discrepancy and to assure its model adequacy in impact analysis, calibration and validation of the trade database of the GTAP model is necessary.

The UN Comtrade database contains detailed global trade data, and is a repository of official trade statistics and relevant analytical tables. It contains annual trade statistics starting from 1962 and monthly trade statistics since 2010 (UNSD, 2015) and is used in this study to check against the GTAP trade data for identifying discrepancies and improving data quality.

Differences and percentage errors between the reported values of the studied trading pairs in 2007 from these two databases are calculated, as shown in Equations (4.5) and (4.6).

$$Diff. \text{ in Value} = Value_{UNCOMTRADE} - Value_{GTAP} \quad (4.5)$$

$$\% Diff = \frac{Value_{UNCOMTRADE} - Value_{GTAP}}{Value_{GTAP}} \times 100\% \quad (4.6)$$

where $Value_{UNCOMTRADE}$ represents commodity trade value reported in the UN Comtrade database whereas $Value_{GTAP}$ represents commodity trade value reported in the GTAP database.

Tables 4.2 to 4.5 show the actual discrepancies in the total import and export values in 2007 between trading pairs from these two databases as well as their corresponding percentage errors. In particular, three GTAP commodity groups (i.e. GTAP Sector #3 – Cereals, GTAP Sector #27 – Textiles, and GTAP

Sector #38 – Motor Vehicles and parts) are selected for further discussion and are presented in Tables 4.6 to 4.11. These three commodity groups comprised the major traded cargo flow across countries and are mostly carried by maritime transport. Detailed tables showing the discrepancies and percentage errors at commodity level are presented in the Appendix II.

After investigating the trade database in the GTAP, it was found that most of the total import and total export data among countries exhibits over 30% difference when compared to the UN Comtrade database (UNSD, 2015) (This is a difference of up to 40000 million USD). At the disaggregated commodity trade (i.e. at commodity level), at least 30% and up to more than ten times difference were discovered. These may be due to compilation efforts by GTAP specialists in building the whole GTAP database which includes not only international trade but also domestic consumptions and intermediate goods production (Gelhar, 1996). As the main focus of this study is to examine the international trade flow among studied countries or within regions, the international trade database inside the GTAP model has to be reconstructed to ensure compatibility to international database through a calibration and validation process.

Table 4.2 Import Trade Comparison between the GTAP and the UN Comtrade (in million USD)

Difference in Import Value	Destination							
	Australia	China	Japan	Korea	USA	ASEAN	EU27	
Origin	Australia	N/A	3448.30	1266.27	977.59	-1706.02	4118.85	-4294.78
	China	-4244.79	N/A	-26892.86	-20795.45	-9962.41	-39538.37	-32292.77
	Japan	140.04	-11593.81	N/A	-5569.24	-25826.54	-18960.49	-22685.90
	Korea	636.44	-9724.61	-11207.86	N/A	-24544.15	-9983.85	-7760.97
	USA	2662.80	27418.14	-280.52	-3784.00	N/A	-22077.25	-35810.92
	ASEAN	-2452.35	3598.61	-7512.32	-2868.35	-12259.40	N/A	-2907.71
	EU27	240.39	-27882.64	-1386.71	-10698.44	-13811.99	-16240.24	N/A

Table 4.3 Export Trade Comparison between the GTAP and the UN Comtrade (in million USD)

Difference in Export Value	Destination							
	Australia	China	Japan	Korea	USA	ASEAN	EU27	
Origin	Australia	N/A	-8949.71	-5265.78	-625.81	-2065.90	634.89	-512.77
	China	-3267.22	N/A	-23807.77	-6851.81	-61911.88	5389.41	-15589.04
	Japan	-217.52	-47560.78	N/A	-11755.53	-21902.26	-4777.69	-10140.23
	Korea	154.78	-36769.38	-4373.04	N/A	-12871.96	-4379.78	-10850.74
	USA	552.49	-11101.39	-7326.45	-10237.89	N/A	-6071.43	-26178.00
	ASEAN	3150.12	-32358.81	-12286.86	-5077.68	-21988.02	N/A	-6781.22
	EU27	-1464.84	-25963.56	-7863.19	-4177.62	-9356.19	-4923.85	N/A

Table 4.4 Import Trade Comparison between the GTAP and the UN Comtrade (in percentage)

% Difference ⁷ in Import Trade	Destination							
	Australia	China	Japan	Korea	USA	ASEAN	EU27	
Origin	Australia	N/A	14.75%	8.48%	19.43%	-6.68%	13.84%	-9.86%
	China	-14.25%	N/A	-19.11%	-19.40%	-12.04%	-34.56%	-23.61%
	Japan	0.46%	-9.29%	N/A	-18.28%	-27.14%	-19.86%	-24.45%
	Korea	5.00%	-14.81%	-18.13%	N/A	-43.84%	-28.53%	-16.58%
	USA	20.25%	8.61%	-0.18%	-6.77%	N/A	-17.51%	-7.70%
	ASEAN	-13.70%	4.14%	-9.14%	-7.91%	-18.05%	N/A	-2.67%
	EU27	0.94%	-9.10%	-1.14%	-15.84%	-3.94%	-10.75%	N/A

Table 4.5 Export Trade Comparison between the GTAP and the UN Comtrade (in percentage)

% Difference ⁷ in Export Trade	Destination							
	Australia	China	Japan	Korea	USA	ASEAN	EU27	
Origin	Australia	N/A	-32.82%	-19.17%	-5.37%	-16.15%	3.71%	-2.07%
	China	-14.77%	N/A	-20.11%	-10.95%	-20.49%	6.52%	-5.34%
	Japan	-1.51%	-35.08%	N/A	-19.76%	-14.46%	-6.04%	-8.64%
	Korea	3.22%	-35.72%	-14.89%	N/A	-23.80%	-12.58%	-16.60%
	USA	2.23%	-14.08%	-7.96%	-18.83%	N/A	-9.20%	-7.53%
	ASEAN	11.08%	-29.48%	-13.78%	-15.38%	-18.07%	N/A	-4.65%
	EU27	-3.46%	-19.58%	-8.69%	-9.17%	-2.06%	-4.61%	N/A

⁷ Calculation method for “% Difference” refers to Equation (4.6).

Table 4.6 Import Trade Comparison for GTAP #3 - Cereals

% Difference ⁸ in		Destination						
Import Trade		Australia	China	Japan	Korea	USA	ASEAN	EU27
Origin	Australia	N/A	38.84%	-99.97%	-2.43%	-85.58%	-60.13%	-65.24%
	China	-0.52%	N/A	-7.73%	---	-9.39%	-7.01%	-14.10%
	Japan	111.62%	-5.58%	N/A	-99.99%	26.59%	-6.87%	-2.44%
	Korea	8.22%	-4.81%	-5.98%	N/A	-4.25%	-99.99%	-76.87%
	USA	-60.99%	95.63%	-12.91%	-21.14%	N/A	-94.14%	-4.32%
	ASEAN	-7.43%	-9.94%	-100.00%	-100.00%	-6.15%	N/A	-98.14%
	EU27	3.97%	29.55%	-44.66%	-31.27%	-3.09%	-69.43%	N/A

Table 4.7 Export Trade Comparison for GTAP #3 - Cereals

% Difference ⁸ in		Destination						
Export Trade		Australia	China	Japan	Korea	USA	ASEAN	EU27
Origin	Australia	N/A	-59.76%	-4.28%	-5.85%	-58.70%	-1.03%	11.09%
	China	0.07%	N/A	1.26%	-2.92%	0.51%	-0.48%	52.00%
	Japan	6.60%	-100.00%	N/A	-100.00%	-36.71%	-100.00%	-38.13%
	Korea	-97.98%	52.11%	202.58%	N/A	182.58%	-100.00%	-28.14%
	USA	1.30%	---	0.68%	-10.93%	N/A	3.77%	0.05%
	ASEAN	-58.80%	2.06%	2.10%	-99.99%	-94.07%	N/A	-68.53%
	EU27	-63.91%	-8.29%	4.37%	-76.22%	0.94%	-98.08%	N/A

Table 4.8 Import Trade Comparison for GTAP #27 - Textiles

% Difference ⁸ in		Destination						
Import Trade		Australia	China	Japan	Korea	USA	ASEAN	EU27
Origin	Australia	N/A	-0.09%	-2.32%	1.00%	6.95%	-16.90%	-2.31%
	China	-10.86%	N/A	-12.04%	-20.76%	-3.12%	-17.25%	-29.43%
	Japan	52.58%	-7.25%	N/A	-19.47%	-14.82%	-13.78%	-20.82%
	Korea	-2.95%	-20.83%	-10.05%	N/A	-17.86%	-11.61%	-31.43%
	USA	-9.68%	12.03%	-6.73%	-28.02%	N/A	8.23%	-19.99%
	ASEAN	-16.29%	4.43%	-19.17%	-49.53%	-18.99%	N/A	-20.15%
	EU27	2.01%	-11.89%	-7.43%	-24.57%	-12.87%	-14.14%	N/A

Table 4.9 Export Trade Comparison for GTAP #27 - Textiles

% Difference ⁸ in		Destination						
Export Trade		Australia	China	Japan	Korea	USA	ASEAN	EU27
Origin	Australia	N/A	-42.99%	-22.15%	-25.17%	-14.64%	-11.97%	6.80%
	China	3.47%	N/A	-8.78%	-4.79%	-9.48%	12.13%	-6.08%
	Japan	-3.95%	-12.62%	N/A	-5.31%	-11.13%	-13.60%	-1.54%
	Korea	-2.15%	-26.72%	-2.55%	N/A	-32.53%	-45.23%	-18.58%
	USA	26.55%	-0.20%	-9.08%	-20.64%	N/A	-14.04%	-10.35%
	ASEAN	-10.62%	-10.84%	-8.00%	-5.21%	14.10%	N/A	-9.14%
	EU27	3.94%	-22.51%	-15.93%	-26.98%	-15.17%	-15.06%	N/A

⁸ Calculation method for “% Difference” refers to Equation (4.6).

Table 4.10 Import Trade Comparison for GTAP #38 – Motor Vehicles

% Difference ⁹ in		Destination						
Import Trade		Australia	China	Japan	Korea	USA	ASEAN	EU27
Origin	Australia	N/A	-13.96%	-3.83%	-6.43%	20.09%	-5.73%	-2.19%
	China	-25.02%	N/A	-6.51%	-9.15%	-4.28%	-45.87%	-12.60%
	Japan	-9.29%	-20.30%	N/A	0.98%	-33.70%	-38.06%	-9.24%
	Korea	-7.19%	-32.54%	-5.78%	N/A	-40.75%	-70.22%	-15.24%
	USA	-16.07%	-2.17%	-1.64%	-2.76%	N/A	-42.85%	4.10%
	ASEAN	-29.37%	23.09%	2.50%	7.55%	-2.59%	N/A	1.28%
	EU27	-28.19%	-27.33%	-13.56%	-3.48%	-7.32%	-42.37%	N/A

Table 4.11 Export Trade Comparison for GTAP #38 – Motor Vehicles

% Difference ⁹ in		Destination						
Export Trade		Australia	China	Japan	Korea	USA	ASEAN	EU27
Origin	Australia	N/A	-18.71%	-28.63%	-10.95%	63.56%	-26.95%	-26.52%
	China	4.62%	N/A	16.84%	32.53%	39.92%	29.55%	-23.83%
	Japan	-0.12%	-9.89%	N/A	-8.78%	1.15%	6.74%	-8.71%
	Korea	1.40%	26.33%	11.79%	N/A	0.44%	13.08%	4.41%
	USA	12.06%	-4.78%	-11.20%	-12.94%	N/A	0.55%	-6.55%
	ASEAN	-0.95%	-44.18%	-35.42%	-69.22%	-40.75%	N/A	-40.16%
	EU27	1.92%	-9.96%	-6.99%	-11.88%	6.45%	5.41%	N/A

4.4 Calibration and Validation of the GTAP Model

Calibration of the GTAP model is performed through (1) GTAP database calibration, and (2) GTAP model calibration. The first portion deals with reconstructing the trade database as discrepancies have been found from previous sections. The second portion deals with calibrating the parameters applied in the trade model for forecasting international trade.

4.4.1 GTAP Database Calibration

As the GTAP database and model adopted year 2007 as their reference period, actual trade data in 2007 was obtained from the UN Comtrade database to update the GTAP international trade module. This is to ensure consistency between the international trade data and the updated GTAP database.

⁹ Calculation method for “% Difference” refers to Equation (4.6).

The calibration procedure is described below:

1. Obtain import and export trade data at commodity level (i.e. HS classification) between trading countries from the UN Comtrade database.
2. Convert the individual trade data at HS classification to corresponding GTAP classification via the algorithm discussed in Section 4.3.1.
3. Compile the updated trade data in GTAP classification according to the GTAP format.
4. Update the original GTAP trade data using the updated trade data from Step 2.

In this manner, the international trade module in the GTAP database is updated and consistent to the UN Comtrade database. After updating the GTAP international trade module, the next step is to calibrate the GTAP model with this updated database.

4.4.2 GTAP Model Calibration

In order to calibrate the GTAP model, socio-economic parameters as well as demographic parameters of the original GTAP model are modified to reconcile with the updated trade database. Parameters considered and their corresponding sources are listed in Table 4.12.

Table 4.12 Parameters Modified in Trade Model

Parameters	Data Sources
GDP growth rate	World Economic Outlook Database (April 2015) from International Monetary Fund (IMF, 2015)
Labour force growth rate	World Population Prospects: The 2015 Revision, United Nations (United Nations, 2015)
Population growth rate	World Population Prospects: The 2015 Revision, United Nations (United Nations, 2015)

These parameters are considered as they are closely related to the international trade growth in the aspect of economic growth. Country's GDP growth is highly supported by the production of various industries in the countries as it takes into account all the final goods and services produced within a certain period of time (mostly annually) and it is commonly used to determine the economic performance of the country or region. For some countries or regions which are highly dependent on international trading, this indicator will be very closely coupled with the performance of their international trading activities. On the other hand, the labour force growth is considered as it is used to simulate the change in the production capacity of the country, assuming other parameters such as technology remain unchanged. Thus, this parameter represents the major factors affecting the changes in the supply of goods. Furthermore, the growth in population is included as it is used to model the change in the consumption of the country on both domestic goods as well as imported goods.

The GTAP Model is calibrated using the 2007 data in compliance to the international trade data used and settings of the database and model. The values of calibrated parameters in the trade model is listed in Table 4.13 The calibrated results of the trade model was compared against the actual trade data in 2007 from the UN Comtrade database and listed in Table 4.14 and 4.15. It was found that the percentage difference between the simulated results and the actual data are within 3% which is considered as high accuracy in its simulating capability.

Table 4.13 Calibrated Parameters in Trade Model

	GDP Growth	Population Growth	Labour Force Growth
Australia	4.52%	1.88%	1.99%
China	14.20%	0.63%	1.11%
Japan	2.19%	0.06%	-0.73%
South Korea	9.11%	0.62%	0.92%
USA	1.78%	0.94%	1.00%
ASEAN	7.07%	1.21%	1.64%
EU-27	4.94%	0.22%	0.28%

Table 4.14 Comparison in Import Trade between Simulated Results and Actual Trade Data in 2007

% Difference in Import Trade	Destination						
	Australia	China	Japan	Korea	USA	ASEAN	EU27
Origin Australia	N/A	1.28%	-1.64%	-1.10%	-0.96%	0.78%	0.33%
China	-1.30%	N/A	0.89%	-1.37%	-0.58%	-0.34%	0.96%
Japan	0.73%	-0.39%	N/A	0.10%	-1.81%	-0.54%	1.37%
Korea	-1.00%	0.13%	1.08%	N/A	1.06%	-1.40%	0.25%
USA	-0.98%	-0.50%	-0.35%	-0.87%	N/A	-1.57%	-0.20%
ASEAN	0.50%	0.64%	0.51%	-1.07%	0.74%	N/A	-1.98%
EU27	0.51%	-0.67%	0.19%	-1.53%	0.43%	0.59%	N/A

Table 4.15 Comparison in Export Trade between Simulated Results and Actual Trade Data in 2007

% Difference in Export Trade	Destination						
	Australia	China	Japan	Korea	USA	ASEAN	EU27
Origin Australia	-0.45%	N/A	-0.10%	-1.14%	1.76%	1.11%	-0.19%
China	0.46%	0.77%	N/A	-0.19%	-0.90%	-1.11%	1.46%
Japan	-0.73%	-0.52%	1.39%	N/A	-0.01%	-0.77%	0.33%
Korea	-1.11%	-0.28%	-0.62%	-1.16%	N/A	1.57%	-0.50%
USA	1.67%	0.30%	-0.17%	-0.57%	-0.69%	N/A	0.03%
ASEAN	0.50%	0.48%	1.51%	1.77%	1.27%	-1.16%	N/A
EU27	0.61%	0.15%	-1.12%	1.27%	-1.22%	0.68%	0.90%

4.4.3 GTAP Model Validation

After calibrating the GTAP model, the next step is to validate the predictability of this forecasting model. Time period between 2008 and 2014 is considered as the validation period for this trade model. International trade among study countries/regions over the period between 2008 and 2014 were simulated under consideration of socio-economic parameters. The parameters applied here are

the same in the model calibration, i.e. GDP growth, population growth and labour force growth, Parameter values applied are presented in Table 4.16.

The international commodity trade data (in HS 2-digit code) between 2008 and 2014 reported in the UN Comtrade database is used to compare with the forecasted international trade data from the model. Percentage error is used to examine the accuracy of the predicted data from the model, as shown in Tables 4.17 and 4.18. It can be seen that most of the results are within acceptable range in forecasting, i.e. +/- 20% tolerance, with only a few exception slightly exceeding 20% tolerance. These exceptions are mostly found during 2010 to 2011, which is the state of global economic recovery after the financial crisis in 2008. Though the percentage errors seems to be large, the model is considered to be satisfactory as it considers all national and international economic transactions together, thus simplifications in formulating the interdependent relationships between transactions cannot be avoided. In modelling international trade in a large scale, the forecasting error is generally quite high. For instance, in the study by Keok et al. (2009), they developed time-series models to forecast growth in international trade for OECD members, focusing on major advanced economies' annual import development. Their results also showed to have error of 20%. Besides, another study by Polder and Van Meijeren (2000), they used gravity models to forecast the amount of physical trade flows within the European Union 12. In more than 85% of the cases, the deviation from the actual size is within 20% and all forecasts are within around 50% of the actual value and the average deviation is about 12%. Therefore, comparing this study to the previous research, the forecasting tolerance could be considered as satisfactory.

As an illustration, the simulation results of the USA trade model were plotted against the UN Comtrade data, as shown in Figures 4.3 and 4.4. It can be observed that the trade model produces quite a good fit in terms of the growth trend. However, it can be seen that the model may not be able to fully simulate the fluctuation in import and export along time. This could be due to the use of changes in GDP growth rate and labour force growth rate as major input variables to the model as these cannot fully reflect the dynamic changes in the global economies. Nevertheless, this trade model is capable of indicating the overall trade trend of each individual trading pair. As a limitation of the GTAP model, trade flow between regions are forecasted simultaneously in the global context. The validation of the US exports to China appears to be not as good fit as other regions. Perhaps the accelerating growth in commodity trade along this trade route is due to technological advancement. In fact, technological advancement plays a crucial role in improving productivity (Dahlman, 2007) . However, technological advancement during this period is not specified into the GTAP model. Thus, there may be a gap in the simulated results and actual trade data.

Table 4.16 Parameter Values Applied in Model Validation

GDP Growth*							
	2008	2009	2010	2011	2012	2013	2014
Australia	2.68%	1.57%	2.26%	2.72%	3.60%	2.06%	2.71%
China	9.64%	9.21%	10.41%	9.30%	7.76%	7.75%	7.36%
Japan	-1.04%	-5.53%	4.65%	-0.45%	1.75%	1.61%	-0.06%
South Korea	1.79%	-0.60%	15.24%	6.21%	3.41%	4.44%	2.92%
USA	-0.29%	-2.78%	2.53%	1.60%	2.32%	2.22%	2.39%
ASEAN	4.25%	1.78%	7.29%	5.20%	5.71%	5.22%	4.81%
EU-27	1.26%	-5.61%	1.70%	1.91%	-0.16%	0.33%	1.76%
Population Growth*							
	2008	2009	2010	2011	2012	2013	2014
Australia	1.81%	1.67%	1.50%	1.36%	1.27%	1.23%	1.24%
China	0.63%	0.63%	0.63%	0.63%	0.62%	0.59%	0.56%
Japan	0.03%	0.00%	-0.03%	-0.05%	-0.08%	-0.11%	-0.14%
South Korea	0.62%	0.60%	0.58%	0.55%	0.53%	0.51%	0.48%
USA	0.92%	0.89%	0.85%	0.82%	0.80%	0.79%	0.79%
ASEAN	1.20%	1.20%	1.20%	1.20%	1.19%	1.16%	1.13%
EU-27	0.20%	0.17%	0.13%	0.09%	0.06%	0.05%	0.04%
Labour Force Growth*							
	2008	2009	2010	2011	2012	2013	2014
Australia	1.83%	1.59%	1.03%	0.85%	0.72%	0.67%	0.68%
China	0.93%	0.75%	0.58%	0.44%	0.29%	0.15%	0.02%
Japan	-0.85%	-0.97%	-0.96%	-1.06%	-1.13%	-1.13%	-1.08%
South Korea	0.90%	0.84%	0.70%	0.69%	0.63%	0.48%	0.30%
USA	0.90%	0.75%	0.64%	0.51%	0.41%	0.37%	0.37%
ASEAN	1.57%	1.53%	1.58%	1.57%	1.54%	1.49%	1.40%
EU-27	0.18%	0.05%	-0.15%	-0.24%	-0.33%	-0.40%	-0.45%

* Data obtained from various sources (IMF (2015), United Nations (2015))

**Table 4.17 Validation Results for Total Import Trade Forecasting
(Percentage Error)**

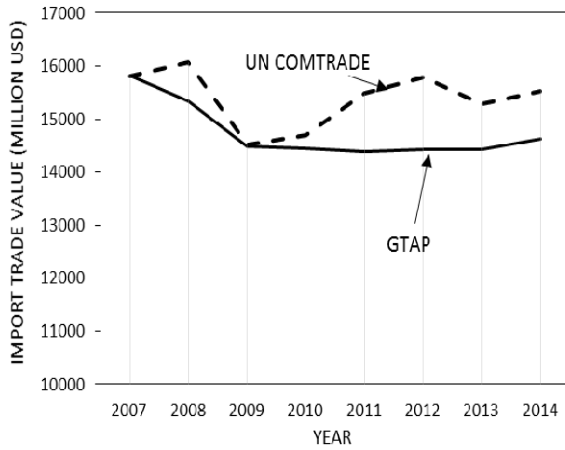
Report Country	Trade Partners	2008	2009	2010	2011	2012	2013	2014
China	Australia	0.3%	9.2%	1.2%	9.8%	11.1%	3.6%	-2.8%
	Japan	-0.2%	11.2%	4.5%	7.7%	8.5%	6.6%	5.4%
	Korea	11.7%	-0.2%	5.1%	-1.7%	1.4%	-1.5%	-4.3%
	USA	-3.7%	6.5%	1.7%	4.7%	-1.0%	9.2%	2.3%
	ASEAN	8.6%	8.6%	3.5%	-4.6%	6.3%	5.3%	4.1%
	EU-27	5.3%	4.9%	-3.0%	6.5%	8.6%	11.9%	-4.5%
USA	Australia	4.6%	0.2%	1.7%	7.1%	8.6%	5.5%	5.8%
	China	-1.6%	-22.5%	-11.7%	-9.6%	-10.3%	-14.0%	-15.4%
	Japan	-7.7%	3.6%	-22.7%	-16.8%	0.0%	-2.9%	-5.7%
	Korea	-2.4%	8.9%	-1.0%	12.2%	14.3%	18.2%	24.8%
	ASEAN	2.9%	10.8%	3.6%	1.6%	-2.5%	-1.1%	1.0%
	EU-27	8.8%	4.4%	-4.5%	8.4%	-2.4%	4.4%	8.3%
Japan	Australia	2.0%	11.2%	-2.0%	9.8%	6.7%	-1.4%	-3.1%
	China	18.6%	5.8%	15.4%	27.6%	24.2%	15.8%	12.0%
	Korea	-0.2%	0.8%	8.9%	-1.2%	-1.3%	5.2%	3.9%
	USA	14.4%	-4.2%	6.0%	18.9%	21.5%	15.8%	20.7%
	ASEAN	-0.4%	8.0%	7.1%	2.0%	-2.3%	5.5%	7.0%
	EU-27	-1.7%	4.1%	11.2%	11.0%	11.9%	-3.9%	6.4%
Korea	Australia	5.2%	-2.4%	9.8%	-1.9%	7.3%	-2.5%	6.1%
	China	0.6%	7.6%	1.9%	0.7%	1.3%	10.3%	4.4%
	Japan	16.1%	-9.1%	20.3%	24.0%	22.7%	19.7%	12.1%
	USA	0.8%	6.2%	9.2%	-3.1%	-3.0%	6.7%	6.2%
	ASEAN	2.4%	8.7%	11.5%	2.0%	11.3%	5.1%	-4.4%
	EU-27	-1.4%	3.3%	-4.2%	1.8%	11.7%	11.6%	9.0%
Australia	China	2.3%	-15.0%	1.2%	13.9%	12.2%	3.4%	1.5%
	Japan	2.2%	-1.4%	-5.1%	6.1%	13.1%	6.4%	-6.9%
	Korea	-11.9%	-18.0%	2.8%	14.7%	5.2%	9.8%	6.9%
	USA	-6.7%	-5.4%	2.1%	5.9%	2.7%	-5.4%	-2.5%
	ASEAN	11.4%	2.5%	5.3%	6.3%	6.0%	5.7%	-2.3%
	EU-27	-4.8%	-0.7%	6.0%	-1.0%	1.4%	8.7%	3.2%
ASEAN	Australia	5.2%	-2.4%	9.8%	-1.9%	7.3%	-2.5%	6.1%
	China	0.6%	7.6%	1.9%	0.7%	1.3%	10.3%	4.4%
	Japan	16.1%	-9.1%	20.3%	24.0%	22.7%	19.7%	12.1%
	Korea	0.8%	6.2%	9.2%	-3.1%	-3.0%	6.7%	6.2%
	USA	9.4%	10.8%	10.4%	9.9%	4.4%	8.6%	1.5%
	EU-27	1.1%	-4.9%	3.1%	-4.5%	9.3%	6.9%	10.5%
EU-27	Australia	2.3%	-15.0%	1.2%	13.9%	12.2%	3.4%	1.5%
	China	2.2%	-1.4%	-5.1%	6.1%	13.1%	6.4%	-6.9%
	Japan	-11.9%	-18.0%	2.8%	14.7%	5.2%	9.8%	6.9%
	Korea	-6.7%	-5.4%	2.1%	5.9%	2.7%	-5.4%	-2.5%
	USA	-2.0%	5.6%	-2.1%	-4.1%	7.9%	1.2%	1.5%
	ASEAN	4.0%	6.7%	-3.3%	0.8%	-3.0%	-1.8%	-3.1%

% Error = $[\text{Value}_{\text{COMTRADE}} - \text{Value}_{\text{GTAP}}] / \text{Value}_{\text{GTAP}} \times 100\%$

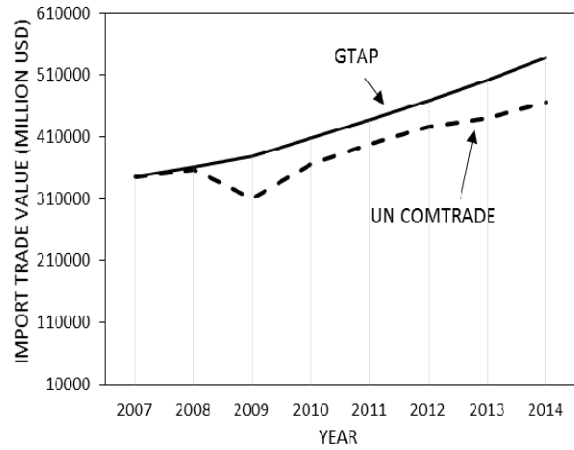
**Table 4.18 Validation Results for Total Export Trade Forecasting
(Percentage Error)**

Report Country	Trade Partners	2008	2009	2010	2011	2012	2013	2014
China	Australia	7.8%	-10.8%	10.2%	22.6%	24.9%	19.0%	17.3%
	Japan	16.2%	1.5%	10.8%	25.2%	21.7%	15.7%	11.2%
	Korea	19.6%	-18.0%	-2.3%	8.9%	8.5%	5.9%	8.6%
	USA	0.6%	-18.9%	0.4%	6.7%	7.7%	5.9%	6.1%
	ASEAN	-4.0%	0.0%	10.2%	0.1%	-1.5%	-1.1%	-4.5%
	EU-27	10.5%	7.6%	3.9%	-2.0%	1.3%	12.0%	-4.3%
USA	Australia	-16.5%	6.0%	-24.5%	2.4%	13.2%	-3.3%	-0.6%
	China	-0.3%	-9.6%	13.6%	21.8%	25.1%	30.5%	30.7%
	Japan	-2.6%	7.6%	-2.6%	1.2%	-8.7%	-15.8%	-10.4%
	Korea	4.2%	1.0%	3.1%	-6.0%	-7.6%	-8.5%	-0.7%
	ASEAN	1.5%	-1.0%	8.9%	1.1%	4.1%	0.5%	8.2%
	EU-27	-3.7%	-2.7%	0.6%	3.2%	3.0%	7.5%	-2.4%
Japan	Australia	15.1%	-0.9%	5.4%	14.2%	18.4%	13.1%	-2.6%
	China	1.3%	3.8%	32.3%	4.2%	27.5%	19.8%	16.7%
	Korea	-0.2%	-7.4%	22.4%	25.9%	23.4%	19.2%	11.1%
	USA	7.2%	0.5%	-2.5%	1.8%	14.2%	11.9%	9.5%
	ASEAN	-2.9%	7.2%	8.5%	0.6%	10.9%	1.2%	7.3%
	EU-27	1.5%	-4.5%	7.1%	8.9%	10.3%	6.2%	-2.9%
Korea	Australia	2.8%	2.9%	22.9%	11.0%	2.9%	10.6%	4.9%
	China	6.9%	17.2%	-3.5%	9.4%	10.4%	-1.5%	-4.1%
	Japan	14.5%	-2.1%	18.1%	-4.0%	4.4%	7.1%	8.8%
	USA	13.4%	-1.6%	22.2%	0.7%	7.0%	-2.2%	1.0%
	ASEAN	0.5%	-2.8%	-1.9%	6.5%	7.7%	3.7%	5.1%
	EU-27	10.0%	3.2%	9.8%	1.5%	7.8%	0.7%	-1.3%
Australia	China	-4.9%	8.7%	-2.6%	0.1%	-1.2%	5.4%	3.3%
	Japan	9.9%	-3.9%	9.4%	3.8%	8.1%	7.9%	0.5%
	Korea	5.6%	8.1%	5.9%	1.3%	2.1%	10.9%	1.9%
	USA	-1.9%	11.5%	0.6%	1.3%	-2.6%	11.5%	0.4%
	ASEAN	10.1%	5.6%	-3.0%	-1.9%	8.2%	6.3%	-4.3%
	EU-27	-1.3%	8.4%	11.0%	11.5%	5.2%	8.2%	4.3%
ASEAN	Australia	2.8%	2.9%	22.9%	11.0%	2.9%	10.6%	4.9%
	China	6.9%	17.2%	-3.5%	9.4%	10.4%	-1.5%	-4.1%
	Japan	14.5%	-2.1%	18.1%	-4.0%	4.4%	7.1%	8.8%
	Korea	13.4%	-1.6%	22.2%	0.7%	7.0%	-2.2%	1.0%
	USA	-1.9%	3.7%	6.9%	2.0%	2.8%	1.3%	-3.2%
	EU-27	4.6%	-2.9%	-4.0%	11.7%	7.2%	-2.4%	7.5%
EU-27	Australia	-4.9%	8.7%	-2.6%	0.1%	-1.2%	5.4%	3.3%
	China	9.9%	-3.9%	9.4%	3.8%	8.1%	7.9%	0.5%
	Japan	5.6%	8.1%	5.9%	1.3%	2.1%	10.9%	1.9%
	Korea	-1.9%	11.5%	0.6%	1.3%	-2.6%	11.5%	0.4%
	USA	8.3%	6.9%	1.8%	-1.8%	4.4%	7.8%	7.1%
	ASEAN	6.0%	11.9%	1.1%	4.8%	9.8%	-4.7%	2.3%

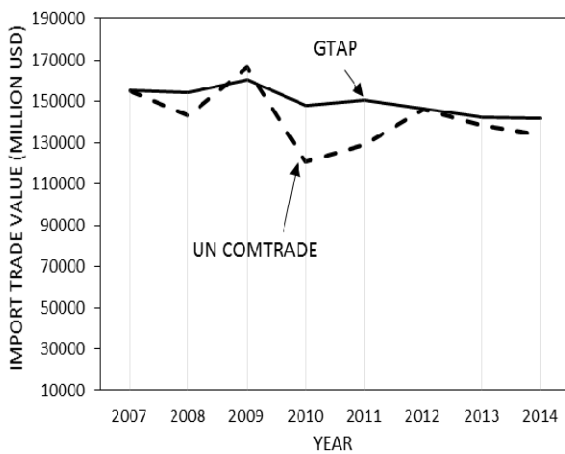
% Error = $[\text{Value}_{\text{COMTRADE}} - \text{Value}_{\text{GTAP}}] / \text{Value}_{\text{GTAP}} \times 100\%$



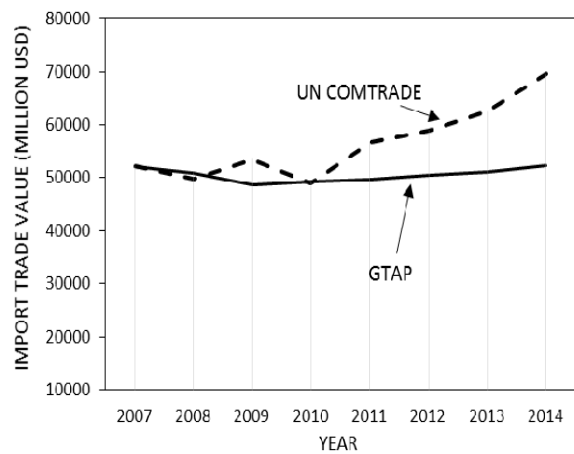
(a) Australia



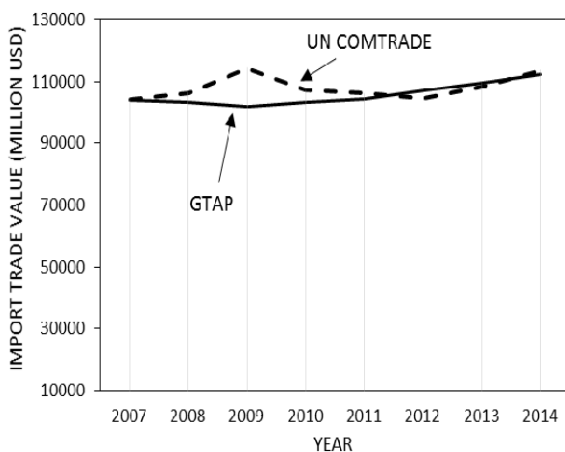
(b) China



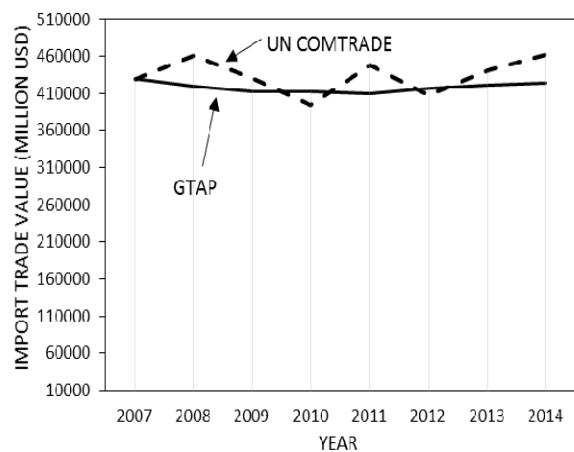
(c) Japan



(d) South Korea

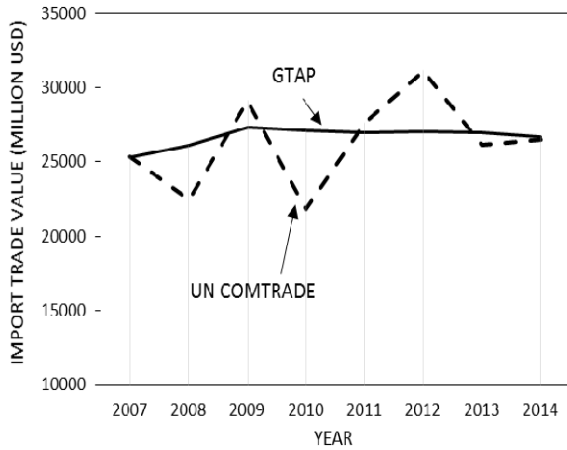


(e) ASEAN

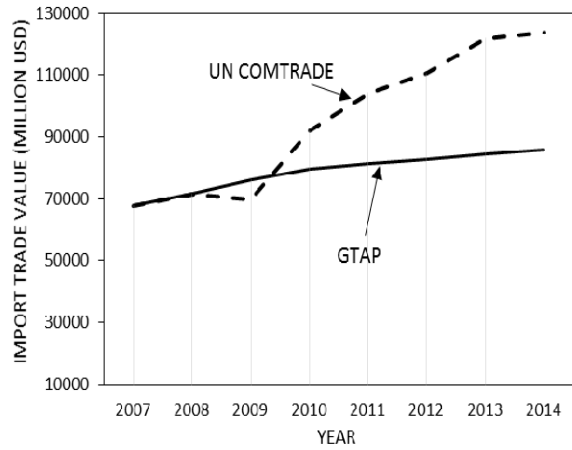


(f) EU-27

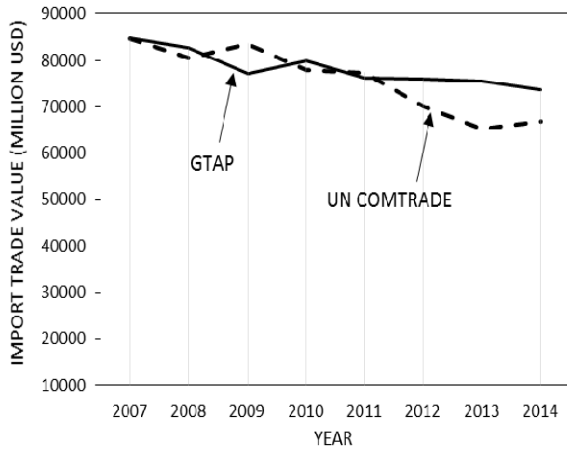
Figure 4.3 Validation Results of USA Import Trade against its Trading Partners



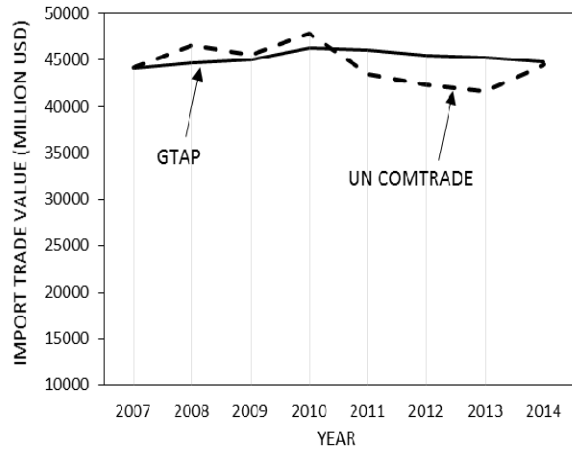
(a) Australia



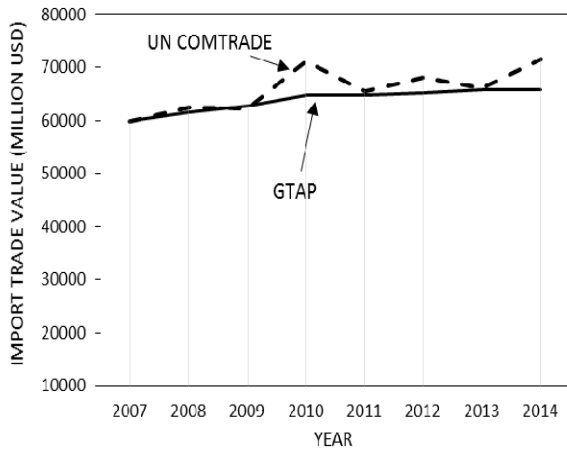
(b) China



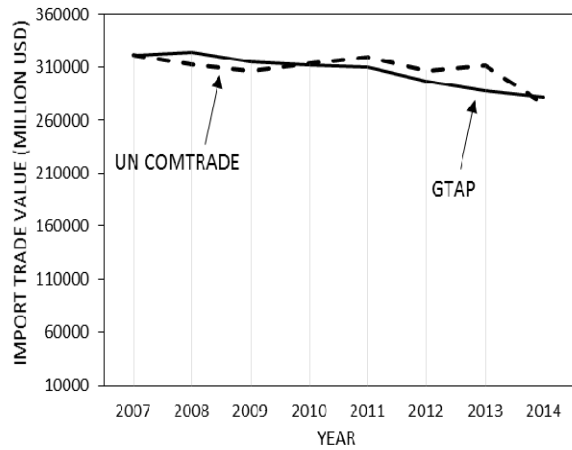
(c) Japan



(d) South Korea



(e) ASEAN



(f) EU-27

Figure 4.4 Validation Results of USA Export Trade against its Trading Partners

4.5 Global Trade Forecasting

After performing the calibration and validation of the GTAP model, the developed model can be used to forecast the future international trade trend among regions or countries. The forecasting period chosen in this study is from 2015 to 2020. In this section, the total import and export trade flow forecasted under various scenarios were discussed and a few commodities were selected for detailed discussion.

4.5.1 Prediction Horizon and Scenario Settings

In this sub-section, the total forecasted import and export trade among countries and regions were analysed. The prediction horizon is from 2015 to 2020. Three case scenarios, namely (1) Median Growth Scenario, (2) High Growth Scenario and (3) Low Growth Scenario, were performed in this study to predict the boundary of this trade forecasting. Scenario settings in the forecasting model are listed in Table 4.19 while the parameters applied are presented in Tables 4.20 to 4.22. These forecasted parameters are calculated from the data published in the International Monetary Fund (IMF, 2015), and the United Nations (United Nations, 2015).

In this study, external trade policies or regulations, such as free-trade-zone developments, trade barrier establishments, and other regional trading measures are not considered.

Table 4.19 Case Scenario Settings

Parameters Considered	Case Scenario		
	Median	High	Low
GDP Growth	Median	High	Low
Population Growth	Median	High	Low
Labour Force Growth	Median	High	Low

Table 4.20 Parameters Applied in Median Growth Case Scenario

GDP Growth Prediction						
Country/Region	2015	2016	2017	2018	2019	2020
Australia	2.85%	3.16%	3.11%	2.98%	2.89%	2.83%
China	6.76%	6.30%	6.00%	6.10%	6.33%	6.33%
Japan	1.04%	1.17%	0.42%	0.65%	0.65%	0.65%
South Korea	3.03%	3.04%	3.15%	3.19%	3.16%	3.23%
USA	3.14%	3.06%	2.66%	2.36%	2.04%	2.02%
ASEAN	5.18%	5.58%	5.66%	5.94%	6.37%	5.72%
EU-27	2.09%	2.32%	2.31%	2.30%	2.30%	2.27%

Population Growth Prediction						
Country/Region	2015	2016	2017	2018	2019	2020
Australia	1.24%	1.32%	1.32%	1.32%	1.32%	1.32%
China	0.56%	0.39%	0.39%	0.39%	0.39%	0.39%
Japan	-0.14%	-0.24%	-0.24%	-0.24%	-0.24%	-0.24%
South Korea	0.48%	0.38%	0.38%	0.38%	0.38%	0.38%
USA	0.79%	0.18%	0.18%	0.18%	0.18%	0.18%
ASEAN	1.13%	0.97%	0.97%	0.97%	0.97%	0.97%
EU-27	0.04%	0.06%	0.06%	0.06%	0.06%	0.06%

Labour Force Growth Prediction						
Country/Region	2015	2016	2017	2018	2019	2020
Australia	0.68%	0.76%	0.76%	0.76%	0.76%	0.76%
China	0.02%	-0.29%	-0.29%	-0.29%	-0.29%	-0.29%
Japan	-1.08%	-0.86%	-0.86%	-0.86%	-0.86%	-0.86%
South Korea	0.30%	-0.19%	-0.19%	-0.19%	-0.19%	-0.19%
USA	0.37%	0.24%	0.24%	0.24%	0.24%	0.24%
ASEAN	1.40%	1.12%	1.12%	1.12%	1.12%	1.12%
EU-27	-0.45%	-0.33%	-0.33%	-0.33%	-0.33%	-0.33%

Table 4.21 Parameters Applied in High Growth Case Scenario

GDP Growth Prediction						
Country/Region	2015	2016	2017	2018	2019	2020
Australia	3.41%	3.79%	3.73%	3.57%	3.47%	3.39%
China	8.11%	7.56%	7.20%	7.32%	7.60%	7.60%
Japan	1.25%	1.41%	0.51%	0.78%	0.78%	0.78%
South Korea	3.64%	3.65%	3.78%	3.83%	3.79%	3.87%
USA	3.76%	3.67%	3.19%	2.83%	2.45%	2.43%
ASEAN	6.22%	6.70%	6.79%	7.13%	7.65%	6.87%
EU-27	2.51%	2.78%	2.77%	2.77%	2.76%	2.72%

Population Growth Prediction						
Country/Region	2015	2016	2017	2018	2019	2020
Australia	1.24%	1.56%	1.56%	1.56%	1.56%	1.56%
China	0.56%	0.54%	0.54%	0.54%	0.54%	0.54%
Japan	-0.14%	-0.09%	-0.09%	-0.09%	-0.09%	-0.09%
South Korea	0.48%	0.51%	0.51%	0.51%	0.51%	0.51%
USA	0.79%	0.41%	0.41%	0.41%	0.41%	0.41%
ASEAN	1.13%	1.24%	1.24%	1.24%	1.24%	1.24%
EU-27	0.04%	0.22%	0.22%	0.22%	0.22%	0.22%

Labour Force Growth Prediction						
Country/Region	2015	2016	2017	2018	2019	2020
Australia	0.68%	0.78%	0.78%	0.78%	0.78%	0.78%
China	0.02%	-0.25%	-0.25%	-0.25%	-0.25%	-0.25%
Japan	-1.08%	-0.84%	-0.84%	-0.84%	-0.84%	-0.84%
South Korea	0.30%	-0.17%	-0.17%	-0.17%	-0.17%	-0.17%
USA	0.37%	0.28%	0.28%	0.28%	0.28%	0.28%
ASEAN	1.40%	1.17%	1.17%	1.17%	1.17%	1.17%
EU-27	-0.45%	-0.30%	-0.30%	-0.30%	-0.30%	-0.30%

Table 4.22 Parameters Applied in Low Growth Case Scenario

GDP Growth Prediction						
Country/Region	2015	2016	2017	2018	2019	2020
Australia	2.28%	2.53%	2.49%	2.38%	2.31%	2.26%
China	5.41%	5.04%	4.80%	4.88%	5.07%	5.07%
Japan	0.84%	0.94%	0.34%	0.52%	0.52%	0.52%
South Korea	2.42%	2.43%	2.52%	2.55%	2.53%	2.58%
USA	2.51%	2.45%	2.13%	1.88%	1.63%	1.62%
ASEAN	4.15%	4.46%	4.52%	4.75%	5.10%	4.58%
EU-27	1.67%	1.85%	1.85%	1.84%	1.84%	1.82%

Population Growth Prediction						
Country/Region	2015	2016	2017	2018	2019	2020
Australia	1.24%	1.10%	1.10%	1.10%	1.10%	1.10%
China	0.56%	0.23%	0.23%	0.23%	0.23%	0.23%
Japan	-0.14%	-0.39%	-0.39%	-0.39%	-0.39%	-0.39%
South Korea	0.48%	0.25%	0.25%	0.25%	0.25%	0.25%
USA	0.79%	-0.04%	-0.04%	-0.04%	-0.04%	-0.04%
ASEAN	1.13%	0.69%	0.69%	0.69%	0.69%	0.69%
EU-27	0.04%	-0.11%	-0.11%	-0.11%	-0.11%	-0.11%

Labour Force Growth Prediction						
Country/Region	2015	2016	2017	2018	2019	2020
Australia	0.68%	0.74%	0.74%	0.74%	0.74%	0.74%
China	0.02%	-0.33%	-0.33%	-0.33%	-0.33%	-0.33%
Japan	-1.08%	-0.88%	-0.88%	-0.88%	-0.88%	-0.88%
South Korea	0.30%	-0.22%	-0.22%	-0.22%	-0.22%	-0.22%
USA	0.37%	0.21%	0.21%	0.21%	0.21%	0.21%
ASEAN	1.40%	1.08%	1.08%	1.08%	1.08%	1.08%
EU-27	-0.45%	-0.35%	-0.35%	-0.35%	-0.35%	-0.35%

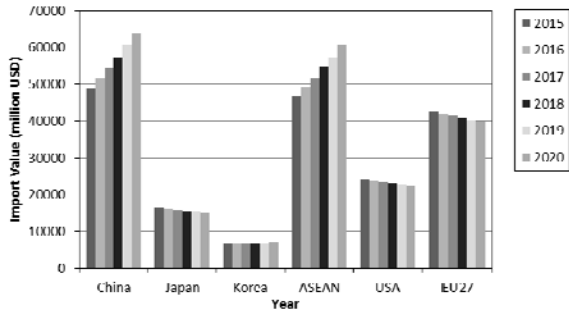
4.5.2 Median Growth Scenario

In general, during the 2015-2020 period, international trade increases greatly in China and the ASEAN region, implying that China is and continues to be a dominant player in international trade whilst the ASEAN region is gaining growth potential with economic development. On the other hand, the model results suggest that Europe and the United States are facing a longer recovery period while Japan and Korea are also comparatively weak in both import and export trade – partly due to weak economic growth forecast by IMF.

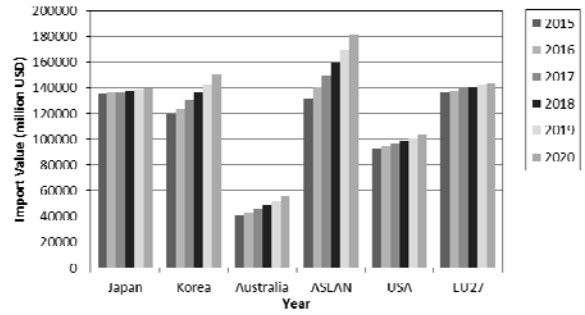
The model results suggest that export growth of China is expected to grow at a rate of 6.62% annually whereas the other countries are observed to

have an export growth rate around 0.13% to 3.51% per annum, with the exception of EU-27 whom is expected to have a negative growth rate in their export trade at -0.70% annually.

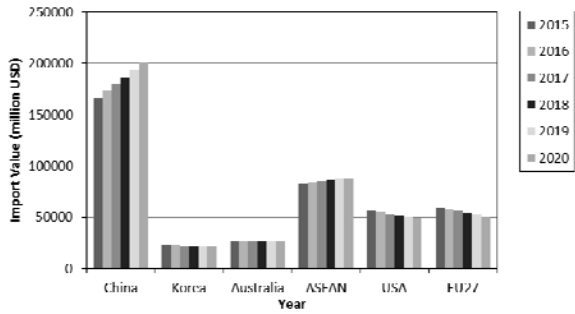
When considering import growth between the respective countries and China, all countries are expected to experience an increase in purchasing goods from China whereas a flat forecast in import trade from other countries are observed.



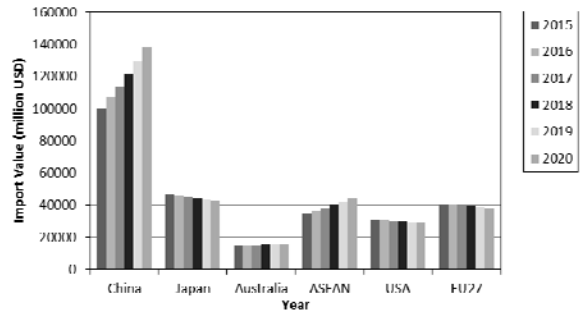
(a) Australia and its Trading Partners



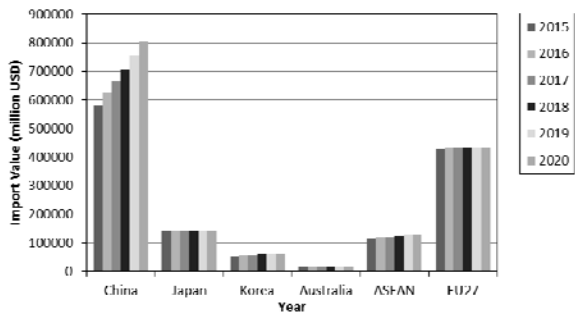
(b) China and its Trading Partners



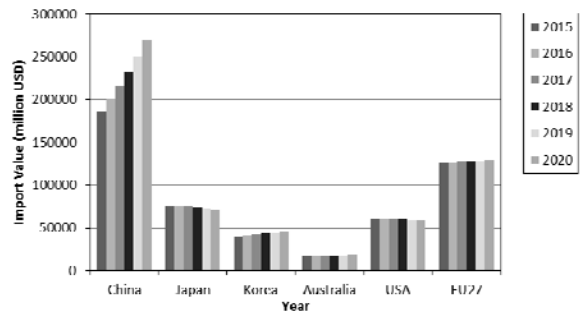
(c) Japan and its Trading Partners



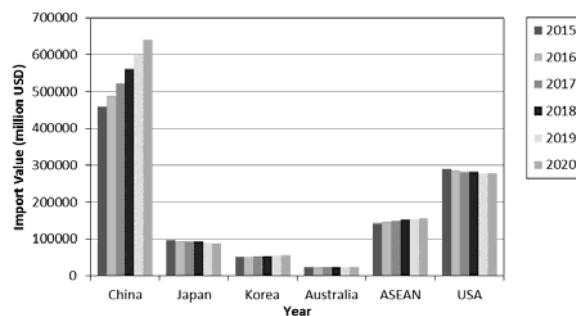
(d) South Korea and its Trading Partners



(e) USA and its Trading Partners

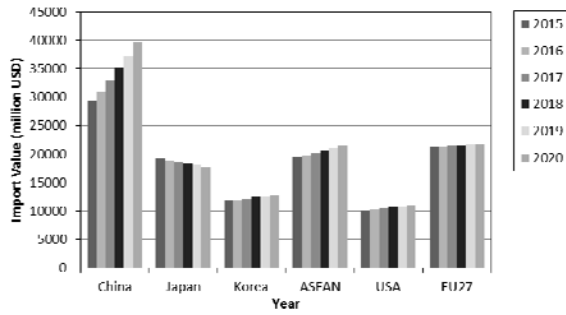


(f) ASEAN and its Trading Partners

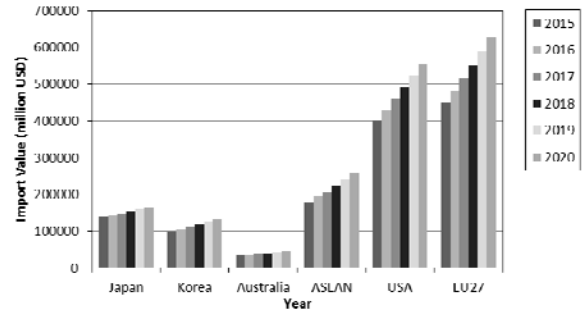


(g) EU-27 and its Trading Partners

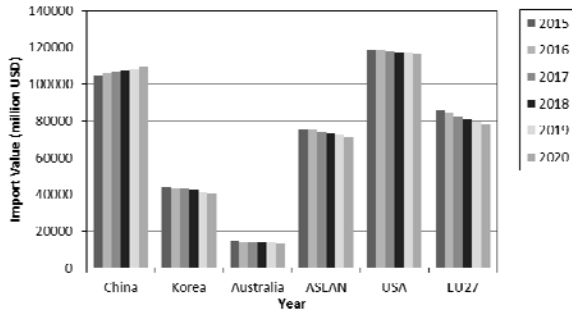
Figure 4.5 Total Import Trade Prediction (Medium Growth)



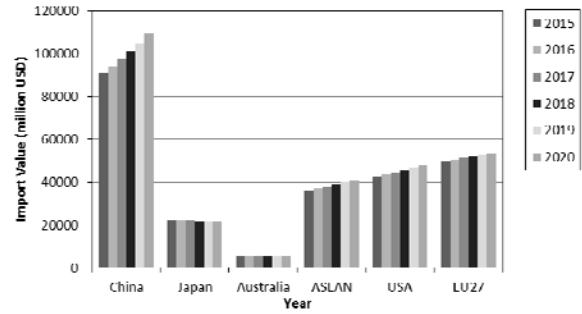
(a) Australia and its Trading Partners



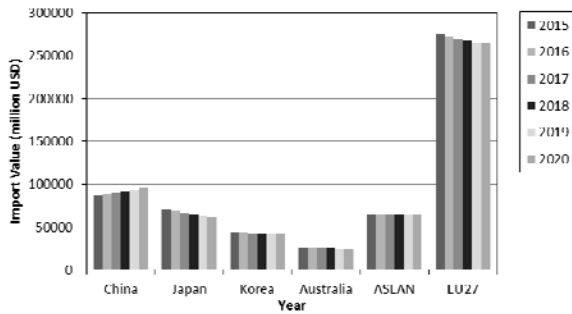
(b) China and its Trading Partners



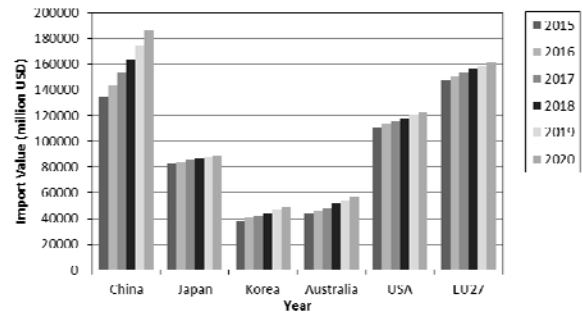
(c) Japan and its Trading Partners



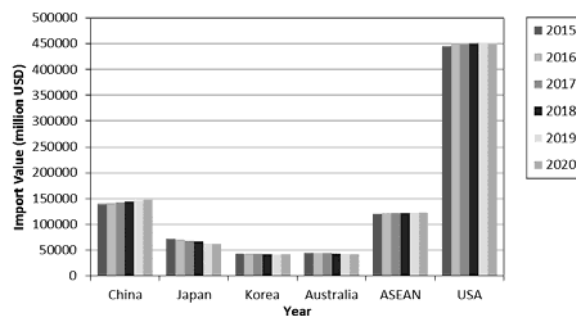
(d) South Korea and its Trading Partners



(e) USA and its Trading Partners



(f) ASEAN and its Trading Partners



(g) EU-27 and its Trading Partners

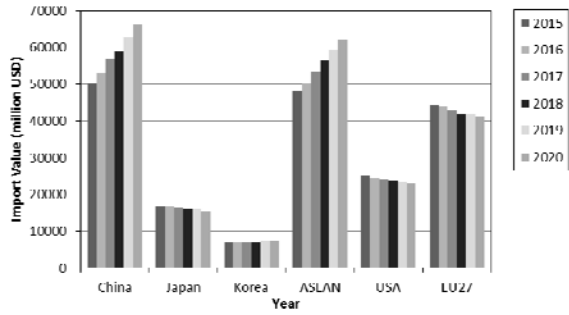
Figure 4.6 Total Export Trade Prediction (Medium Growth)

4.5.3 High Growth Scenario

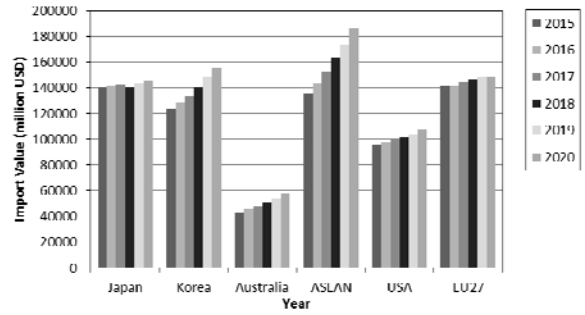
Similar to the medium growth scenario, international trade growth is observed for China and the ASEAN region from 2015 to 2020 at a steeper rate (7.62% for China export and 3.56% for ASEAN export) due to optimistic prediction in socio-economic and demographic factors. The model results suggest that though Europe and the United States are still struggling in getting economies growing, they are in a comparatively steady pace for international trade growth.

The model results suggest that export growth of China is expected to grow at a rate of 7.62% annually whereas the other countries are observed to have a growth rate around 0.79% to 3.56% per annum, with the exception of EU-27 whom is still expected to have a negative growth rate in their export trade at -0.52% annually.

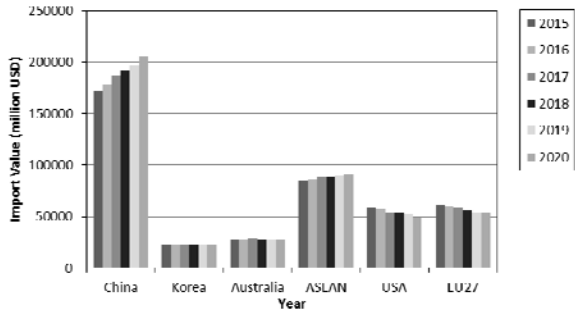
The model results also indicates that the import growth of all regions have similar behaviour as the medium growth scenario but with steeper growth rate. It shows that all regions increase their import from China as well as the ASEAN region. Besides, when looking into the import trend of USA, it can be seen that the major increase in import quantities is from China while imports from other regions remain steady. It can mean that the increase in import demand of USA is mostly covered by supply from China.



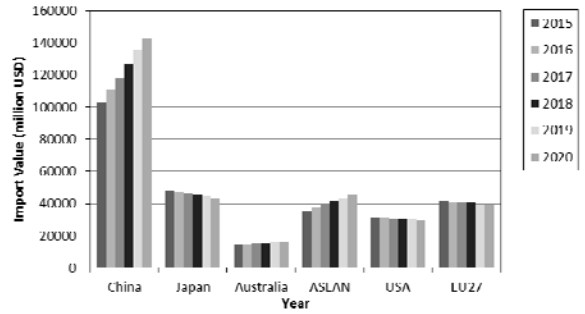
(a) Australia and its Trading Partners



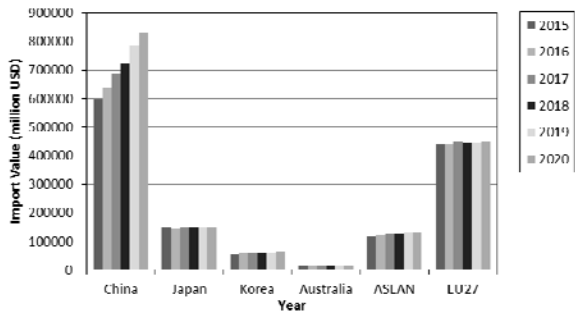
(b) China and its Trading Partners



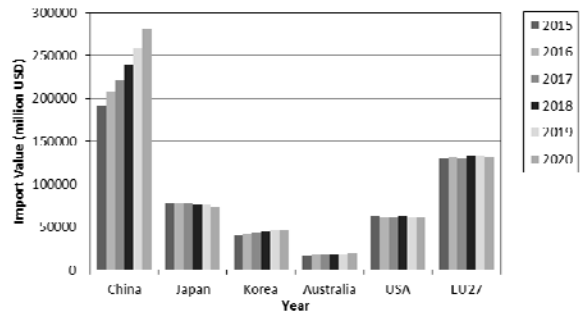
(c) Japan and its Trading Partners



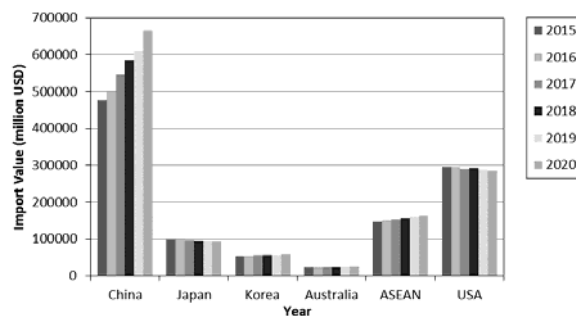
(d) South Korea and its Trading Partners



(e) USA and its Trading Partners

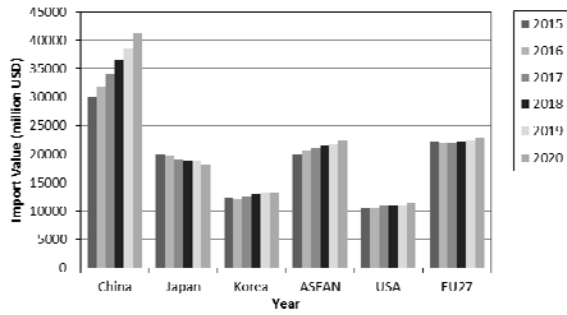


(f) ASEAN and its Trading Partners

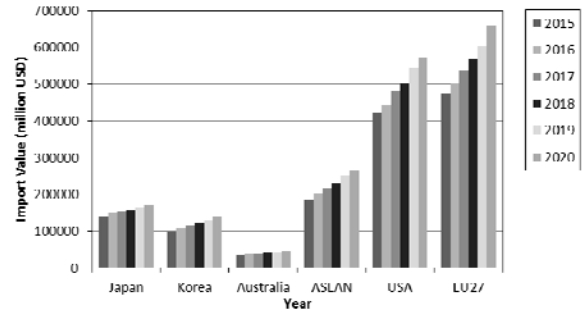


(g) EU-27 and its Trading Partners

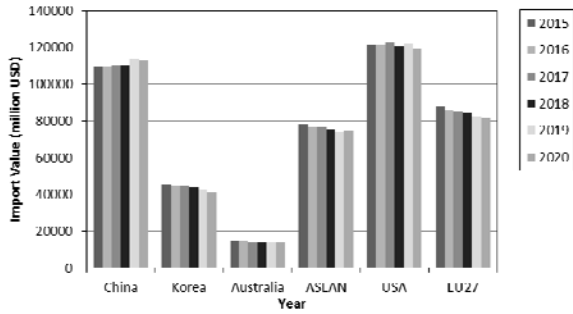
Figure 4.7 Total Import Trade Prediction (High Growth)



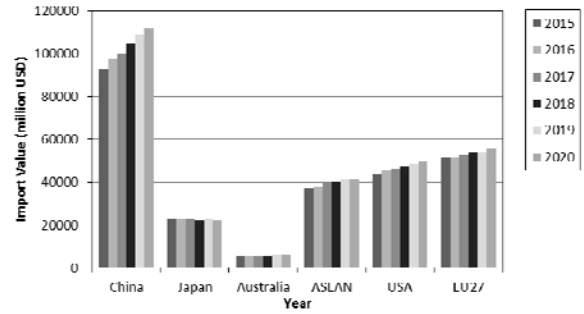
(a) Australia and its Trading Partners



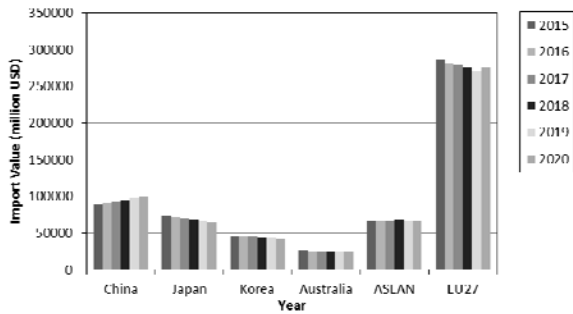
(b) China and its Trading Partners



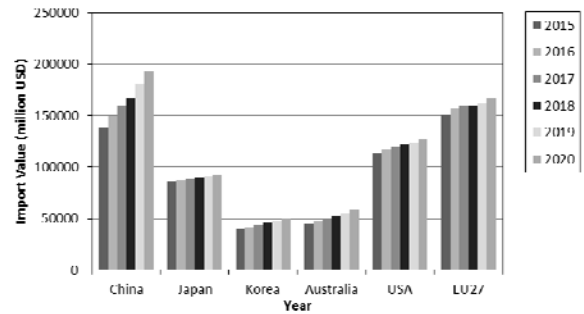
(c) Japan and its Trading Partners



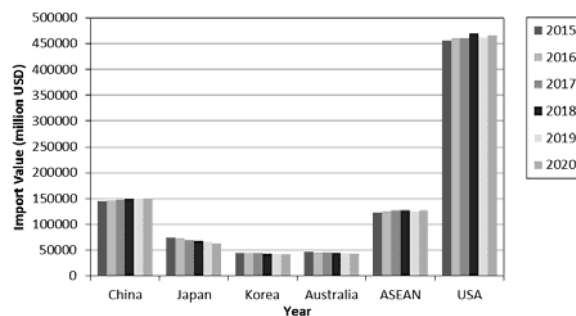
(d) South Korea and its Trading Partners



(e) USA and its Trading Partners



(f) ASEAN and its Trading Partners



(g) EU-27 and its Trading Partners

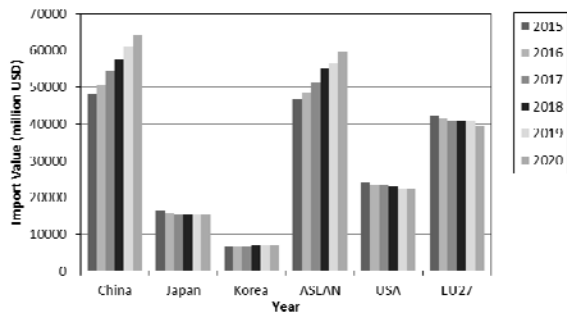
Figure 4.8 Total Export Trade Prediction (High Growth)

4.5.4 Low Growth Scenario

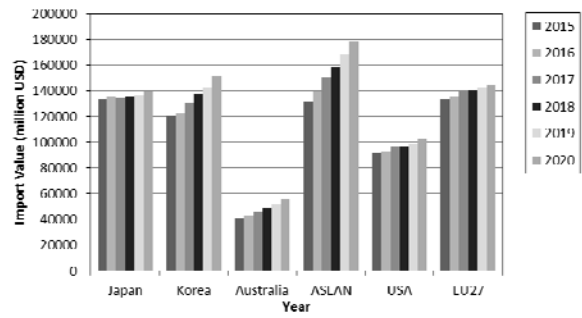
Similar to the previous two case scenarios, China and ASEAN are predicted to have comparatively higher growth in bilateral trade despite the low forecast in the socio-economic factors. At the same time, the model results suggest that U.S. and EU-27 are growing at a slower pace due to the pessimistic forecast of parameters by IMF and United Nations.

The model results suggest that export growth of China is expected to grow at a rate of 5.37% annually whereas the other countries are observed to have a growth rate around 0.30% to 2.79% per annum, with the exception of EU-27 whom is still expected to have a negative growth rate in their export trade at -0.87% annually.

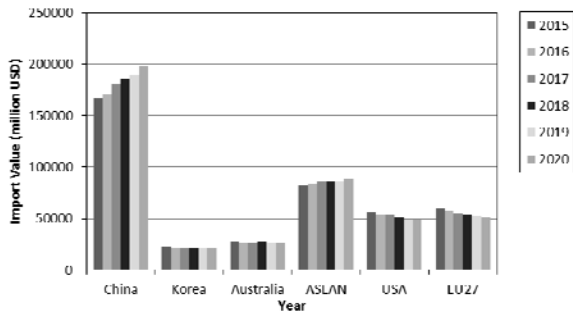
The model results also indicates that the import growth of all regions have similar behaviour as the medium growth scenario but with flat growth rate. It shows that the increase in import demands of all regions mostly is covered by the supply from China as well as the ASEAN region.



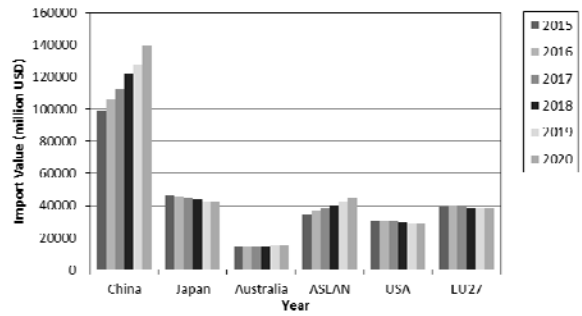
(a) Australia and its Trading Partners



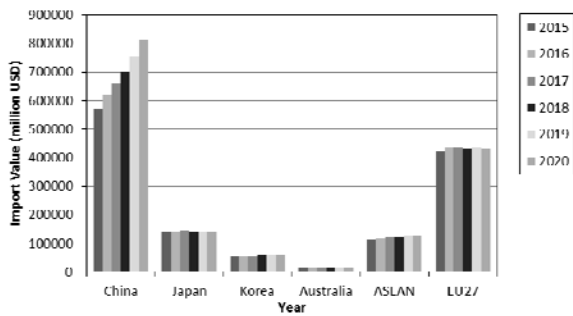
(b) China and its Trading Partners



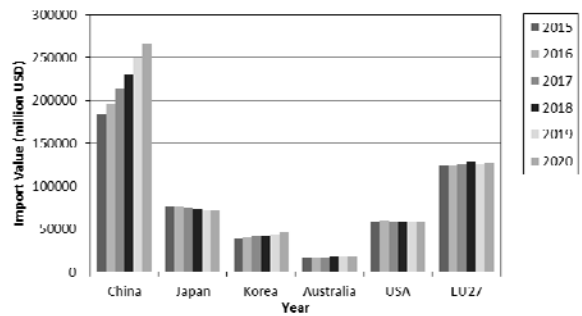
(c) Japan and its Trading Partners



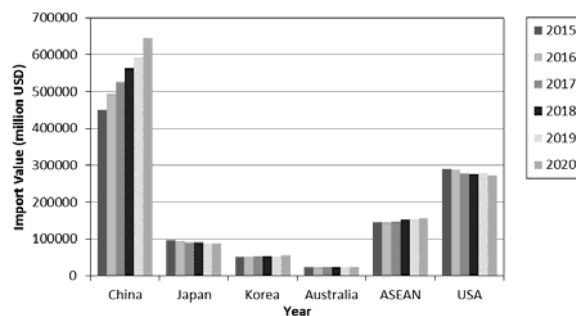
(d) South Korea and its Trading Partners



(e) USA and its Trading Partners

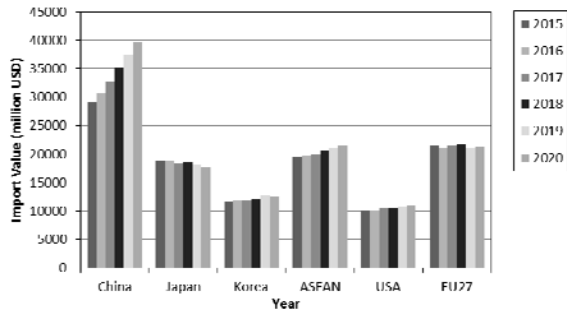


(f) ASEAN and its Trading Partners

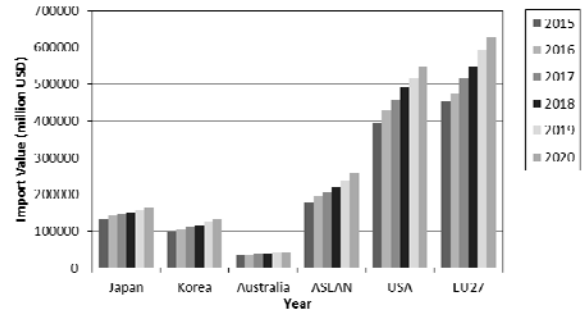


(g) EU-27 and its Trading Partners

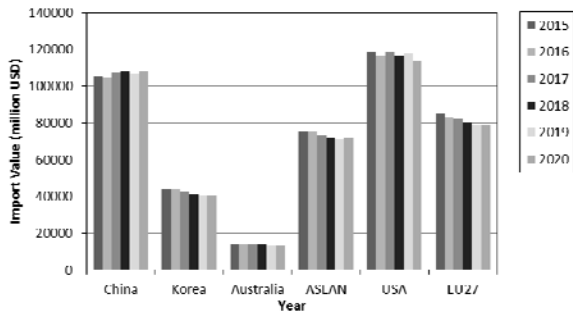
Figure 4.9 Total Import Trade Prediction (Low Growth)



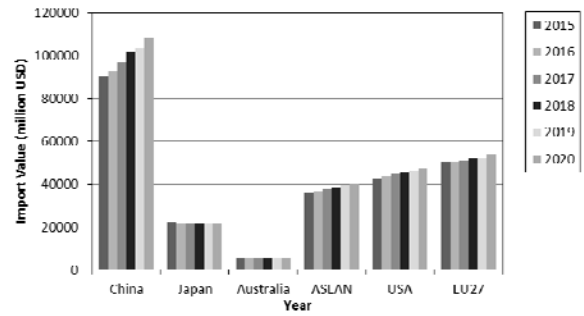
(a) Australia and its Trading Partners



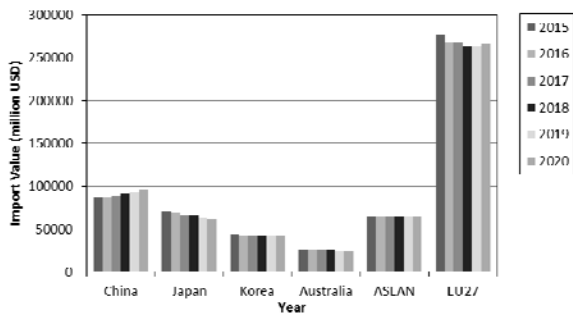
(b) China and its Trading Partners



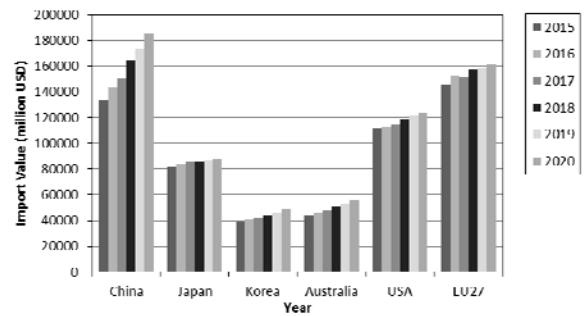
(c) Japan and its Trading Partners



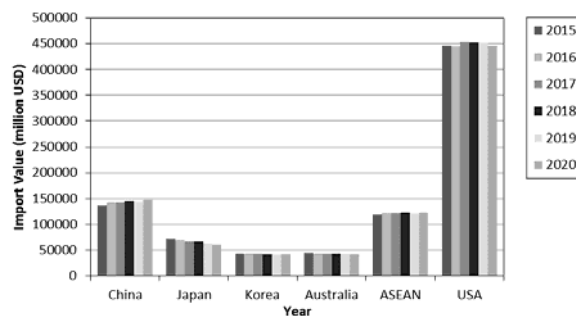
(d) South Korea and its Trading Partners



(e) USA and its Trading Partners



(f) ASEAN and its Trading Partners



(g) EU-27 and its Trading Partners

Figure 4.10 Total Export Trade Prediction (Low Growth)

4.6 Global Trade Prediction for Selected Commodities

To investigate the predictability of trade model, several commodities were chosen to analyse in details. In particular, import and export trade of these commodities of U.S. under medium growth case scenario are described in depth in this section. The results of other trading regions under different case scenarios are discussed whereas detailed results are tabulated in Appendix III.

4.6.1 Case Study for U.S. and its Trading Partners

The commodities chosen for import and export flow are listed in Table 4.23. These commodities are selected since they are ranked in the top 10 commodities in the USA import and export in the previous decade. Moreover, these goods are mostly transported by maritime carrier to other countries or regions.

Table 4.23 Commodities Selected for U.S. Import and Export

Trade	HS-2 Code	Commodity Description
Imports	22	Beverages, Spirits And Vinegar
	84	Nuclear Machinery & Parts
	85	Electric Machinery & Parts
	87	Vehicles & Parts
	95	Toys & Accessories
Exports	10	Cereals
	12	Oil Seeds Etc.
	47	Wood Pulp Etc.
	84	Nuclear Machinery & Parts
	87	Vehicles & Parts

Under the medium growth rate scenario setting, U.S. import and export trade prediction on selected commodities are listed in Tables 4.24 and 4.25. These two tables show the annual changes in import and export volumes of those specific commodities. It can be observed that changes in the import demand from China to U.S. remain positive although there is slight variance on growth rate. It implies that U.S. still rely on import from China and the potential growth in import volume from China is increasing annually. It could be due to the fast pace in the growth of manufacturing industry in China. In particular,

growth in demand for vehicles & parts (HS code 87) from China is strong, suggesting that China still remain as a strong manufacturing hub in near future.

Table 4.24 U.S. Import Trade Prediction on Selected Commodities (Medium Growth)

Australia	2015	2016	2017	2018	2019	2020
22	1.69%	1.50%	1.43%	1.09%	1.02%	1.00%
84	0.87%	0.54%	0.38%	-0.21%	-0.31%	-0.37%
85	0.16%	-0.15%	-0.28%	-0.86%	-1.02%	-1.23%
87	2.47%	2.34%	2.31%	1.94%	1.87%	1.72%
95	-3.35%	-3.87%	-4.28%	-5.11%	-5.35%	-5.70%
China	2015	2016	2017	2018	2019	2020
22	5.33%	5.08%	4.97%	4.59%	4.47%	4.43%
84	8.30%	7.70%	7.30%	6.59%	6.24%	6.12%
85	6.71%	6.15%	5.81%	5.15%	5.01%	4.87%
87	9.61%	9.21%	8.94%	8.42%	8.02%	7.57%
95	7.82%	7.16%	6.66%	5.84%	5.42%	5.02%
Japan	2015	2016	2017	2018	2019	2020
22	1.51%	1.19%	1.08%	0.69%	0.71%	0.67%
84	-0.09%	-0.93%	-1.20%	-1.86%	-1.94%	-1.87%
85	-1.67%	-2.59%	-2.88%	-3.60%	-3.54%	-3.78%
87	1.64%	1.05%	0.88%	0.38%	0.42%	0.57%
95	-5.06%	-6.19%	-6.80%	-7.81%	-7.54%	-7.67%
South Korea	2015	2016	2017	2018	2019	2020
22	2.45%	2.25%	2.16%	1.82%	1.78%	1.67%
84	3.27%	2.95%	2.81%	2.32%	2.12%	2.04%
85	1.67%	1.31%	1.21%	0.71%	0.81%	0.80%
87	4.16%	3.90%	3.77%	3.35%	3.24%	3.12%
95	-1.57%	-2.23%	-2.75%	-3.62%	-3.67%	-3.78%
ASEAN	2015	2016	2017	2018	2019	2020
22	2.71%	2.54%	2.19%	1.84%	1.72%	1.67%
84	2.71%	2.46%	1.60%	1.09%	1.01%	0.97%
85	1.55%	1.27%	0.47%	-0.06%	-0.42%	-0.61%
87	4.95%	4.84%	4.13%	3.77%	3.29%	3.01%
95	-0.69%	-1.19%	-2.40%	-3.23%	-3.46%	-3.89%
EU-27	2015	2016	2017	2018	2019	2020
22	1.53%	1.25%	1.09%	0.68%	0.47%	0.35%
84	0.14%	-0.59%	-1.10%	-1.94%	-2.10%	-2.27%
85	-0.74%	-1.50%	-2.01%	-2.88%	-3.12%	-3.46%
87	1.99%	1.52%	1.19%	0.58%	0.04%	-0.15%
95	-4.15%	-5.06%	-5.79%	-6.87%	-6.47%	-6.38%

$$\% \text{ Growth} = [\text{Value}_{t+1} - \text{Value}_t] / \text{Value}_t$$

Similar findings can be observed in export trend from U.S. to China, i.e. remain mostly positive at all time. It could be seen that the predicted export trends from USA to Australia, Japan and South Korea are all negative, meaning

that export capacity of USA to these regions are contracting because of unfavourable forecast in economic activities.

Table 4.25 U.S. Export Trade Prediction on Selected Commodities (Medium Growth)

Australia	2015	2016	2017	2018	2019	2020
10	-1.05%	-1.14%	-0.92%	-0.94%	-0.97%	-0.99%
12	-0.11%	-0.23%	-0.12%	-0.27%	-0.17%	-0.31%
47	-2.18%	-1.99%	-1.65%	-1.35%	-1.01%	-0.92%
84	-3.51%	-3.23%	-2.81%	-2.42%	-1.97%	-1.28%
87	-1.67%	-1.43%	-1.05%	-0.70%	-0.42%	-0.19%
China	2015	2016	2017	2018	2019	2020
10	0.29%	0.25%	0.22%	0.18%	0.13%	0.08%
12	6.55%	6.67%	6.85%	6.98%	7.21%	7.34%
47	0.64%	0.90%	1.12%	1.40%	1.59%	1.72%
84	-0.99%	-0.52%	-0.13%	0.32%	0.51%	0.68%
87	-1.71%	-1.32%	-1.02%	-0.57%	-0.04%	0.28%
Japan	2015	2016	2017	2018	2019	2020
10	-1.92%	-1.85%	-1.86%	-1.85%	-1.84%	-1.82%
12	-2.21%	-2.23%	-2.26%	-2.41%	-2.37%	-2.39%
47	-3.42%	-2.96%	-2.83%	-2.62%	-2.57%	-2.41%
84	-6.41%	-5.86%	-5.63%	-5.30%	-5.01%	-4.70%
87	-4.11%	-3.71%	-3.62%	-3.41%	-3.18%	-2.91%
South Korea	2015	2016	2017	2018	2019	2020
10	-2.61%	-2.78%	-2.87%	-2.90%	-3.10%	-3.24%
12	-4.22%	-4.52%	-4.73%	-5.01%	-5.28%	-5.42%
47	-1.30%	-1.17%	-0.97%	-0.71%	-0.34%	-0.01%
84	-3.18%	-2.88%	-2.65%	-2.31%	-2.02%	-1.74%
87	-2.25%	-2.15%	-2.10%	-1.86%	-1.64%	-1.54%
ASEAN	2015	2016	2017	2018	2019	2020
10	-2.42%	-2.89%	-4.16%	-4.96%	-5.10%	-5.27%
12	-0.26%	-0.32%	-0.39%	-0.47%	-0.51%	-0.61%
47	-0.35%	0.09%	-0.10%	0.24%	0.37%	0.42%
84	-2.90%	-2.43%	-2.70%	-2.35%	-2.31%	-2.17%
87	-2.07%	-1.72%	-2.05%	-1.74%	-1.99%	-1.67%
EU-27	2015	2016	2017	2018	2019	2020
10	-1.18%	-1.07%	-0.99%	-0.94%	-0.87%	-0.81%
12	-0.20%	-0.01%	0.16%	0.21%	0.31%	0.37%
47	-2.19%	-1.51%	-1.05%	-0.42%	0.03%	0.27%
84	-3.66%	-2.88%	-2.35%	-1.64%	-1.04%	-0.58%
87	-2.37%	-1.71%	-1.27%	-0.64%	-0.12%	0.42%

$$\% \text{ Growth} = [\text{Value}_{t+1} - \text{Value}_t] / \text{Value}_t$$

4.6.2 Case Study for Other Regions

Same groups of commodities for import and export flow among other regions as listed in Table 4.23 are discussed in this section. Detailed results are listed in

Appendix III. For selected commodities traded between ASEAN and her trading partners, the import demand from China and South Korea grow annually whereas the import demand from USA and EU-27 decreases, indicating that China and South Korea are leading exporters while USA and EU-27 are losing import share in ASEAN. Besides, export to all trading partners are growing annually, implying that the potential expansion in manufacturing capacity of ASEAN may lead to growth in her export trade with other countries/regions.

For selected commodities traded between Australia and her trading partners, the import demand from China has a positive growth but import demand from other regions are mostly falling. On the other hand, the export of Australia has positive increment in China and USA.

Commodity trade between China and her trading partners in terms of import and export are growing, implying that China is growing in import demand from all regions. For selected commodities trades of the remaining regions (i.e. EU-27, Japan and South Korea), similar results to the ASEAN and Australian trade could be observed, i.e. China is predicted to be their growing partner in both import and export.

4.7 Summary of Findings

A trade forecasting model based on the GTAP model has been developed and was validated in this chapter. The proposed model takes into account the economic relationships among various parties within an economy as well as the inter-relationships among various economy bodies to simulate the impact of commodity production and consumption under the changes in socio-economic environment. There are in total seven countries and regions selected in this studies, aiming to cover all the major international trade routes in the globe.

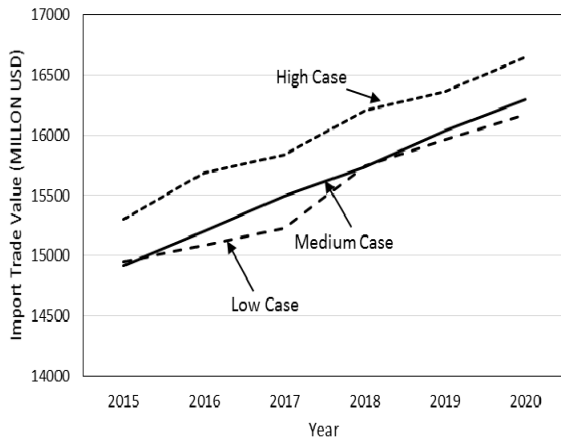
First, a data conversion algorithm has been developed to match the GTAP trade data with the UN Comtrade data in HS classification, and vice versa. After comparing the trade data between the GTAP database and the UN Comtrade database, discrepancies in international trade data have been found, mostly due to the compliance needs to harmonise the entire GTAP database which includes the intermediate good production, final good production and consumption for domestic needs, and for international needs. Therefore, calibration has been performed to the international trade module.

After calibrating the international trade data module, the GTAP model is calibrated and validated using various data during period 2007 to 2014. In this study, three major socio-economic factors are considered, they are GDP growth rate which reflects the overall economic environment, population growth rate which represents the overall consumption demand for goods, and labour force growth rate which stands for the overall production capacity for commodities. After validating the model, satisfactory results are observed in comparing the simulated trade value against the actual reported trade value from the UN Comtrade. Therefore, the model is valid to provide us a reliable forecast in trade growth.

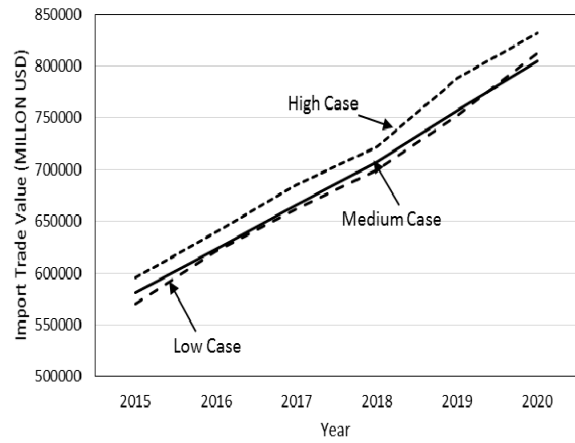
To provide a more general picture of the future trade trend, three case scenarios have been analysed (medium growth case with central estimate from various sources for all three factors, high growth case with high projection from various sources for all three factors, and low growth case with low projection for all three factors). These three case scenarios provides the upper and lower bound for the international trade prediction among the studied regions. From the forecasted results, it shows that China remains as the dominant pillar in

international trade while the ASEAN region is growing its share in international trade. Due to unfavourable forecast in the socio-economic factors, western developed countries, i.e. USA and EU-27, are deteriorating in their market share in international trade. Figure 4.11 and 4.12 show a sample the upper bound and lower bound of the predicted import and export trade trend for USA and its trading partners.

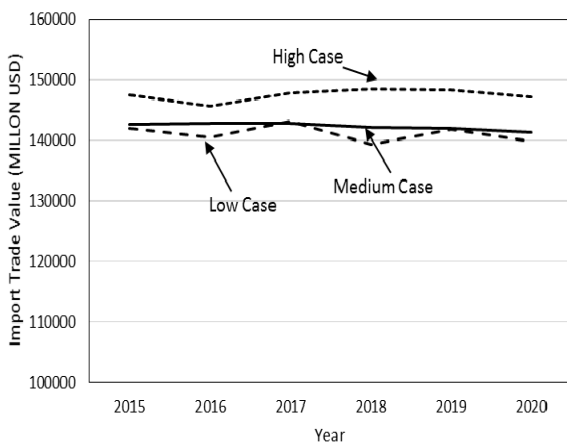
This model is the first stage of the entire global maritime forecasting framework. With this trade model, the total trade flow (in terms of monetary value) among regions are forecasted, thus leading us to the next stage of the framework, i.e. extracting the amount of maritime trade from this total trade via transportation technique which will be discussed in depth in next chapter.



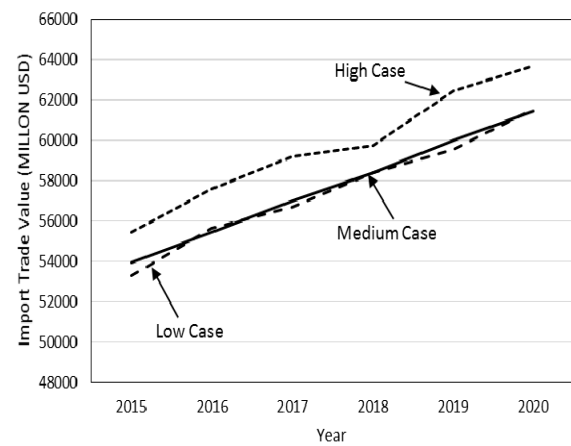
(a) Australia



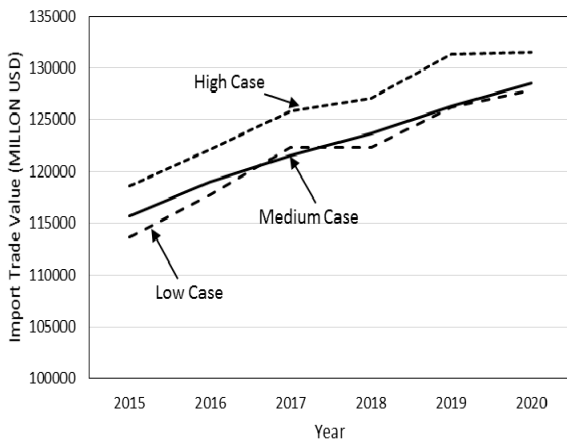
(b) China



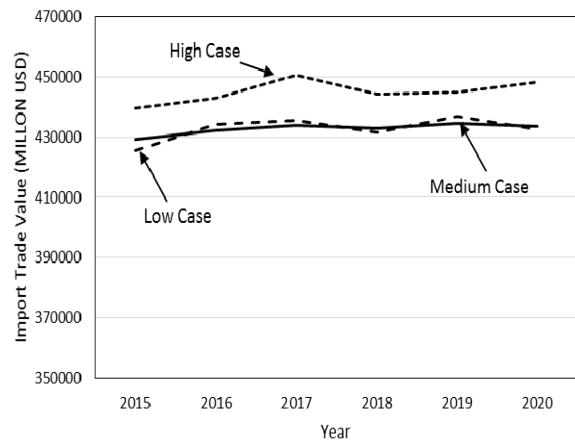
(c) Japan



(d) South Korea

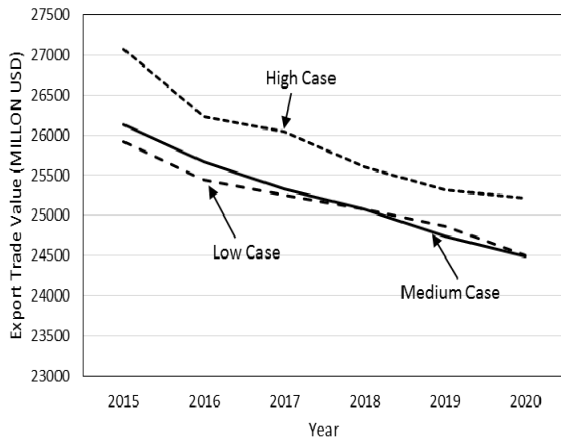


(e) ASEAN

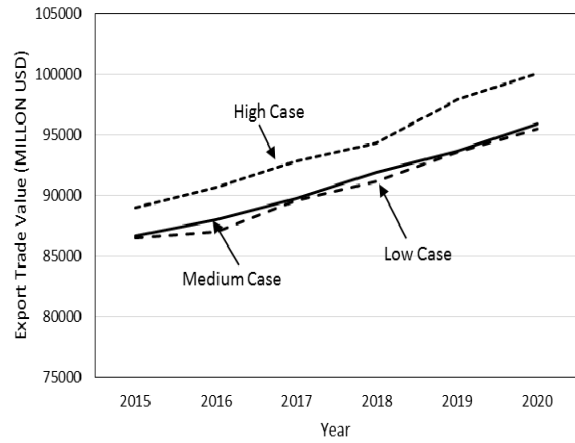


(f) EU-27

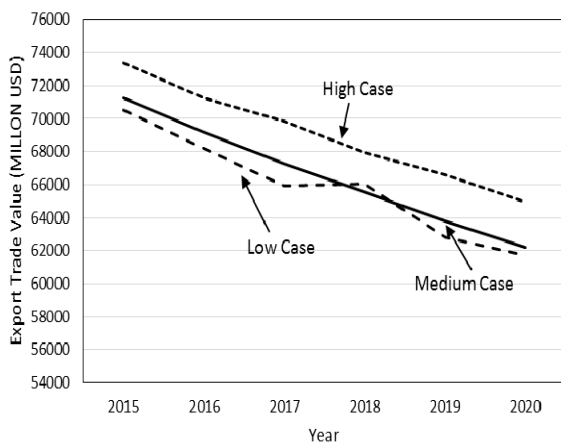
Figure 4.11 Import Trade Trend of USA from its Trading Partners



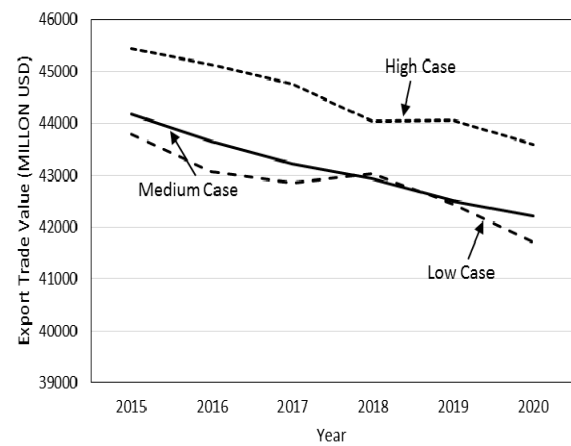
(a) Australia



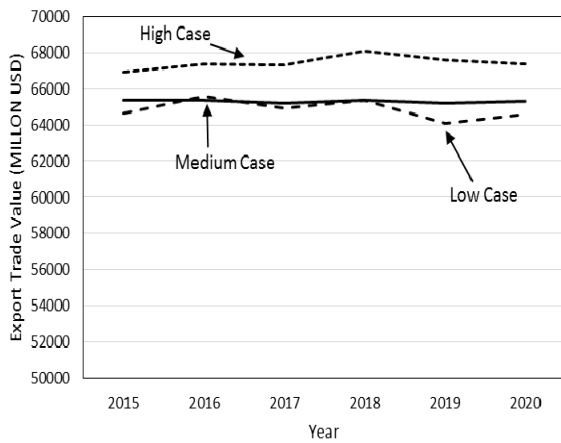
(b) China



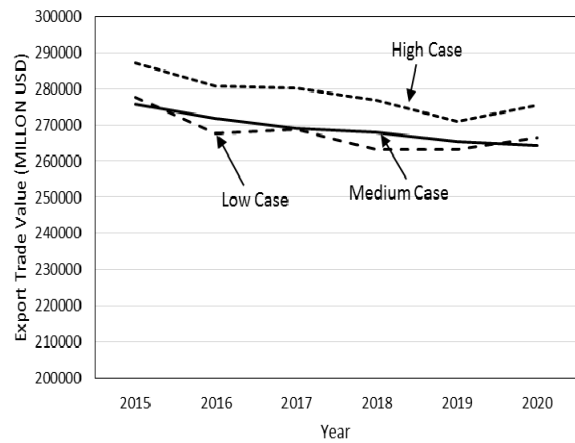
(c) Japan



(d) South Korea



(e) ASEAN



(f) EU-27

Figure 4.12 Export Trade Trend of USA from its Trading Partners

CHAPTER 5 FREIGHT MODE CHOICE MODELLING USING DISCRETE CHOICE MODELS

Based on the proposed integrated trade demand forecasting framework as presented in Chapter 3, after predicting the commodity trade between regions via the first module (as discussed in Chapter 4), there is a need to determine the mode share for commodity trade via the freight transport mode choice model. Detailed discussion of this model development are described in this chapter. First, an introduction on the application of various discrete choice model in extracting the share of maritime trade out from the total trade flow predicted in the previous chapter is presented. Then the commodity data used and model configuration are described. The impact of the choice of commodity classification levels in trade data on mode choice models are examined. Detailed discussion on the development of various freight mode choice models are presented.

5.1 Introduction

As discussed in Chapter 3, this chapter presents the second stage of the entire forecasting framework. From the first module of the proposed framework as shown in Figure 3.1, the amount of commodity flow between countries/regions by commodity group can be determined. However, this freight flow quantity is inclusive of all types of transportation mode, i.e. there is no specific transport mode differentiation. With our research objective focused on forecasting the amount of maritime container flow between countries, this second module of the framework aims to estimate the amount or proportion of total commodity trade between countries that are being transported through maritime transport.

Discrete choice model are adopted to determine the amount of commodities carried by maritime transport between countries and regions.

Freight mode choice were examined in the literature using either operational research methods or utility maximization theory. The use of utility maximization approach gains traction in recent years as the logistics decision-making process has become more sophisticated and factors other than cost (for example, speed, reliability and risk) are playing a more significant role (Samimi *et al.*, 2011). In particular, discrete choice models are commonly used. Different forms of discrete choice models were proposed in the literature and the model form very much depends on the underlying assumption on the distribution of the unobserved utility. The logit model assumes independent and identically distributed (IID) error terms in the utility function whereas the probit model assumes a normal distribution for the error terms. Regardless of the choice of the model form, such models in the literature had traditionally relied on either shipper-provided data or a comprehensive survey on microscopic information such as origin, destination, transport cost, weight, volume, value, commodity type, distance, level of service from the carrier. (Foekens *et al.*, 1994; Nam, 1997; Rich *et al.*, 2009; Shen and Wang, 2012). Such data could hardly be accessed completely at the planning level by government agencies whose only option would be to use publicly available macroscopic commodity trade information such as value and weight of commodities along trade routes and their corresponding modal shares.

In this case, at the strategic planning level, only limited trade commodity characteristics such as value and weight of commodity could be available (Yang *et al.*, 2014) whereas more detailed freight characteristics such as freight rates,

speed, reliability, inventories, etc. would be available at shippers' level since most of these data are commercial confidential (Norojono *et al.*, 2003; Rich *et al.*, 2009). Hence, commodity value-weight ratio becomes a thumb of rule in characterising the type of transport mode which a commodity will be carried by.

However, as known that there are different levels of classification in commodity data, i.e. how detail a specific commodity could be categorised in, the amount of effort in data collection varies a lot, as the number of entities under same commodity category can be up to 100,000. For instance, in the Harmonised System (HS) classification of goods, there are three levels of classifications (i.e. HS two-digit, HS four-digit, and HS six-digit) with maximum of 99, 9900 and 990000 entities at each level respectively and can be further expanded into another two levels (i.e. HS eight-digit and HS ten-digit) for tariffs and statistical purposes. Hence, data collection effort and computational intensity are growing exponentially with finest classification of goods. However, finer commodity classification may not necessarily guarantee an efficient and effective result as it involves massive data collection effort and intensive computational costs. Not much research effort has been put to ascertain the trade-off one may face in when using an estimated model derived from broad commodity classification. Therefore, there is a need to understand the impact on mode choice model development under various level of commodity data classification and corresponding model effectiveness.

After analysing the impact of commodity data classification levels on freight mode choice model, the appropriate classification level of commodity data is used to develop the freight mode choice model for this study. Two types of discrete choice models, i.e. (1) binary probit model, and (2) binary logit

model will be investigated to perform the freight mode choice model in this study since only inter-continental trade will be considered in which only sea or air mode is available.

It should be noted that only two transportation modes, i.e. sea and air, are considered in this study. In other words, it is assumed that commodities traded between regions are either carried by vessels or planes. However, a conventional transportation mode, i.e. by land, is not addressed in this study. Land mode is only made available wherever there is land connection between two countries/regions. In this study, countries and regions are generally dispersed in nature, thus an assumption is made where land mode is neglected. For future study and more holistic application, land mode and other transportation modes should be included in the mode choice study.

5.2 Commodity Data Description and Geographical Scope Definition

As mentioned in the previous section, commodity value-weight ratio is commonly used as a guide to determine the transport mode which a commodity will be carried with. In order to build the mode choice model using commodity value-weight ratio, the monetary value of commodities and their corresponding physical quantities have to be obtained and used as inputs to the model. However, international trade database which is capable of providing detailed commodity information with both monetary value and physical quantities are rarely publicly available, as discussed in Chapter 3. In fact, these databases are either commercial trade databases which are highly expensive or public trade databases which mostly only report commodity value. Moreover, traded value and quantities provided are not in detail and mostly are aggregated, i.e. either trading partner are not reported, commodity are not clearly categorised, or

transport mode are not defined. Such issues can impede a proper development of international freight mode choice models.

In this study, the data used is extracted from the USA Trade® Online database which was developed by the Foreign Trade Division of the U.S. Census Bureau (United States Census Bureau, 2014). The database presents a complete and detailed U.S. export and import trade data for over 18,000 export commodities and 24,000 import commodities and updated monthly so as to provide current and cumulative trade information. The trade data is reported in the total flow between origins and destinations by commodity group and transport mode. Monthly, quarterly and annual commodity trade data are listed in this database. Besides, the trade statistics are available in HS System up to the ten-digit level (US Census Bureau, 2012). Besides, the advantage of this trade database is that the transport mode is also defined, thus it can be considered the most detailed trade database which provides commodity value and quantities with corresponding transport mode at commodity level. However, the major drawback of this database is that it only reports trade flow related to the United States, but not trade flow among countries outside the United States.

In this study, trade routes between US and other countries / regions in this study are analysed. The values and weights of commodities transported by sea and air are extracted from the USA Trade® Online database. Table 5.1 shows the 12 trade routes between USA and her trading partners analysed in this chapter.

Table 5.1 Trade Route Analysed in this Chapter

	Trade Routes	Exporter Region (Origin)	Importer Region (Destination)
1	USA → AUS	United States of America (USA)	Australia
2	AUS → USA	Australia	United States of America (USA)
3	USA → CHN	United States of America (USA)	China
4	CHN → USA	China	United States of America (USA)
5	USA → JPN	United States of America (USA)	Japan
6	JPN → USA	Japan	United States of America (USA)
7	USA → KOR	United States of America (USA)	South Korea
8	KOR → USA	South Korea	United States of America (USA)
9	USA → EUR	United States of America (USA)	European Union 27
10	EUR → USA	European Union 27	United States of America (USA)
11	USA → ASN	United States of America (USA)	ASEAN
12	ASN → USA	ASEAN	United States of America (USA)

5.3 Discrete Choice Model Configuration

As described in Chapter 3, discrete choice model relies on the formulation of the utility function. This study aims to explore the development of commodity mode choice model using the current rule of thumb, i.e. commodity value-weight ratio. In this study, discrete choice models for commodity mode choice between countries are developed without explicit consideration of commodity differentiation.

For a given trade route between two countries (say countries a and b) in a generic manner, the utility function T from Eq. (3.59) can be rewritten as:

$$T_{i,(a,b)} = \beta_{0,i,(a,b)} + \beta_{1,i,(a,b)}X_1 + \beta_{2,i,(a,b)}X_2 + \varepsilon_{i,(a,b)} \quad (5.1)$$

where,

$X_{1,i,(a,b)}$: natural logarithm of the value of the commodities between regions a and b using transport mode i ,

$X_{2,i,(a,b)}$: natural logarithm of the weight of the commodities between regions a and b using transport mode i ,

β : estimable parameters for mode choice i , and

ε : disturbance term.

As commodity value/weight (V/W) ratio is used as parameter in this study, it would be appropriate to take the natural logarithm on V/W ratio so as to transform it to linear form and suits the utility function in the discrete choice model. In this way, the effect of commodity value and weight on choice elasticity can also be examined. It is noted that the choice of mode is affected by geography. Hence, mode choice models were developed using trade data on each trade routes, i.e. with specifications on origins and destinations, thus geographical specification is actually implicitly included in the model development.

However, as discussed in the previous section, the selection of an appropriate data aggregation level can heavily affect the data collection effort and computational time. Therefore, an analysis on the potential impact of trade data aggregation on international freight mode choice will be discussed in the next section.

5.4 Impact Analysis of Different Trade Data Classifications on Freight Mode Choice Model Effectiveness

When estimating modal split in international commodity trade at the strategic planning level, it is preferable to use trade data with a broader coverage (i.e. either at HS two-digit or four digit levels) to reduce the amount of data collection efforts and the computational power and time required for handling the required analyses. One intuitive drawback of employing a broader classification is that it may have a chance for potential model inaccuracy due to the inherent lack of detail in commodity data. Nam (1997) hinted that even in the presence of such bias from data aggregation over heterogeneous commodity

types, aggregate models using the broader coverage commodity classification may still be preferable as the estimation errors do not warrant additional costs in data collection and computational processing effort. However, there were no further studies done to ascertain the trade-off one may face in when using an estimated model derived from broad commodity classification. Recognizing this need, the potential impact of trade data aggregation on international freight mode choice will be analysed.

In order to be consistent with the predicted results from the trade forecasting module, commodity data used in this module will be also categorised under the HS classification system. The HS classification system is a multipurpose international product nomenclature developed by the World Customs Organization and comprises about 5000 commodity groups, defined by a six-digit code and arranged in a legal and logical structure, supported by well-defined rules to achieve uniform classification. The codes with the broadest coverage are the first four digits, and are referred to as the heading whereas the first two digits provide the chapter in which the commodity is categorized in. The HS system sets forth all the international nomenclature through the six-digit level and, where needed, contains added subdivisions assigned two more digits, for a total of eight at the tariff-rate line level. Two final (non-tariff-rate line level) digits are assigned as statistical reporting numbers if warranted, for a total of ten digits to be listed on entries (World Customs Organization, 2011). A graphical explanation of the HS system is shown in Figure 5.1.

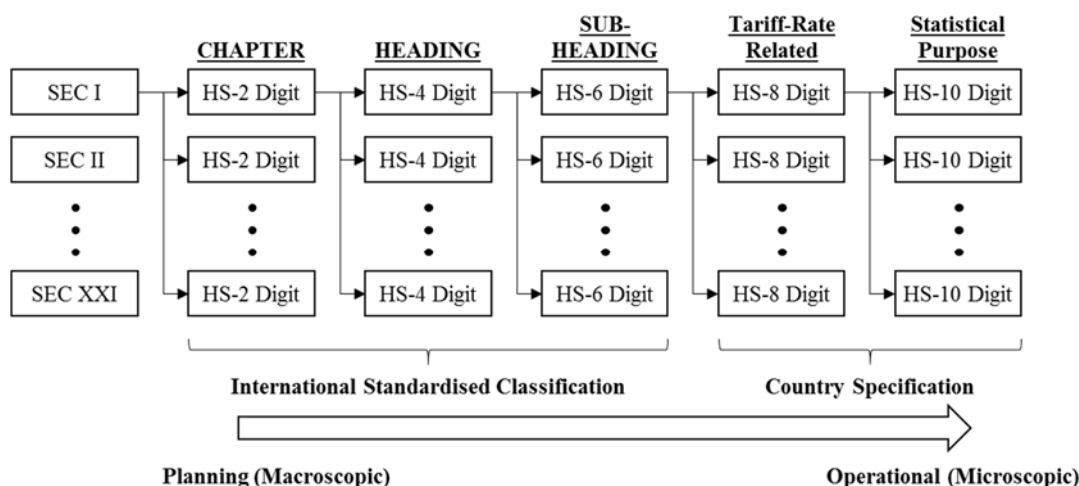


Figure 5.1 Graphical Explanation of the HS Classification System

To illustrate this impact analysis, binary probit models were developed based on various classification levels of commodity to perform this analysis. The values and weights of commodities transported by sea and air were extracted from the USA Trade® Online database at three different HS classification levels, i.e. HS two-digit, HS four-digit and HS six-digit respectively and with a maximum of 99, 9900 and 990000 entities at each level respectively. However, due to some missing codes that are not intended to be used in the classification system, the actual numbers of entities are 98, 2530 and 5545 at HS two-digit, HS four-digit and HS six-digit levels respectively. USA bilateral trade with China, ASEAN and EU-27 are chosen for this study, as shown in Table 5.2.

Table 5.2 Trade Routes Considered in Impact Analysis

Trade Routes	Exporter Region (Origin)	Importer Region (Destination)
1 USA → CHN	United States of America (USA)	China
2 CHN → USA	China	United States of America (USA)
3 USA → EUR	United States of America (USA)	European Union 27
4 EUR → USA	European Union 27	United States of America (USA)
5 USA → ASN	United States of America (USA)	ASEAN
6 ASN → USA	ASEAN	United States of America (USA)

5.4.1 Model Estimations and Comparison among the Developed Models

Applying the utility function as shown in Equation (5.1) with the trade data obtained from the USA Trade Online®, eighteen binary probit models (i.e three models per trade route according to their trade data level) over the six trade routes are developed.

Coefficient estimates for the eighteen mode choice models are presented in Tables 5.3 and 5.4. Their corresponding maximum log likelihoods and McFadden ρ^2 values are also listed in the same table. With air and sea modes are defined as 1 and 0 respectively, the coefficients shown in the tables are based on the probability of choosing air to carry the commodities (i.e. $Y = 1$).

It can be observed from Tables 5.3 and 5.4 that all mode variables have intuitively correct signs. The estimated parameters for the $\ln(\text{value})$ variable are positive, stating that the higher the value of a commodity, the higher the tendency of it will be transported by air. On the contrary, the predicted coefficients for the $\ln(\text{weight})$ variable are negative and this indicates that the heavier the commodity weight, the lower the tendency that it will be transported by air.

The McFadden ρ^2 values for all the models range from 0.155 to 0.662. It can be observed that using data from a broader trade classification level results in a better model goodness of fit (i.e. a higher McFadden ρ^2 value). However, the number of observations in different models varies a lot, ranging from 191 to 8612. Hence, “noise” may exist in the model when different trade data aggregation levels are employed. As such, the accuracy of discrete choice models is heavily dependent on the trade route and data classification level used during model development.

Table 5.3 Probit Model Estimation for USA Import Trade with Different Commodity Data Classification Level

Trade Partner	Data Level	Estimated Parameters			n	Restricted Log likelihood	Log likelihood function	ρ^2
		Constant	ln (Value)	ln (Weight)				
China	HS 2	4.639	0.905	-1.334	191	-132.4	-44.8	0.662
	HS 4	1.798	0.507	-0.742	2070	-1429.9	-825.6	0.423
	HS 6	1.331	0.465	-0.690	7531	-5174.4	-3286.7	0.365
ASEAN	HS 2	4.014	0.942	-1.239	191	-132.4	-43.7	0.639
	HS 4	2.137	0.606	-0.664	2094	-1448.9	-825.6	0.544
	HS 6	1.870	0.439	-0.628	7371	-5076.2	-3097.7	0.345
EU-27	HS 2	3.293	0.394	-0.671	194	-134.5	-88.9	0.339
	HS 4	1.620	0.277	-0.430	2287	-1585.0	-1208.8	0.237
	HS 6	0.643	0.275	-0.406	8612	-5968.9	-4839.9	0.189

Table 5.4 Probit Model Estimation for USA Export Trade with Different Commodity Data Classification Level

Trade Partner	Data Level	Estimated Parameters			n	Restricted Log likelihood	Log likelihood function	ρ^2
		Constant	ln (Value)	ln (Weight)				
China	HS 2	2.729	0.380	-0.631	194	-134.5	-87.3	0.351
	HS 4	1.521	0.213	-0.392	2113	-1464.0	-1164.2	0.205
	HS 6	0.950	0.228	-0.384	7033	-4868.7	-3948.6	0.189
ASEAN	HS 2	2.727	0.386	-0.684	191	-132.4	-93.3	0.615
	HS 4	1.407	0.251	-0.440	2017	-1387.9	-1174.2	0.403
	HS 6	0.952	0.158	-0.404	6325	-4434.1	-3728.6	0.219
EU-27	HS 2	2.087	0.272	-0.478	194	-134.5	-104.2	0.225
	HS 4	1.278	0.181	-0.349	2028	-1404.8	-1187	0.155
	HS 6	0.867	0.201	-0.360	6451	-4468.0	-3734.9	0.164

5.4.2 Comparisons among Mode Choice Models with Different Levels of Commodity Classifications

The models developed are further analysed using different performance measures to examine the impact of trade classification level on international freight mode choice.

First, the estimated trade value and commodity weight transported by sea can be used to compare with the actual trade value and commodity weight extracted from the USA Trade® Online database. Estimated trade value and

weight for the bilateral trade between USA and China are plotted against the actual numbers for the bilateral trade between them, as shown in Figure 5.2. For most of the commodities, there is a good agreement between the model-estimated and the actual commodity weights carried by sea. Besides, it is also obvious that the estimated and the actual commodity weights fit relatively good for all three trade aggregation levels. The differences between models at the three data aggregation levels are negligible if the interest is on commodity weights. However, when comparing the goodness of fit between the estimated and actual commodity values, it can be observed that the data points get considerably more scattered when the model classification levels gets finer (i.e. from HS 2-digit to HS 6-digit). Therefore, a drawback of using a finer commodity classification is a decrease in model fitness with a lower McFadden ρ^2 value.

Comparisons between the RMSE values for the eighteen models developed in this chapter are presented in Tables 5.5 and 5.6. It can be observed from the table that no significant improvement is achieved when employing a finer trade data classification as RMSE values are comparable for models developed at the HS 2-digit level and that at HS 6-digit level. This indicates that a broader trade data classification may already be sufficient for the purpose of international commodity mode choice modelling at the planners' level. Therefore, in this study, freight mode choice models are built based on commodity at HS 2-digit level. Comparisons on the model performance among various types of discrete choice models will be presented in later sections.

5.4.3 Insights from Impact Analysis on Trade Data Aggregation

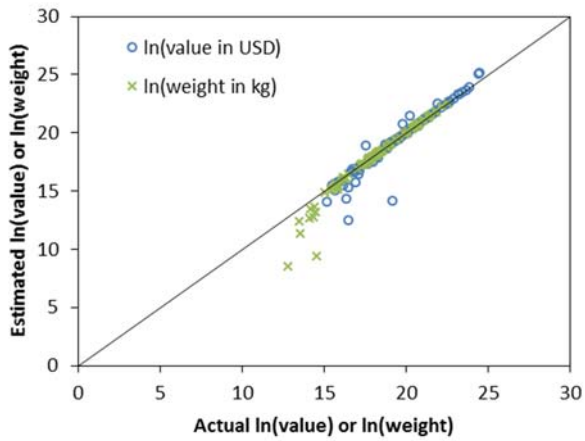
This study aims to examine the potential impact of trade data aggregation on international freight mode choice. Eighteen mode choice models which are specified for six trading routes and three levels of commodity data classification are developed. Each model indicates correct signs in the estimated coefficients, showing that the industry norm that the higher the commodity value, the higher the tendency to be transported by air while the higher the commodity weight, the lower the tendency to be carried by air. Besides, when comparing the models which are developed with various level of commodity data classification along same trading routes, it could be observed that there is no significant improvement when developing freight mode choice model using finer commodity classification, i.e. HS 6-digit level, instead of broader commodity classification, i.e. HS 2-digit level. Therefore, in this study, to achieve the purpose of the second stage in this entire framework at strategic planner's level freight mode choice models will be developed at HS 2-digit level.

Table 5.5 Model Effectiveness Estimation for USA Import Trade with Different Commodity Data Classification Level

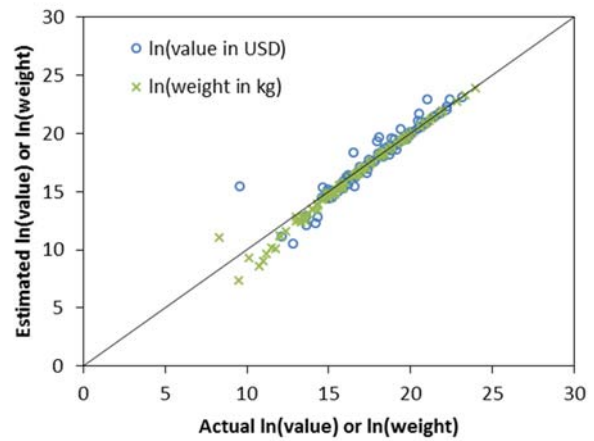
Trade Partner	Data Level	RMSE Values between Actual and Estimated Data			
		Sea		Air	
		Commodity Value	Commodity Weight	Commodity Value	Commodity Weight
China	HS-2	0.777	0.790	4.040	3.572
	HS-4	0.774	0.660	4.647	4.958
	HS-6	0.688	0.629	5.406	5.346
ASEAN	HS-2	0.704	0.594	2.054	2.633
	HS-4	0.794	0.515	4.800	4.770
	HS-6	0.823	0.526	10.041	9.994
EU-27	HS-2	0.688	0.538	1.392	1.601
	HS-4	1.090	0.709	3.287	3.795
	HS-6	1.132	0.765	4.014	4.268

Table 5.6 Model Effectiveness Estimation for USA Export Trade with Different Commodity Data Classification Level

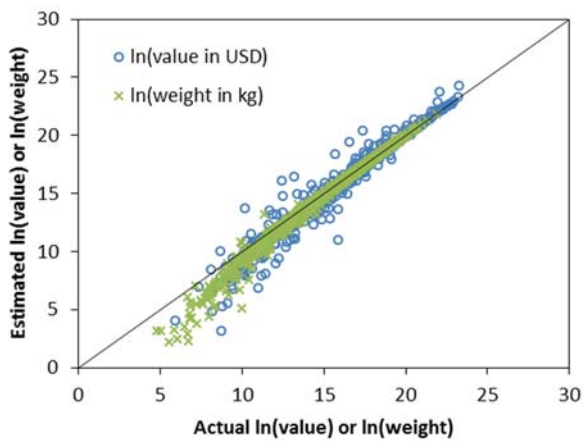
Trade Partner	Data Level	RMSE Values between Actual and Estimated Data			
		Sea		Air	
		Commodity Value	Commodity Weight	Commodity Value	Commodity Weight
China	HS-2	0.865	0.632	1.630	2.223
	HS-4	1.027	0.746	4.305	4.540
	HS-6	1.064	0.726	5.433	5.280
ASEAN	HS-2	0.513	0.567	1.705	2.270
	HS-4	0.501	0.516	4.452	4.328
	HS-6	0.622	0.650	5.328	4.843
EU-27	HS-2	0.538	0.447	1.421	2.041
	HS-4	0.940	0.672	4.017	4.065
	HS-6	0.961	0.713	5.104	4.768



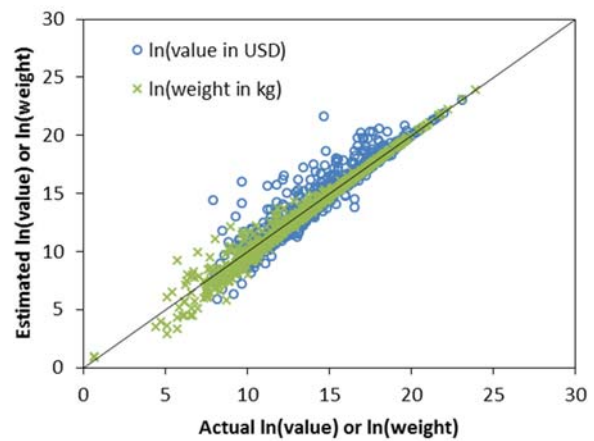
(a) Model developed for US Import from China at HS 2-digit data



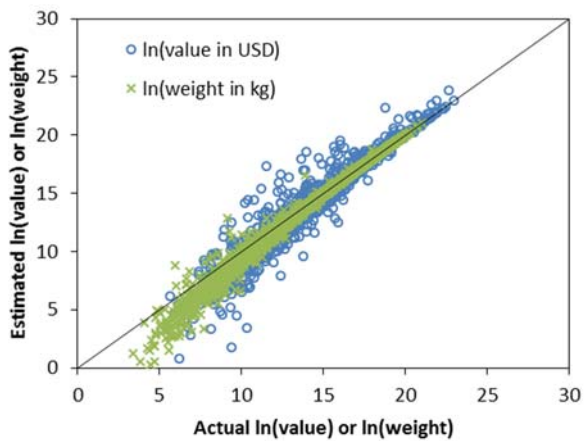
(d) Model developed for US Export to China at HS 2-digit data



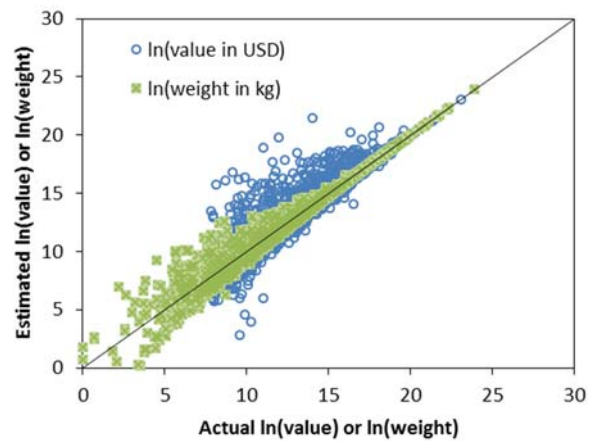
(b) Model developed for US Import from China at HS 4-digit data



(e) Model developed for US Export to China at HS 4-digit data



(c) Model developed for US Import from China at HS 6-digit data



(f) Model developed for US Export to China at HS 6-digit data

Figure 5.2 Comparison between Actual and Estimated Commodity Value and Weight on for Bilateral Commodity Trade Carried by Sea between USA and China

5.5 Comparison Analysis among Various Approaches in Developing Freight Mode Choice Model

After analysing the effects of choosing different commodity trade data classification in freight mode choice model development in Section 5.4, it can be observed that model developed using broader commodity data classification (i.e. HS 2-digit level) will be effective enough to determine the transport mode choice behaviour of goods in this study.

As introduced earlier in this Chapter, two different approaches, i.e. (1) binary probit model and (2) binary logit model are developed for all trade routes between the United States and other trading regions studied under this study. The models are calibrated and validated against the actual data reported in the USA Trade Online® database. The model effectiveness in their mode choice determinant ability are also examined.

5.5.1 Freight Mode Choice using Binary Probit Model

Coefficient estimates for the twelve discrete choice models over all the trade routes related to the United States are presented in Table 5.8 and 5.9. Their corresponding maximum log likelihoods and McFadden ρ^2 values are also listed in the same table. With air and sea modes are defined as 1 and 0 respectively, the coefficients shown in Table 5.7 and 5.8 are based on the probability of choosing air to carry the commodities (i.e. $Y = 1$).

It can be observed from the above tables that all mode variables have intuitively correct signs, same as those models developed in the previous section. The estimated parameters for the $\ln(\text{value})$ variable are positive, stating that higher the commodity value, higher the tendency for it to be transported by air. On the other hand, the predicted coefficients for the $\ln(\text{weight})$ variable are

negative, indicating that heavier the commodity weight, lower the tendency for it to be transported by air.

Table 5.7 Probit Model Estimation for US Import Trade

Trade Route	Estimated Parameters			n	Restricted Log likelihood	Log likelihood function	ρ^2
	Constant	ln (Value)	ln (Weight)				
Australia	1.644	0.694	-1.036	181	-125.457	-85.073	0.303
China	4.639	0.905	-1.334	191	-132.400	-44.800	0.662
Japan	1.629	1.055	-0.930	188	-130.312	-98.533	0.327
Korea	4.302	0.624	-1.082	183	-126.821	-79.292	0.409
ASEAN	4.014	0.942	-1.239	191	-132.400	-43.700	0.639
EU-27	3.293	0.394	-0.671	194	-134.471	-88.900	0.339

Table 5.8 Probit Model Estimation for US Export Trade

Trade Route	Estimated Parameters			n	Restricted Log likelihood	Log likelihood function	ρ^2
	Constant	ln (Value)	ln (Weight)				
Australia	3.365	-0.096	-0.729	193	-133.775	-105.616	0.286
China	2.729	0.380	-0.631	194	-134.471	-87.300	0.351
Japan	3.738	0.263	-0.457	193	-133.775	-107.206	0.162
Korea	3.052	0.666	-0.564	194	-134.471	-108.862	0.121
ASEAN	2.727	0.386	-0.684	191	-132.400	-93.300	0.615
EU-27	2.087	0.272	-0.478	194	-134.471	-104.200	0.225

The McFadden ρ^2 values for all the models range from 0.121 to 0.662. It may appear that the models may not perform at a very good fit but as it is considered to be acceptable when the predicted results are compare against the actual data. The predicted results are compared against the actual reported values by different measures as listed in Equation 3.65 – 3.68, and are presented in Table 5.9 and 5.10. It can be depicted that the mode choice model can effectively reflect the actual mode share between sea and air as the calculated errors are comparatively small. It can be observed that the model is exhibiting quite a good fit as the errors in comparing the predicted and actual reported commodity value and weight are not large. For example, the predicted commodity value and weight transported by sea for all trade routes are plotted

against those reported commodity value and weight, as shown in Figure 5.3 and 5.4. It shows that the plots are lying closely along the line of equality, meaning that the predicted value are matching closely to the actual value.

Table 5.9 Model Effectiveness Measures for USA Import Trade

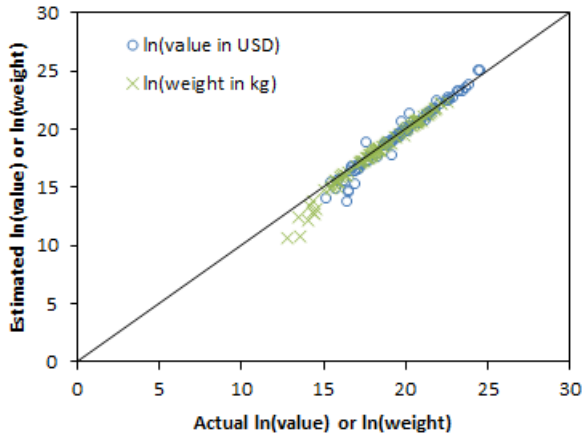
Trading Partners	USA Import Trade Transported by Sea			
	Errors in Commodity Value		Errors in Commodity Weight	
	RMSE	RMSPE	RMSE	RMSPE
Australia	2.2562	0.2176	1.5732	1.8484
China	1.6849	1.8422	2.1949	1.4607
Japan	1.3235	0.7883	1.6882	1.4548
South Korea	1.7973	0.1354	1.6441	1.5071
ASEAN	1.5910	1.8257	2.2711	1.4260
EU-27	1.9614	0.6095	2.0854	1.3012

Trading Partners	USA Import Trade Transported by Air			
	Errors in Commodity Value		Errors in Commodity Weight	
	RMSE	RMSPE	RMSE	RMSPE
Australia	1.7802	0.9458	3.4615	1.9868
China	2.8728	0.1625	3.7699	1.6850
Japan	2.0604	1.0981	3.3382	1.7230
South Korea	2.2160	1.3410	3.4825	1.4567
ASEAN	3.2743	1.2525	3.9297	1.8919
EU-27	1.7316	1.5824	2.9465	0.7398

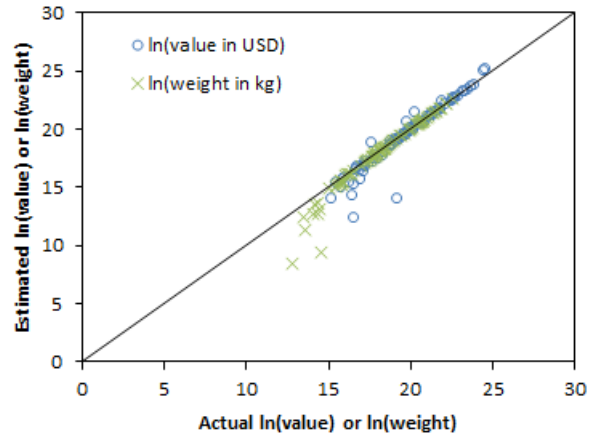
Table 5.10 Model Effectiveness Measures for USA Export Trade

Trading Partners	USA Import Trade Transported by Sea			
	Errors in Commodity Value		Errors in Commodity Weight	
	RMSE	RMSPE	RMSE	RMSPE
Australia	1.1257	0.7989	1.0454	0.0729
China	1.1211	0.4049	1.6553	0.0837
Japan	2.1669	1.4384	0.9150	1.4454
South Korea	1.4701	1.1949	0.7504	1.4066
ASEAN	2.3752	0.5846	1.2279	2.0041
EU-27	1.6947	0.9421	2.0987	0.6405

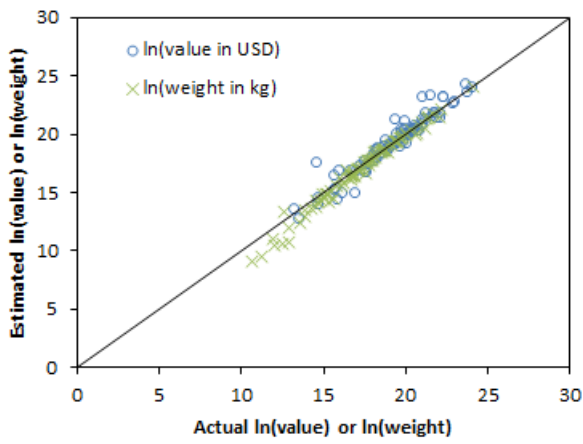
Trading Partners	USA Import Trade Transported by Air			
	Errors in Commodity Value		Errors in Commodity Weight	
	RMSE	RMSPE	RMSE	RMSPE
Australia	2.3698	1.3243	3.4047	1.2412
China	1.7099	0.4064	4.2149	1.8564
Japan	2.8042	0.3433	4.0738	0.7281
South Korea	2.1900	0.4425	2.8062	2.0659
ASEAN	2.2144	1.3434	2.6273	0.5431
EU-27	1.2854	1.3475	2.0028	1.5410



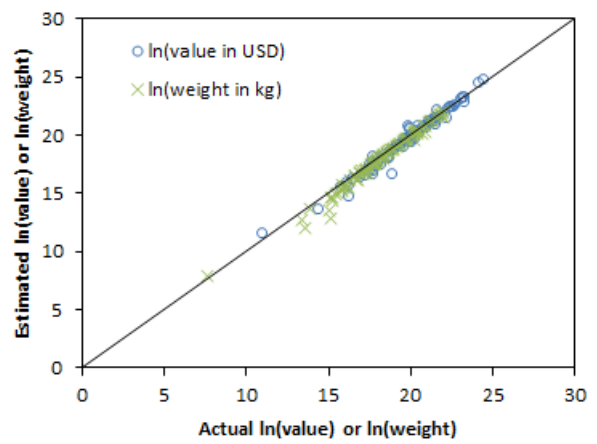
(a) Australia



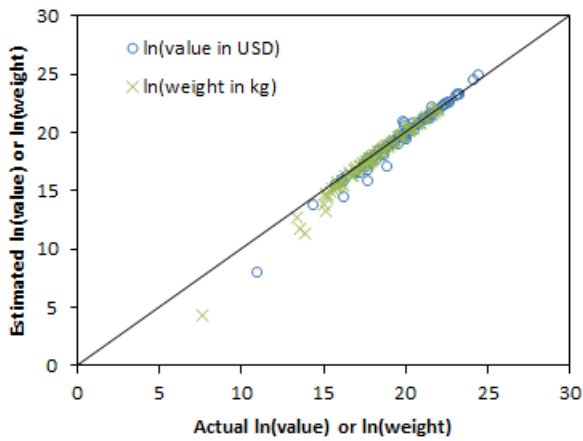
(b) China



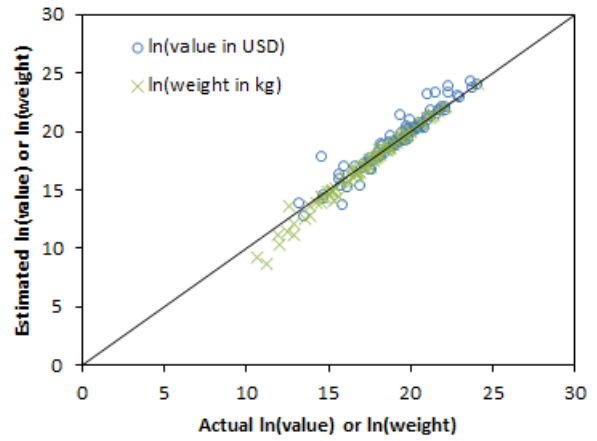
(c) Japan



(d) South Korea

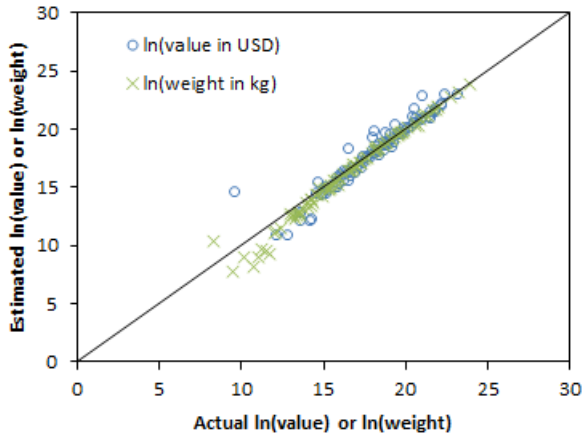


(e) ASEAN

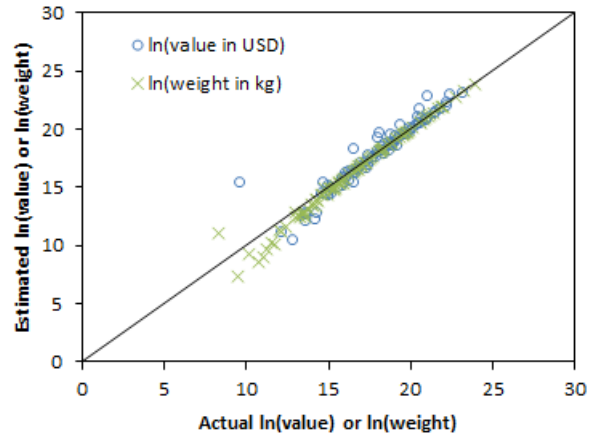


(f) EU-27

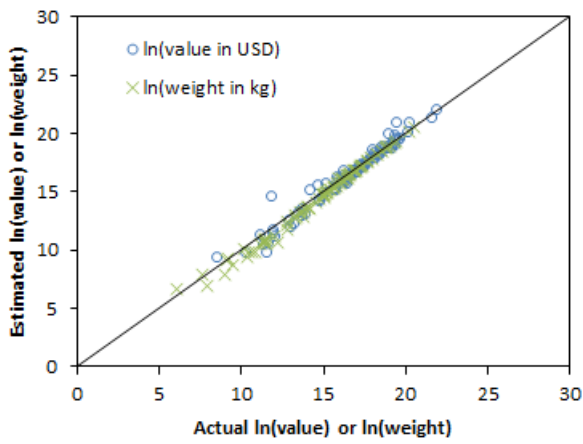
Figure 5.3 Comparison between Actual and Estimated Commodity Value and Weight for US Import Maritime Trade from its Trading Partners



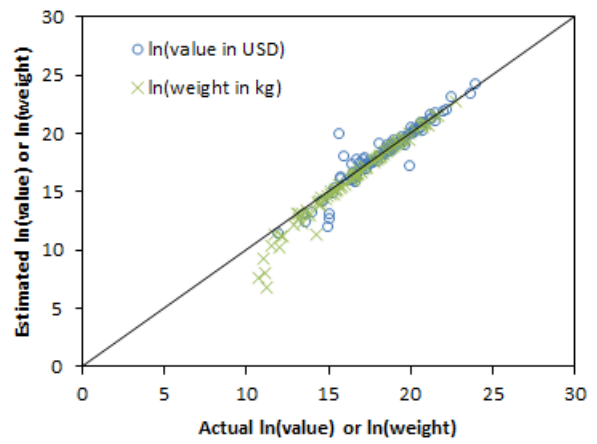
(a) Australia



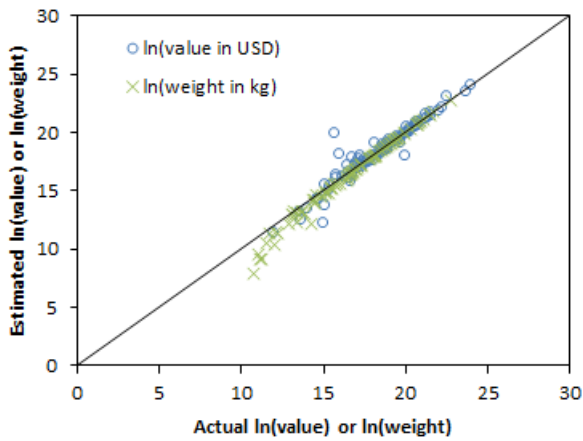
(b) China



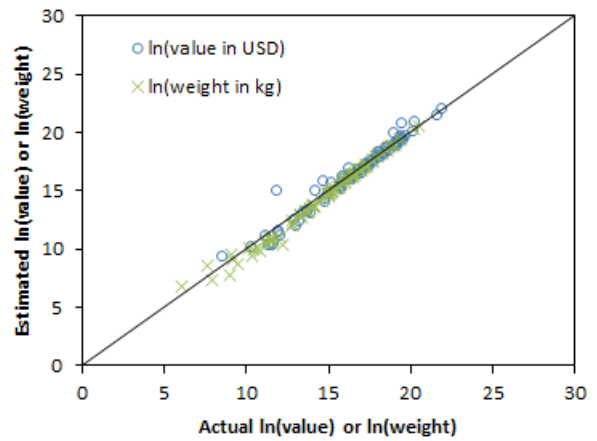
(c) Japan



(d) South Korea



(e) ASEAN



(f) EU-27

Figure 5.4 Comparison between Actual and Estimated Commodity Value and Weight for US Export Maritime Trade from its Trading Partners

5.5.2 Freight Mode Choice using Binary Logit Model

Twelve binary logit models over all the trade routes related to the United States are developed based on the same data set and the resulted parameter values are presented in Tables 5.11 and 5.12. With air and sea modes are defined as 1 and 0 respectively, the coefficients shown in Tables 5.11 and 5.12 are based on the probability of choosing air to carry the commodities (i.e. $Y = 1$).

Table 5.11 Logit Model Estimation for US Import Trade

Trade Route	Estimated Parameters			n	Restricted Log likelihood	Log likelihood function	ρ^2
	Constant	ln (Value)	ln (Weight)				
ASEAN	2.033	0.680	-1.022	181	-125.457	-84.671	0.325
Australia	7.882	1.776	-2.550	191	-132.400	-44.176	0.670
EU-27	1.420	0.657	-0.917	188	-130.312	-99.032	0.240
China	4.124	0.653	-1.107	183	-126.821	-79.754	0.371
Japan	6.270	1.301	-1.977	191	-132.400	-51.079	0.610
Korea	5.873	0.661	-1.147	194	-134.471	-88.044	0.345

Table 5.12 Logit Model Estimation for US Export Trade

Trade Route	Estimated Parameters			n	Restricted Log likelihood	Log likelihood function	ρ^2
	Constant	ln (Value)	ln (Weight)				
ASEAN	3.557	0.399	-0.735	193	-133.775	-105.365	0.212
Australia	5.544	0.673	-1.165	194	-134.471	-84.680	0.367
EU	3.702	0.372	-0.686	193	-133.775	-107.160	0.199
China	2.886	0.358	-0.625	194	-134.471	-109.241	0.188
Japan	3.329	0.551	-0.868	191	-132.400	-100.077	0.256
Korea	6.210	0.604	-1.085	194	-134.471	-94.188	0.300

Same as the binary probit models, all the models possesses intuitively correct signs. The estimated parameters for the ln(value) variable are positive, stating that the higher the value of a commodity, the higher the tendency of it will be transported by air. Furthermore, the predicted coefficients for the ln(weight) variable are negative and this indicates that the heavier the commodity weight, the lower the tendency that it will be transported by air.

However, the values of coefficients differ from that of those probit models due to different underlying assumptions on the disturbance term among them.

Nevertheless, the McFadden ρ^2 values for all the models range from 0.188 to 0.670, which are still considered to be acceptable when comparing against the actual data. The predicted results are compared against the actual reported values by different measures as listed in Equation 3.65 to 3.68, and are presented in Tables 5.13 and 5.14.

It can be observed that the model is exhibiting quite a good fit as the errors in comparing the predicted and actual reported commodity value and weight are not large. Similar to the previous approach, it can be observed that the mode choice models can effectively reflect the actual mode share between sea and air as the calculated errors are comparatively small. However, the errors in comparing the predicted and actual reported commodity weight for goods transported by air are relatively larger than those carried by sea. It may be due to that the fluctuation in value-weight ratio of commodity carried by air is comparatively higher, thus leading to this relatively higher error. Nonetheless, the errors are still considered to be minimal and the models are considered to be satisfactory in estimating the mode choice behaviour of commodities.

As an illustration, the predicted commodity value and weight transported by sea for all trade routes are shown in Figure 5.5 and 5.6. It shows that the plots are lying closely along the 45 degree line, thus explaining that the predicted value are matching closely to the actual reported value. Besides, interesting behaviours can be observed from the outliers that commodity value is being overestimated while the commodity weight is being underestimated.

Commodity differentiation should be taken into account to minimise the effect of combining heterogeneous products under the same model.

Table 5.13 Model Effectiveness Measures for USA Import Trade

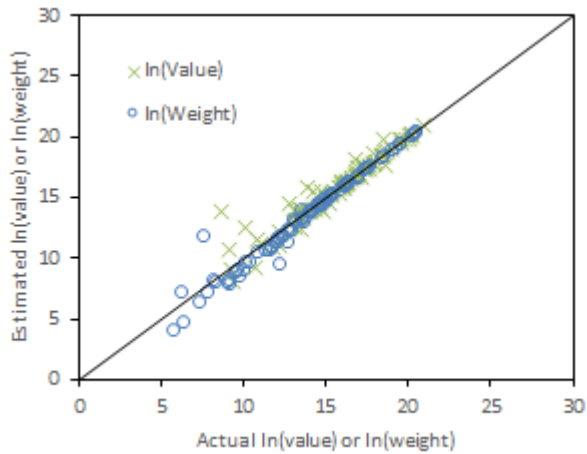
Trading Partners	USA Import Trade Transported by Sea			
	Errors in Commodity Value		Errors in Commodity Weight	
	RMSE	RMSPE	RMSE	RMSPE
Australia	0.8142	0.0796	0.7032	0.0844
China	0.7669	0.0432	0.9659	0.0787
Japan	0.5155	0.0353	0.6132	0.0598
South Korea	0.6223	0.0464	0.5851	0.0661
ASEAN	0.5970	0.0357	0.7981	0.0610
EU-27	0.5894	0.0335	0.6554	0.0492

Trading Partners	USA Import Trade Transported by Air			
	Errors in Commodity Value		Errors in Commodity Weight	
	RMSE	RMSPE	RMSE	RMSPE
Australia	1.7232	0.1678	2.8115	0.5478
China	2.0978	0.1445	2.4919	0.9880
Japan	1.4014	0.1171	2.3282	0.3260
South Korea	1.9340	0.1860	2.8815	0.6417
ASEAN	1.8183	0.1385	2.5307	0.3209
EU-27	1.2056	0.0754	1.8295	0.1438

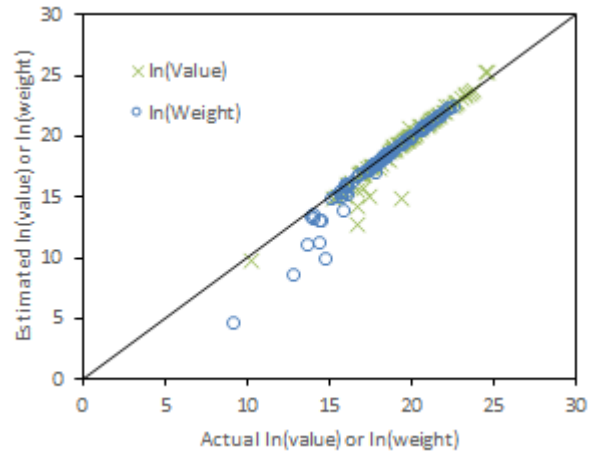
Table 5.14 Model Effectiveness Measures for USA Export Trade

Trading Partners	USA Import Trade Transported by Sea			
	Errors in Commodity Value		Errors in Commodity Weight	
	RMSE	RMSPE	RMSE	RMSPE
Australia	0.6567	0.0599	0.5384	0.0519
China	0.6901	0.0499	0.7853	0.0677
Japan	0.7099	0.0514	0.5870	0.0684
South Korea	0.7571	0.0609	0.6094	0.0616
ASEAN	0.6912	0.0536	0.6389	0.0561
EU-27	0.6087	0.0391	0.6907	0.0515

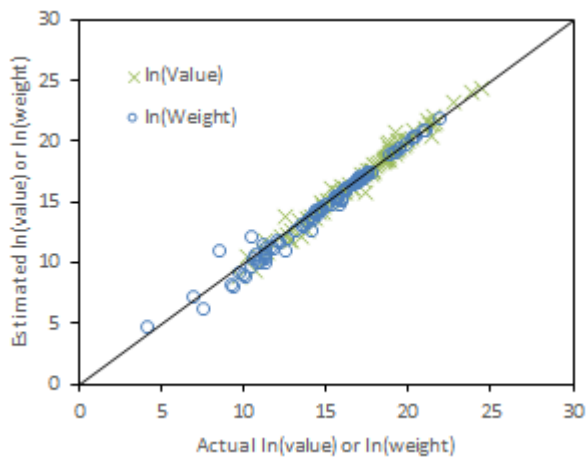
Trading Partners	USA Import Trade Transported by Air			
	Errors in Commodity Value		Errors in Commodity Weight	
	RMSE	RMSPE	RMSE	RMSPE
Australia	1.5378	0.1333	2.1737	0.2232
China	1.5539	0.1264	2.3059	0.2294
Japan	1.6332	0.1333	2.3738	0.1981
South Korea	1.7620	0.1395	2.5982	0.2239
ASEAN	1.4494	0.1094	2.3203	0.1901
EU-27	1.1254	0.0745	1.6058	0.1230



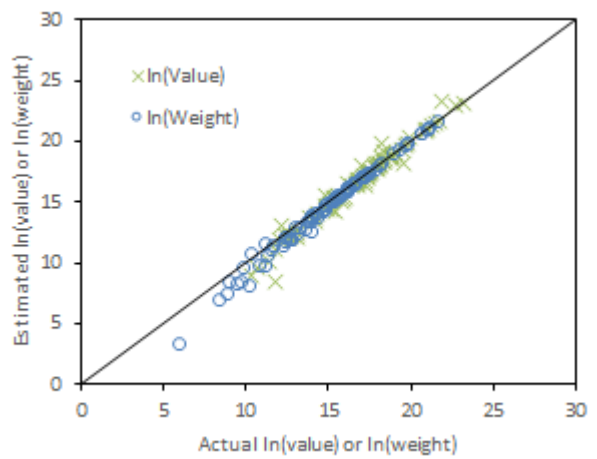
(a) Australia



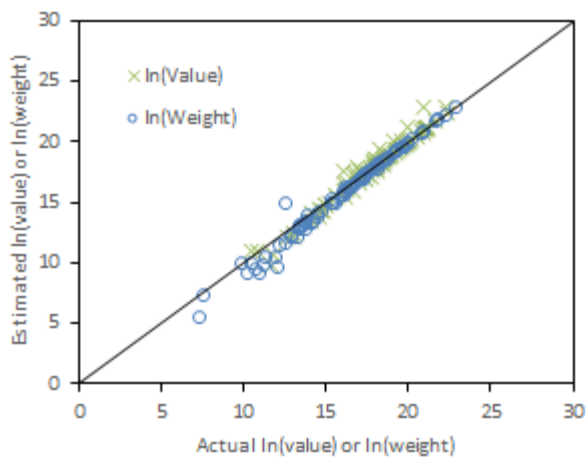
(b) China



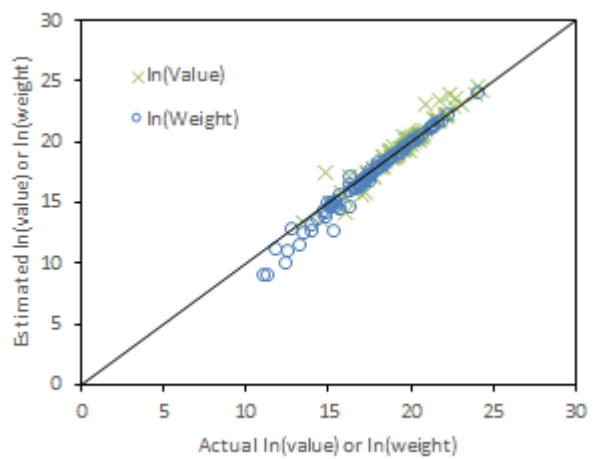
(c) Japan



(d) South Korea

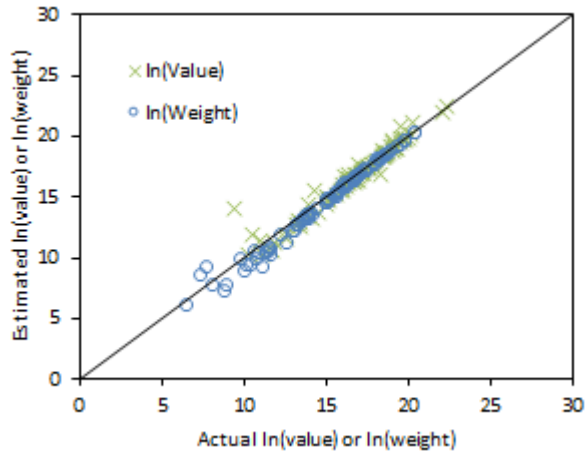


(e) ASEAN

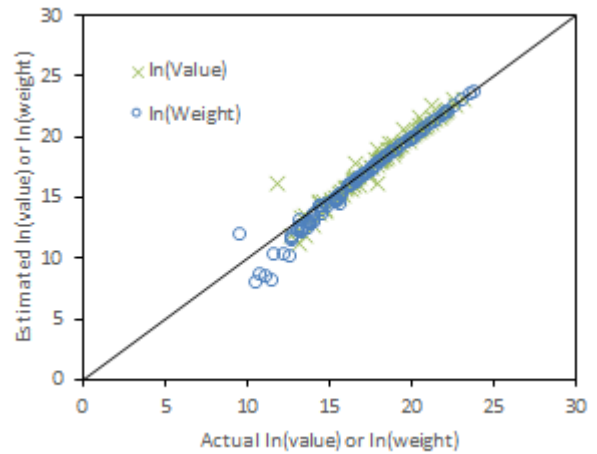


(f) EU-27

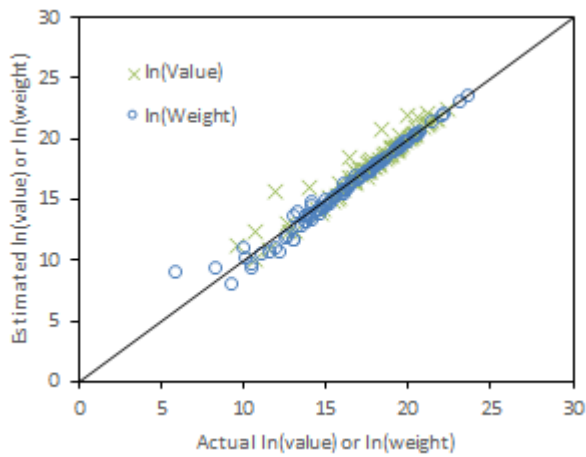
Figure 5.5 Comparison between Actual and Estimated Commodity Value and Weight for US Import Maritime Trade from its Trading Partners



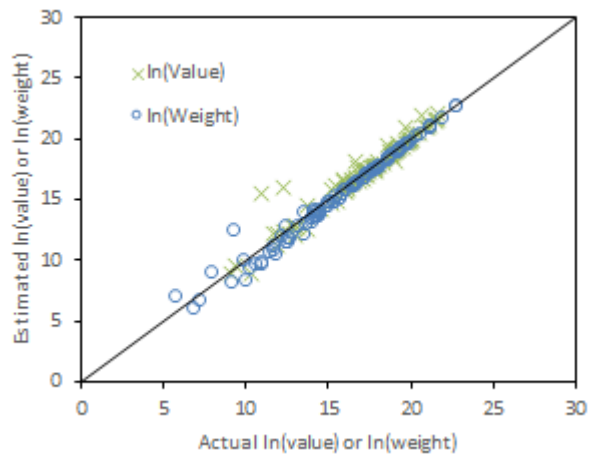
(a) Australia



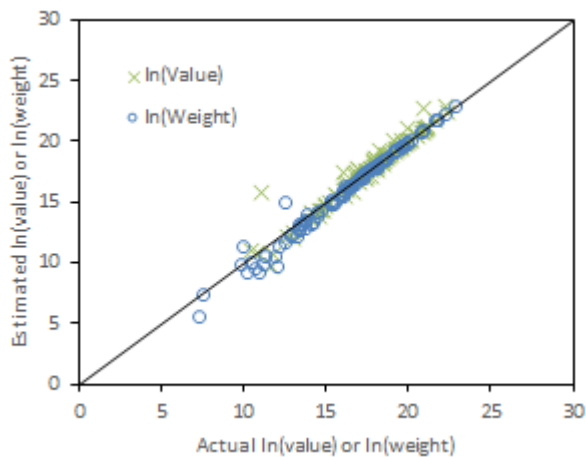
(b) China



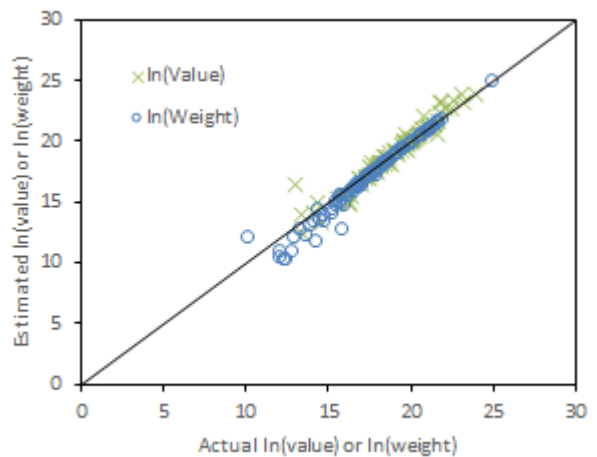
(c) Japan



(d) South Korea



(e) ASEAN



(f) EU-27

Figure 5.6 Comparison between Actual and Estimated Commodity Value and Weight for US Export Maritime Trade from its Trading Partners

5.6 Insights from the Model Results

In this study, two different mode choice models were developed. Binary probit models and binary logit models were developed to examine the transport mode share between sea and air for the bilateral trade between the United States and other trading partners. In general, both logit and probit models work equally well in determining the share of mode between sea and air as the errors in comparing the predicted values and actual observations are comparatively small. For all the trade routes being examined, the transport mode choice model developed presented a comparatively good fit from the estimated results to the observations. However, when comparing the model effectiveness between these two types of models, it could be observed that the errors calculated from the logit models are slightly higher than that of the binary models, meaning that probit models could possibly perform better than logit models along these trade routes. In view of this, binary probit models will be employed to determine the mode choice behaviour of commodity in the later chapters.

5.7 Summary of Findings

This chapter presents the second stage of the entire global container demand forecasting framework. Transportation analysis techniques are deployed in the development of this freight mode choice module. In this module, discrete choice models are employed to determine the amount of commodities carried by maritime transport between countries and regions.

At the strategic planning level, only limited trade commodity characteristics such as value and weight of commodity are available and the commodity value-weight ratio becomes a thumb of rule in characterising the type of transport mode in which a commodity is carried.

An analysis to understand the impact on mode choice model development under various level commodity data classification level was performed. Eighteen mode choice models which were specified for six trading routes and three levels of commodity data classification were developed. It was observed from the model results that the higher the commodity value, the higher the tendency of the commodity to be transported by air. It was observed that there is no significant improvement when developing freight mode choice model using finer commodity classification. In this study, it was found that freight mode choice models developed at HS 2-digit level is sufficient for international freight mode choice.

Two types of discrete choice models, i.e. the binary probit model, and the binary logit model were developed to investigate freight mode choice for inter-continental trade in which only sea or air transport mode is available. Binary probit models and binary logit models were developed to estimate the transport mode share between sea and air for the bilateral trade between the United States and other trading partners. Twelve models were developed for each approaches to estimate the mode share behaviour along various trade routes. All the developed models has a good fit with actual data which means that freight mode choice behaviours can be well-modelled.

It should be noted that only two transportation modes, i.e. sea and air, are considered in this study. In other words, it is assumed that commodities traded between regions are either carried by vessels or planes. However, a conventional transportation mode, i.e. by land, is not addressed in this study. Land mode is only made available wherever there is land connection between two countries/regions. In this study, countries and regions are generally

dispersed in nature, thus an assumption is made where land mode is neglected. For future study and more holistic application, land mode and other transportation modes should be included in the mode choice study.

CHAPTER 6 COMMODITY VALUE-WEIGHT-CONTAINER TRANSFORMATION

In the proposed integrated trade demand forecasting framework as presented in Chapter 3, commodity trade between regions is predicted via the first module (as discussed in Chapter 4) while the amount of commodity (in monetary value) carried by maritime transport is determined via the second module (as discussed in Chapter 5). However, maritime commodity trade (expressed in terms of monetary value) could not represent the physical nature of transportation. As such, there is a need to relate the monetary nature of international trade to the physical nature of international freight transportation. Therefore, the last module, i.e. the commodity value-weight transformation, which aims to transform the amount of maritime commodity trade (in monetary value) into physical quantities (in TEU) is described in this Chapter.

First, an introduction on the two-step commodity value-to-container conversion, i.e. (i) commodity value-to-weight conversion, and (ii) commodity weight-to-container conversion, is presented. Commodity data used are described. An analysis on commodity value-weight characteristics is described. Then statistical models are developed to determine value-tonnage ratios trends in different international trade routes, followed by presentation on weight-container ratio analysis. Lastly, implications from this module are summarised.

6.1 Introduction

As discussed in Chapter 3, this chapter presents the last stage of the entire forecasting framework. From the second module of the proposed framework as shown in Figure 3.1, the amount of commodity flow between countries/regions that are being transported through maritime transport can be obtained. However,

this commodity flow is expressed in monetary value. With the ultimate goal of this framework to predict the number of container trade flow between countries/regions in mind, this chapter therefore attempts to develop a conversion algorithm that is capable of estimating commodity weight and number of containers from commodity value obtained from Chapter 4 and 5.

In most trade demand forecasting studies, researchers were only focused on forecasting the monetary trade flow between regions and has neglected the importance of physical unit of goods in transport system (Du and Kockleman, 2012; Sharma and Kallummal, 2012; Strutt, 2008). From a transportation perspective, global freight flow is not completely represented by monetary value only as it does not account for the physical aspect of international trade. Despite its importance, the use of physical unit such as weight, in addition to its monetary value, to represent physical commodity trade flow has always been limited (United Nations, 2009).

In fact, recent container trade demand forecasting studies have also reported a problem in the transformation of freight trade in monetary value into some physical unit (for example, the number of TEUs). Many researchers have simply assumed a constant value-weight ratio to convert trade value into trade weight and use some other conversion factor(s) to further transform weight into TEU (Cheong and Cho, 2012; Lee, *et al.*, 2011; Markianidou, 2012; Shibasaki and Watanabe, 2011). It is intuitive that value per unit weight for a particular commodity should vary with time and across different trade routes. To date, there has been limited attention on deriving useful relationships between value and weight for traded commodities.

As introduced previously in Section 3.5, a two-step conversion procedure (i.e. commodity value-to-weight conversion and commodity weight-to-container conversion) was proposed to achieve this goal in this module. In the first step, time series models would be employed to derive the relationship between commodity value and weight and to predict their future trend. In the second step, commodity weight-to-container conversion is estimated based on information from literature and opinions from shipping industry experts via interviews.

6.2 Commodity Data Description and Geographical Scope Definition

The commodity value and weight data used in this chapter was obtained from the USA Trade® Online database (United States Census Bureau, 2014) and they also reported commodity value and weight data by transport mode as well. However, the major drawback of this database is that it only reports trade flow related to the United States, but not trade flow among countries outside the United States. Therefore, only trade routes in which either end is bounded by the United States will be examined here due to the lack of comprehensive database in global context. In this study, trade routes between US and other countries / regions in this study are analysed. The values and weights of commodities transported during 2007 to 2014 are extracted from the USA Trade® Online database. This period is chosen because it recapitulates changes during economic cycle (i.e. the global economic bloom in 2007, the global financial crisis in 2008-2009, and the economic recovery from 2010). Table 6.1 shows the 12 trade routes between USA and her trading partners analysed in this Chapter.

Table 6.1 Trade Route Analysed in this Chapter

	Trade Routes	Exporter Region (Origin)	Importer Region (Destination)
1	USA → AUS	United States of America (USA)	Australia
2	AUS → USA	Australia	United States of America (USA)
3	USA → CHN	United States of America (USA)	China
4	CHN → USA	China	United States of America (USA)
5	USA → JPN	United States of America (USA)	Japan
6	JPN → USA	Japan	United States of America (USA)
7	USA → KOR	United States of America (USA)	South Korea
8	KOR → USA	South Korea	United States of America (USA)
9	USA → EUR	United States of America (USA)	European Union 27
10	EUR → USA	European Union 27	United States of America (USA)
11	USA → ASN	United States of America (USA)	ASEAN
12	ASN → USA	ASEAN	United States of America (USA)

6.3 Analysis on Commodity Value and Weight Characteristic

In order to develop the commodity value-to-weight conversion function, it will be useful to investigate and understand the unique commodity value and weight characteristics in international trade. The top 10 commodities (in terms of value and weight) which U.S. traded with other countries were selected to be discussed in this section. Tables 6.2 and 6.3 showed the value and weight of selected commodity in the U.S. foreign trade from 2007 to 2014.

It is noted from Table 6.2 that the commodity share in U.S. trade have remained the same over the years. During the period between 2007 and 2014, the top U.S. import (in terms of both value and weight) from the world among the selected commodities is “Nuclear machinery & parts” with a value of over US\$324 billion and a weight of over 14 million tons as of 2014. However, it should be noted that even though it was essentially the top U.S. imports over the period, there was a drop in the import in 2009 after the 2008 global financial crisis. A similar situation was observed for the U.S. exports where the top U.S. exports (in terms of value) from the world was also “Nuclear reactors and parts” with a value over US\$219 billion and the top export commodity (in terms of

weight) was “cereals” with a weight of over 77 million ton in 2014, as shown in Table 6.3. A slight drop in both value and weight for these commodities were also observed in 2009 due to the financial crisis.

Table 6.2 Import Value and Weight for Selected Commodities for USA

HS Code	Commodity	VALUE (BILLION USD)							
		2007	2008	2009	2010	2011	2012	2013	2014
22	Beverages, spirits and vinegar	16.96	17.12	14.74	15.74	17.86	19.82	20.21	20.32
84	Nuclear machinery	249.93	249.10	203.06	249.80	287.64	308.09	304.83	324.31
85	Electric machinery	248.87	251.59	214.10	258.24	278.58	291.56	298.48	314.77
87	Vehicles & parts	214.27	194.99	131.30	182.79	202.62	240.00	249.02	261.05
95	Toys & accessories	31.06	31.82	27.26	29.77	27.75	27.03	26.65	27.58

HS Code	Commodity	WEIGHT (MILLION TON)							
		2007	2008	2009	2010	2011	2012	2013	2014
22	Beverages, spirits and vinegar	8.38	8.64	6.57	6.44	7.13	8.41	7.86	7.13
84	Nuclear machinery	11.96	11.43	8.19	9.86	11.54	12.37	11.90	13.18
85	Electric machinery	7.85	7.48	6.13	7.07	7.30	7.60	7.46	7.89
87	Vehicles & parts	12.21	11.16	7.39	9.61	10.39	11.82	11.73	12.43
95	Toys & accessories	3.91	3.57	2.86	3.33	2.97	2.87	2.82	2.90

Table 6.3 Export Value and Weight for Selected Commodities for USA

HS Code	Commodity	VALUE (BILLION USD)							
		2007	2008	2009	2010	2011	2012	2013	2014
10	Cereals	21.10	28.91	17.38	20.04	28.35	20.62	20.30	22.85
12	Oil seeds etc.	12.66	18.60	19.53	21.96	21.23	29.69	26.96	28.86
47	Wood pulp etc.	7.07	7.89	6.80	8.86	10.10	9.31	8.97	8.97
84	Nuclear machinery	179.29	190.63	153.16	182.90	205.83	215.18	213.48	219.77
87	Vehicles & parts	107.21	111.70	73.67	99.15	120.01	133.08	134.08	135.97

HS Code	Commodity	WEIGHT (MILLION TON)							
		2007	2008	2009	2010	2011	2012	2013	2014
10	Cereals	89.15	81.92	68.20	77.18	76.06	54.38	56.59	77.28
12	Oil seeds etc.	31.57	35.35	42.90	44.82	37.05	48.42	44.48	53.60
47	Wood pulp etc.	20.48	20.36	22.66	22.70	26.52	25.36	23.93	23.75
84	Nuclear machinery	4.97	5.86	4.15	5.00	5.50	5.44	5.04	4.71
87	Vehicles & parts	4.46	5.51	3.52	4.39	5.43	5.95	5.60	5.30

When looking into the percentage share of these selected commodities over the total U.S. foreign trade as illustrated in Table 6.4 and 6.5, it could be observed that the percentage share in total traded value behaved differently from the percentage share in total traded weight. From Table 6.4, these commodities

constitute to approximately 35% of the total U.S. imports (in terms of value) but only slightly around 5% of the total U.S. imports (in terms of weight). In particular, the commodity “Nuclear machinery & parts” is among the highest value share but only occupied around 1% in the total weight of U.S. imported commodity, meaning that this product may possibly possess a high unit value. On the other hand, when looking into the percentage of these selected commodities over the total U.S. export trade as shown in Table 6.5, similar phenomenon can be observed. However, interesting facts that though “Cereals” only constitutes around 1.5% of the total U.S. export in terms of value, but it represents over 12% of the total U.S. export in terms of weight, meaning that this product may possibly possess a relatively low unit value. The unit value of commodity shall be studied more in detail in Section 6.4. Nevertheless, it could be observed that trade for all commodities (in terms of both value and weight) are growing since 2009 which is indicative that global trade has improved after the global recession.

After investigating the general growth trend of U.S. commodity trade (in terms of value and weight), it could be useful to explore more information that can be observed from the commodity value and weight data, such as the transportation mode share, and the variation of commodity value-weight ratio along different trade routes. This information is of particular importance in formulating the commodity value-to-weight conversion function, i.e. whether a single function would be able to convert commodity value to weight without taking into account transportation mode and trade partners, or individual function has to be developed with consideration in transportation mode and trade partners. In the following sub-sections, the commodity value-weight

ratios will be examined according to different transportation modes and also along various trade routes.

Table 6.4 Commodity Share by Value and Weight for USA Import Trade

HS Code	Commodity	VALUE SHARE							
		2007	2008	2009	2010	2011	2012	2013	2014
22	Beverages, spirits and vinegar	0.87%	0.81%	0.95%	0.82%	0.81%	0.87%	0.89%	0.87%
84	Nuclear machinery	12.77%	11.84%	13.02%	13.05%	13.03%	13.53%	13.44%	13.81%
85	Electric machinery	12.72%	11.96%	13.73%	13.49%	12.62%	12.81%	13.16%	13.41%
87	Vehicles & parts	10.95%	9.27%	8.42%	9.55%	9.18%	10.54%	10.98%	11.12%
95	Toys & accessories	1.59%	1.51%	1.75%	1.56%	1.26%	1.19%	1.17%	1.17%

HS Code	Commodity	WEIGHT SHARE							
		2007	2008	2009	2010	2011	2012	2013	2014
22	Beverages, spirits and vinegar	1.25%	1.28%	1.09%	1.25%	1.49%	1.71%	1.76%	1.94%
84	Nuclear machinery	0.82%	0.83%	0.81%	0.90%	0.94%	1.05%	1.10%	1.16%
85	Electric machinery	1.28%	1.25%	0.98%	1.22%	1.34%	1.63%	1.73%	1.84%
87	Vehicles & parts	0.41%	0.40%	0.38%	0.42%	0.38%	0.40%	0.42%	0.43%
95	Toys & accessories	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Table 6.5 Commodity Share by Value and Weight for USA Export Trade

HS Code	Commodity	VALUE SHARE							
		2007	2008	2009	2010	2011	2012	2013	2014
10	Cereals	1.84%	2.25%	1.65%	1.57%	1.91%	1.33%	1.29%	1.41%
12	Oil seeds etc.	1.10%	1.44%	1.85%	1.72%	1.43%	1.92%	1.71%	1.78%
47	Wood pulp etc.	0.62%	0.61%	0.64%	0.69%	0.68%	0.60%	0.57%	0.55%
84	Nuclear machinery	15.62%	14.81%	14.50%	14.31%	13.88%	13.92%	13.52%	13.56%
87	Vehicles & parts	9.34%	8.68%	6.98%	7.76%	8.10%	8.61%	8.49%	8.39%

HS Code	Commodity	WEIGHT SHARE							
		2007	2008	2009	2010	2011	2012	2013	2014
10	Cereals	20.76%	16.80%	14.99%	14.69%	13.18%	9.43%	9.62%	12.54%
12	Oil seeds etc.	7.35%	7.25%	9.43%	8.53%	6.42%	8.40%	7.56%	8.69%
47	Wood pulp etc.	4.77%	4.17%	4.98%	4.32%	4.60%	4.40%	4.07%	3.85%
84	Nuclear machinery	1.16%	1.20%	0.91%	0.95%	0.95%	0.94%	0.86%	0.76%
87	Vehicles & parts	1.04%	1.13%	0.77%	0.84%	0.94%	1.03%	0.95%	0.86%

6.3.1 Commodity Transport Mode Share in USA Foreign Trade

After investigating the commodity value and weight properties along time, the percentage of goods carried by various transport modes will be another interesting area to be explored. Tables 6.6 and 6.7 show the percentage of goods (in terms of value) carried by sea between USA and her trading partners over

the period from 2007 to 2014. It could be observed that the transport mode share per trade route of each commodity group is relatively consistent throughout the entire period. Changes in mode share is mostly within the 10% range, meaning that shippers are quite used to employ the transport mean which the goods were used to carry by.

When comparing the transport mode share of same commodity but along various import trading routes as shown in Table 6.6, it appears that the transport mode share of certain commodity group tends to fluctuate quite a lot across trade routes while some of them remains quite stable. For instance, over 80% of “Toys & accessories” is carried by sea into USA from China, South Korea and ASEAN while around 50% of them is carried by sea from Australia and EU-27, and less than 40% of them is carried via sea mode from Japan. However, when considering commodity group “Beverages, spirits & vinegars”, over 95% of them is imported from all countries by sea. It could be noticed that the transport mode share of the different commodity groups behaves differently along various import trade routes, depending the origin countries and also the nature of products.

Table 6.6 Transport Mode Share for USA Import by Sea

HS Code	Commodity	Australia							
		2007	2008	2009	2010	2011	2012	2013	2014
22	Beverages, spirits and vinegar	99.82%	99.85%	99.87%	99.85%	98.95%	98.39%	99.06%	99.10%
84	Nuclear machinery	64.42%	64.13%	61.58%	57.77%	60.45%	63.69%	61.50%	65.61%
85	Electric machinery	28.00%	24.37%	18.50%	20.20%	24.26%	26.84%	28.46%	24.89%
87	Vehicles & parts	84.12%	97.99%	90.45%	83.58%	86.83%	84.57%	83.41%	84.27%
95	Toys & accessories	61.50%	67.93%	57.75%	55.72%	55.82%	67.38%	67.02%	59.54%

HS Code	Commodity	China							
		2007	2008	2009	2010	2011	2012	2013	2014
22	Beverages, spirits and vinegar	99.59%	99.63%	99.99%	99.87%	98.78%	98.53%	98.83%	98.75%
84	Nuclear machinery	55.15%	54.47%	49.82%	48.83%	47.57%	46.86%	50.93%	49.06%
85	Electric machinery	54.68%	56.74%	52.12%	49.13%	49.02%	44.50%	43.11%	41.83%
87	Vehicles & parts	94.76%	93.33%	91.21%	88.83%	85.60%	82.76%	83.06%	84.93%
95	Toys & accessories	93.01%	93.69%	94.69%	92.73%	92.86%	89.67%	86.32%	82.38%

HS Code	Commodity	Japan							
		2007	2008	2009	2010	2011	2012	2013	2014
22	Beverages, spirits and vinegar	99.31%	99.54%	99.47%	99.66%	99.28%	99.64%	99.81%	99.50%
84	Nuclear machinery	72.96%	75.46%	70.60%	70.55%	72.14%	75.70%	74.57%	73.04%
85	Electric machinery	38.32%	40.12%	40.66%	36.80%	39.72%	49.77%	50.40%	49.83%
87	Vehicles & parts	99.06%	99.25%	99.09%	99.11%	99.04%	98.92%	98.88%	98.26%
95	Toys & accessories	29.64%	14.70%	12.54%	30.90%	17.47%	22.49%	39.37%	42.24%

HS Code	Commodity	South Korea							
		2007	2008	2009	2010	2011	2012	2013	2014
22	Beverages, spirits and vinegar	99.40%	99.96%	99.71%	99.75%	99.66%	98.64%	98.37%	97.89%
84	Nuclear machinery	60.67%	68.26%	69.40%	60.44%	67.43%	73.58%	68.20%	64.89%
85	Electric machinery	21.71%	17.11%	15.75%	17.91%	20.19%	30.99%	26.14%	25.45%
87	Vehicles & parts	99.13%	98.51%	98.36%	98.32%	97.74%	97.70%	97.93%	97.85%
95	Toys & accessories	83.31%	83.24%	86.56%	84.85%	85.44%	81.95%	82.02%	79.78%

HS Code	Commodity	ASEAN							
		2007	2008	2009	2010	2011	2012	2013	2014
22	Beverages, spirits and vinegar	99.94%	99.90%	99.12%	98.98%	99.73%	99.74%	99.72%	99.88%
84	Nuclear machinery	20.56%	24.66%	28.64%	27.96%	34.46%	34.98%	32.26%	36.65%
85	Electric machinery	24.59%	26.54%	28.89%	25.90%	27.16%	32.12%	28.98%	24.98%
87	Vehicles & parts	94.05%	93.76%	94.72%	93.40%	92.56%	91.26%	91.40%	92.92%
95	Toys & accessories	90.51%	89.63%	90.30%	90.49%	93.14%	91.04%	91.03%	89.25%

HS Code	Commodity	EU-27							
		2007	2008	2009	2010	2011	2012	2013	2014
22	Beverages, spirits and vinegar	96.88%	96.93%	97.44%	97.40%	97.88%	98.32%	98.73%	98.50%
84	Nuclear machinery	47.44%	48.65%	45.64%	44.49%	46.73%	50.36%	50.15%	49.40%
85	Electric machinery	35.17%	37.09%	37.06%	29.47%	31.86%	33.89%	31.76%	31.94%
87	Vehicles & parts	93.12%	92.73%	91.87%	91.74%	91.34%	92.92%	92.65%	92.85%
95	Toys & accessories	57.09%	58.45%	52.90%	44.33%	47.69%	58.33%	59.14%	64.52%

However, when observing the transport mode share phenomenon in the USA export trade, transport mode share of the same commodity group was found to be steady across various trading partners. For instance, it can be observed from Table 6.7 that almost all of the “Cereals” commodity are exported from USA to all her trading partners by sea and the percentage fluctuation in mode share is minimal, meaning that constant choice of transport mode may be deployed under same commodity group for export to all destinations.

After investigating the commodity transport mode share of the U.S. foreign trade, the next step is to investigate the value-weight ratio trend for transport mode along various trade routes.

Table 6.7 Transport Mode Share for USA Export by Sea

HS Code	Commodity	Australia							
		2007	2008	2009	2010	2011	2012	2013	2014
10	Cereals	99.68%	99.92%	99.58%	99.97%	99.97%	100.00%	99.41%	98.84%
12	Oil seeds etc.	73.53%	50.72%	45.92%	43.98%	42.58%	36.26%	57.79%	49.52%
47	Wood pulp etc.	99.91%	99.96%	98.95%	99.44%	100.00%	99.96%	100.00%	100.00%
84	Nuclear machinery	64.37%	68.19%	66.35%	68.24%	73.79%	75.48%	73.71%	71.14%
87	Vehicles & parts	96.29%	96.32%	95.75%	96.44%	97.12%	98.03%	97.24%	96.66%

HS Code	Commodity	China							
		2007	2008	2009	2010	2011	2012	2013	2014
10	Cereals	100.00%	98.83%	98.88%	98.47%	100.00%	100.00%	99.99%	99.60%
12	Oil seeds etc.	99.49%	99.53%	99.76%	99.71%	99.74%	99.70%	99.67%	99.65%
47	Wood pulp etc.	100.00%	99.81%	99.40%	98.74%	99.37%	99.16%	98.48%	99.28%
84	Nuclear machinery	45.21%	54.97%	54.51%	47.32%	51.13%	55.38%	54.13%	52.58%
87	Vehicles & parts	93.68%	90.15%	89.36%	95.27%	96.62%	97.33%	96.51%	97.36%

HS Code	Commodity	Japan							
		2007	2008	2009	2010	2011	2012	2013	2014
10	Cereals	99.97%	99.98%	99.94%	99.95%	99.98%	99.94%	99.86%	99.88%
12	Oil seeds etc.	95.65%	95.22%	95.54%	94.92%	95.59%	96.21%	93.71%	93.10%
47	Wood pulp etc.	100.00%	100.00%	99.99%	99.88%	99.98%	99.99%	100.00%	99.03%
84	Nuclear machinery	22.19%	25.67%	26.70%	25.04%	25.76%	28.56%	29.80%	27.23%
87	Vehicles & parts	80.52%	85.28%	78.89%	82.05%	81.90%	83.92%	83.02%	79.08%

HS Code	Commodity	South Korea							
		2007	2008	2009	2010	2011	2012	2013	2014
10	Cereals	99.98%	99.92%	99.97%	99.86%	99.97%	99.89%	99.61%	99.77%
12	Oil seeds etc.	98.85%	98.20%	98.25%	98.24%	97.57%	97.85%	97.43%	97.31%
47	Wood pulp etc.	99.71%	99.94%	99.11%	99.57%	99.98%	99.50%	99.94%	99.83%
84	Nuclear machinery	29.63%	35.62%	43.09%	35.97%	40.43%	36.77%	48.36%	41.87%
87	Vehicles & parts	84.11%	89.38%	80.38%	82.72%	82.17%	90.84%	85.37%	84.49%

HS Code	Commodity	ASEAN							
		2007	2008	2009	2010	2011	2012	2013	2014
10	Cereals	99.58%	99.92%	99.98%	99.98%	99.94%	99.98%	99.90%	99.87%
12	Oil seeds etc.	95.51%	97.05%	97.54%	97.80%	98.65%	98.68%	97.74%	97.61%
47	Wood pulp etc.	100.00%	99.99%	100.00%	99.96%	99.99%	99.99%	89.09%	84.58%
84	Nuclear machinery	35.25%	40.17%	42.49%	35.39%	39.84%	43.16%	43.87%	41.77%
87	Vehicles & parts	86.23%	90.65%	89.32%	90.46%	92.94%	92.82%	82.18%	90.17%

HS Code	Commodity	EU-27							
		2007	2008	2009	2010	2011	2012	2013	2014
10	Cereals	98.20%	91.73%	89.61%	95.06%	96.27%	93.46%	90.86%	94.18%
12	Oil seeds etc.	92.08%	93.84%	88.56%	91.27%	88.27%	92.07%	93.50%	93.53%
47	Wood pulp etc.	99.97%	99.87%	99.88%	99.88%	99.60%	99.64%	99.49%	99.74%
84	Nuclear machinery	34.48%	37.76%	33.55%	33.19%	34.37%	36.15%	35.41%	34.58%
87	Vehicles & parts	88.83%	89.57%	86.43%	84.00%	86.41%	86.99%	85.28%	84.06%

6.3.2 Commodity Value-Weight Ratio by Trade Routes

The value-weight ratios of selected commodities in U.S. imports and exports by various transport modes over the period 2007-2014 are shown in Tables 6.8 to 6.11. It can be observed that within the same commodity type, trade flow direction and transport mode, the value-weight ratio appeared to have a wide range of value across regions. Figures 6.1 shows the distribution of value-weight ratio of HS 84 (nuclear reactors & parts) by transport mode along different trade routes. For example, HS 84 (i.e. nuclear reactors & parts) for the U.S. has import value-weight ratios ranging from US\$7.25/kg to US\$16.72/kg under sea mode and ranging from US\$76.33 to US\$266.51/kg under air mode, while having export value-weight ratios ranging from US\$11.36/kg to US\$22.32/kg under sea mode and ranging from US\$74.11/kg to US\$168.79/kg under air mode. It could be deduced that when applying the value-weight ratio for value-to-weight conversion, spatial effects should be taken into account.

It can be also noted that commodity value-weight ratio is dependent on trade flow direction (i.e. import and export). For instance, HS 84 has different value-weight ratios for its import and export. No matter the commodity is carried by sea or by air, the value-weight ratios for import are observed to be different from that for export. Therefore, it could be observed that, this value-weight ratio is also trade-direction specific.

Furthermore, it can be seen that commodity value-weight ratio is also dependent on the transport mode. Interesting fact could be observed here: if goods are transported by air which is comparatively higher in freight rate, they possess higher value per unit weight than those carried by sea. For instance,

same commodity group, i.e. HS 84, has much higher value-weight ratios when it is carried by air mode than those carried by sea mode.

From this analysis on the commodity value-weight characteristics, it should be noted that when developing the model for value-to-weight conversion, spatial effects (i.e. trading partners), trade directions (i.e. imports and exports), and transport modes (i.e. by which type of transport) has to be taken into consideration.

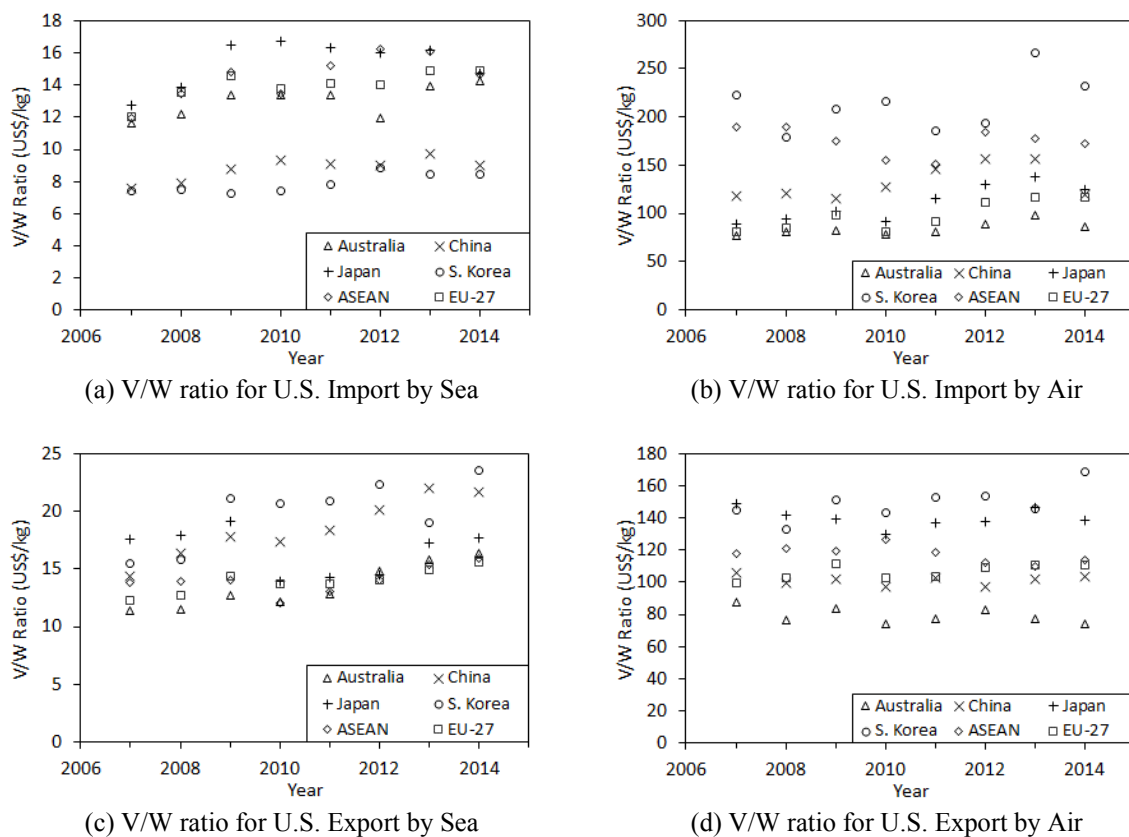


Figure 6.1 Distribution of Value-Weight Ratio of HS 84 (Nuclear Reactors & Parts) for U.S. Trade by Transport Mode

Table 6.8 Commodity Value-Weight Ratio (US\$/kg) for USA Import (Sea)

HS Code	Commodity	Australia							
		2007	2008	2009	2010	2011	2012	2013	2014
22	Beverages, spirits and vinegar	2.22	2.12	1.77	1.81	1.91	1.78	1.84	1.84
84	Nuclear machinery	11.66	12.21	13.41	13.37	13.40	11.93	13.93	14.24
85	Electric machinery	17.82	24.90	23.52	25.08	28.12	31.78	32.84	27.78
87	Vehicles & parts	11.57	13.73	12.90	12.98	12.28	11.82	14.00	14.18
95	Toys & accessories	12.94	27.53	13.72	19.98	21.61	17.68	21.95	25.43

HS Code	Commodity	China							
		2007	2008	2009	2010	2011	2012	2013	2014
22	Beverages, spirits and vinegar	0.73	0.77	0.76	0.84	0.92	1.19	1.16	1.12
84	Nuclear machinery	7.59	7.92	8.79	9.32	9.10	9.01	9.76	8.97
85	Electric machinery	9.93	10.74	10.41	10.45	11.08	11.15	11.30	11.43
87	Vehicles & parts	2.64	3.00	2.88	3.00	3.31	3.60	3.64	3.70
95	Toys & accessories	6.88	7.85	8.44	7.69	7.85	7.55	7.38	7.11

HS Code	Commodity	Japan							
		2007	2008	2009	2010	2011	2012	2013	2014
22	Beverages, spirits and vinegar	1.79	1.80	1.92	1.94	2.17	2.21	1.63	2.35
84	Nuclear machinery	12.77	13.83	16.49	16.72	16.30	16.02	16.17	14.75
85	Electric machinery	20.97	21.65	22.69	23.33	25.39	26.63	26.60	23.67
87	Vehicles & parts	12.10	11.96	12.10	12.67	12.69	12.87	13.18	13.26
95	Toys & accessories	25.99	14.87	14.34	26.22	17.24	22.95	23.03	20.61

HS Code	Commodity	South Korea							
		2007	2008	2009	2010	2011	2012	2013	2014
22	Beverages, spirits and vinegar	0.92	0.88	0.82	0.81	0.84	0.81	0.80	0.81
84	Nuclear machinery	7.41	7.50	7.25	7.39	7.80	8.81	8.47	8.44
85	Electric machinery	9.83	10.90	11.13	11.45	13.04	14.28	15.93	14.69
87	Vehicles & parts	7.46	7.68	7.54	7.38	8.52	9.17	9.57	9.70
95	Toys & accessories	17.75	22.58	22.01	20.31	22.30	26.15	28.59	23.55

HS Code	Commodity	ASEAN							
		2007	2008	2009	2010	2011	2012	2013	2014
22	Beverages, spirits and vinegar	0.72	0.77	0.79	0.78	0.89	0.89	0.90	0.98
84	Nuclear machinery	11.98	13.50	14.83	13.42	15.22	16.26	16.10	14.69
85	Electric machinery	10.83	12.87	13.41	13.35	14.16	13.23	13.07	13.11
87	Vehicles & parts	7.41	7.96	8.36	8.03	9.28	9.54	9.63	8.91
95	Toys & accessories	7.13	7.96	8.76	9.85	10.54	12.12	12.29	12.40

HS Code	Commodity	EU27							
		2007	2008	2009	2010	2011	2012	2013	2014
22	Beverages, spirits and vinegar	2.09	2.14	2.16	2.16	2.39	2.49	2.67	2.67
84	Nuclear machinery	12.03	13.53	14.59	13.79	14.09	14.03	14.88	14.86
85	Electric machinery	12.72	14.15	12.62	14.39	14.36	16.40	16.85	14.64
87	Vehicles & parts	14.33	15.60	15.39	15.15	14.23	14.76	16.33	16.40
95	Toys & accessories	10.65	10.95	10.57	10.34	12.11	13.00	13.09	14.23

Table 6.9 Commodity Value-Weight Ratio (US\$/kg) ifor USA Import (Air)

HS Code	Commodity	Australia							
		2007	2007	2007	2007	2007	2007	2007	2007
22	Beverages, spirits and vinegar	7.49	7.49	7.49	7.49	7.49	7.49	7.49	7.49
84	Nuclear machinery	76.33	76.33	76.33	76.33	76.33	76.33	76.33	76.33
85	Electric machinery	95.53	95.53	95.53	95.53	95.53	95.53	95.53	95.53
87	Vehicles & parts	25.17	25.17	25.17	25.17	25.17	25.17	25.17	25.17
95	Toys & accessories	31.58	31.58	31.58	31.58	31.58	31.58	31.58	31.58

HS Code	Commodity	China							
		2007	2007	2007	2007	2007	2007	2007	2007
22	Beverages, spirits and vinegar	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38
84	Nuclear machinery	117.59	117.59	117.59	117.59	117.59	117.59	117.59	117.59
85	Electric machinery	103.90	103.90	103.90	103.90	103.90	103.90	103.90	103.90
87	Vehicles & parts	10.30	10.30	10.30	10.30	10.30	10.30	10.30	10.30
95	Toys & accessories	33.92	33.92	33.92	33.92	33.92	33.92	33.92	33.92

HS Code	Commodity	Japan							
		2007	2007	2007	2007	2007	2007	2007	2007
22	Beverages, spirits and vinegar	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83
84	Nuclear machinery	89.32	89.32	89.32	89.32	89.32	89.32	89.32	89.32
85	Electric machinery	133.08	133.08	133.08	133.08	133.08	133.08	133.08	133.08
87	Vehicles & parts	19.05	19.05	19.05	19.05	19.05	19.05	19.05	19.05
95	Toys & accessories	140.25	140.25	140.25	140.25	140.25	140.25	140.25	140.25

HS Code	Commodity	South Korea							
		2007	2007	2007	2007	2007	2007	2007	2007
22	Beverages, spirits and vinegar	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30
84	Nuclear machinery	222.42	222.42	222.42	222.42	222.42	222.42	222.42	222.42
85	Electric machinery	229.05	229.05	229.05	229.05	229.05	229.05	229.05	229.05
87	Vehicles & parts	12.17	12.17	12.17	12.17	12.17	12.17	12.17	12.17
95	Toys & accessories	33.15	33.15	33.15	33.15	33.15	33.15	33.15	33.15

HS Code	Commodity	ASEAN							
		2007	2007	2007	2007	2007	2007	2007	2007
22	Beverages, spirits and vinegar	3.59	3.59	3.59	3.59	3.59	3.59	3.59	3.59
84	Nuclear machinery	189.43	189.43	189.43	189.43	189.43	189.43	189.43	189.43
85	Electric machinery	184.31	184.31	184.31	184.31	184.31	184.31	184.31	184.31
87	Vehicles & parts	17.38	17.38	17.38	17.38	17.38	17.38	17.38	17.38
95	Toys & accessories	22.82	22.82	22.82	22.82	22.82	22.82	22.82	22.82

HS Code	Commodity	EU27							
		2007	2007	2007	2007	2007	2007	2007	2007
22	Beverages, spirits and vinegar	7.84	7.84	7.84	7.84	7.84	7.84	7.84	7.84
84	Nuclear machinery	80.70	80.70	80.70	80.70	80.70	80.70	80.70	80.70
85	Electric machinery	90.10	90.10	90.10	90.10	90.10	90.10	90.10	90.10
87	Vehicles & parts	19.71	19.71	19.71	19.71	19.71	19.71	19.71	19.71
95	Toys & accessories	30.31	30.31	30.31	30.31	30.31	30.31	30.31	30.31

Table 6.10 Commodity Value-Weight Ratio (US\$/kg) for USA Export (Sea)

HS Code	Commodity	Australia							
		2007	2008	2009	2010	2011	2012	2013	2014
10	Cereals	0.37	0.73	1.10	0.97	1.02	0.94	0.96	1.05
12	Oil seeds etc.	0.57	1.58	1.60	1.54	1.74	1.80	0.75	1.53
47	Wood pulp etc.	0.34	0.41	0.45	0.55	0.63	0.65	0.71	0.69
84	Nuclear machinery	11.36	11.51	12.69	12.21	12.88	14.83	15.76	16.33
87	Vehicles & parts	11.59	11.52	11.19	12.34	13.32	15.09	13.94	14.12

HS Code	Commodity	China							
		2007	2008	2009	2010	2011	2012	2013	2014
10	Cereals	0.22	0.52	0.25	0.20	0.31	0.31	0.28	0.24
12	Oil seeds etc.	0.35	0.44	0.40	0.45	0.51	0.57	0.54	0.47
47	Wood pulp etc.	0.18	0.20	0.17	0.23	0.24	0.23	0.23	0.23
84	Nuclear machinery	14.41	16.35	17.82	17.36	18.32	20.15	21.95	21.61
87	Vehicles & parts	12.00	12.15	12.23	12.82	12.69	12.94	13.77	16.29

HS Code	Commodity	Japan							
		2007	2008	2009	2010	2011	2012	2013	2014
10	Cereals	0.19	0.29	0.22	0.21	0.32	0.31	0.31	0.24
12	Oil seeds etc.	0.29	0.38	0.35	0.36	0.40	0.46	0.46	0.45
47	Wood pulp etc.	0.66	0.72	0.66	0.80	0.81	0.93	0.87	0.89
84	Nuclear machinery	17.56	17.91	19.16	13.91	14.28	14.53	17.24	17.67
87	Vehicles & parts	13.46	13.47	12.76	10.42	10.67	11.51	12.80	14.11

HS Code	Commodity	South Korea							
		2007	2008	2009	2010	2011	2012	2013	2014
10	Cereals	0.20	0.30	0.20	0.21	0.32	0.30	0.32	0.25
12	Oil seeds etc.	0.26	0.30	0.32	0.32	0.36	0.41	0.41	0.40
47	Wood pulp etc.	0.29	0.30	0.25	0.30	0.30	0.28	0.28	0.29
84	Nuclear machinery	15.43	15.86	21.11	20.63	20.89	22.32	19.01	23.59
87	Vehicles & parts	13.64	11.13	12.80	11.47	12.39	12.79	11.28	11.71

HS Code	Commodity	ASEAN							
		2007	2008	2009	2010	2011	2012	2013	2014
10	Cereals	0.24	0.40	0.25	0.24	0.35	0.33	0.32	0.29
12	Oil seeds etc.	0.32	0.47	0.42	0.45	0.50	0.55	0.57	0.52
47	Wood pulp etc.	0.29	0.31	0.28	0.38	0.42	0.40	0.40	0.41
84	Nuclear machinery	13.87	13.97	14.02	12.04	13.05	14.03	15.37	15.96
87	Vehicles & parts	6.35	7.73	5.88	7.35	8.61	8.31	7.74	8.07

HS Code	Commodity	EU27							
		2007	2008	2009	2010	2011	2012	2013	2014
10	Cereals	0.24	0.30	0.42	0.30	0.33	0.36	0.34	0.29
12	Oil seeds etc.	0.40	0.51	0.50	0.51	0.66	0.65	0.66	0.54
47	Wood pulp etc.	0.62	0.64	0.62	0.65	0.62	0.73	0.67	0.67
84	Nuclear machinery	12.29	12.68	14.34	13.70	13.74	14.09	14.93	15.61
87	Vehicles & parts	11.82	11.25	12.10	12.67	12.70	13.65	13.53	15.00

Table 6.11 Commodity Value-Weight Ratio (US\$/kg) for USA Export (Air)

HS Code	Commodity	Australia							
		2007	2008	2009	2010	2011	2012	2013	2014
10	Cereals	1.50	0.73	1.10	0.97	1.02	0.94	0.96	1.05
12	Oil seeds etc.	15.90	1.58	1.60	1.54	1.74	1.80	0.75	1.53
47	Wood pulp etc.	0.26	0.41	0.45	0.55	0.63	0.65	0.71	0.69
84	Nuclear machinery	87.61	11.51	12.69	12.21	12.88	14.83	15.76	16.33
87	Vehicles & parts	26.95	11.52	11.19	12.34	13.32	15.09	13.94	14.12

HS Code	Commodity	China							
		2007	2008	2009	2010	2011	2012	2013	2014
10	Cereals	---	0.52	0.25	0.20	0.31	0.31	0.28	0.24
12	Oil seeds etc.	34.37	0.44	0.40	0.45	0.51	0.57	0.54	0.47
47	Wood pulp etc.	0.29	0.20	0.17	0.23	0.24	0.23	0.23	0.23
84	Nuclear machinery	106.13	16.35	17.82	17.36	18.32	20.15	21.95	21.61
87	Vehicles & parts	19.99	12.15	12.23	12.82	12.69	12.94	13.77	16.29

HS Code	Commodity	Japan							
		2007	2008	2009	2010	2011	2012	2013	2014
10	Cereals	4.48	0.29	0.22	0.21	0.32	0.31	0.31	0.24
12	Oil seeds etc.	10.21	0.38	0.35	0.36	0.40	0.46	0.46	0.45
47	Wood pulp etc.	0.48	0.72	0.66	0.80	0.81	0.93	0.87	0.89
84	Nuclear machinery	148.62	17.91	19.16	13.91	14.28	14.53	17.24	17.67
87	Vehicles & parts	33.19	13.47	12.76	10.42	10.67	11.51	12.80	14.11

HS Code	Commodity	South Korea							
		2007	2008	2009	2010	2011	2012	2013	2014
10	Cereals	1.76	0.30	0.20	0.21	0.32	0.30	0.32	0.25
12	Oil seeds etc.	6.74	0.30	0.32	0.32	0.36	0.41	0.41	0.40
47	Wood pulp etc.	0.14	0.30	0.25	0.30	0.30	0.28	0.28	0.29
84	Nuclear machinery	145.22	15.86	21.11	20.63	20.89	22.32	19.01	23.59
87	Vehicles & parts	29.59	11.13	12.80	11.47	12.39	12.79	11.28	11.71

HS Code	Commodity	ASEAN							
		2007	2008	2009	2010	2011	2012	2013	2014
10	Cereals	15.26	0.40	0.25	0.24	0.35	0.33	0.32	0.29
12	Oil seeds etc.	22.46	0.47	0.42	0.45	0.50	0.55	0.57	0.52
47	Wood pulp etc.	0.20	0.31	0.28	0.38	0.42	0.40	0.40	0.41
84	Nuclear machinery	118.00	13.97	14.02	12.04	13.05	14.03	15.37	15.96
87	Vehicles & parts	23.63	7.73	5.88	7.35	8.61	8.31	7.74	8.07

HS Code	Commodity	EU27							
		2007	2008	2009	2010	2011	2012	2013	2014
10	Cereals	15.87	0.30	0.42	0.30	0.33	0.36	0.34	0.29
12	Oil seeds etc.	21.48	0.51	0.50	0.51	0.66	0.65	0.66	0.54
47	Wood pulp etc.	0.37	0.64	0.62	0.65	0.62	0.73	0.67	0.67
84	Nuclear machinery	99.67	12.68	14.34	13.70	13.74	14.09	14.93	15.61
87	Vehicles & parts	34.65	11.25	12.10	12.67	12.70	13.65	13.53	15.00

Note: "—"denotes no data available

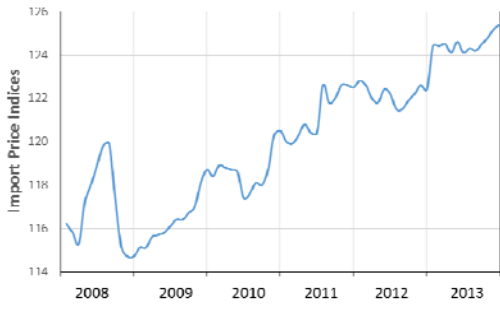
6.4 Value-to-Weight Conversion Development

To develop the conversion model which is capable of predicting the trend of value-weight ratio from historical data, ARMAX model is used in this study. Historical trade data used in this model is again obtained from the USA Trade Online®. Variable considered and model configuration will be presented in the later sections.

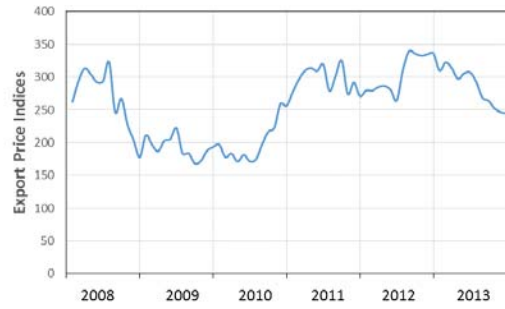
6.4.1 Variables Considered in the ARMAX Model

Value-weight ratio trends for various commodities between different country pairs were developed using ARMAX models. Since trade values are reported in the trade database in real dollars, any variation in the commodity price due to product differentiation will not be reflected in the trade flow data. Therefore, the proposed ARMAX model employs price indices as a variable to reflect changes in commodity prices in a country over time.

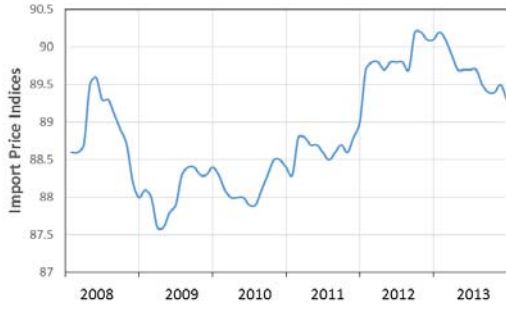
Two price indices related to international trade, i.e. the export price index and the import price index, are included in the export and import models respectively. Export price index (XPI) measures the rate of change in the prices of goods and services sold by residents of that country to, and used by, foreign buyers. Import price index (MPI) measures the rate of change in the prices of goods and services purchased by residents of that country from, and supplied by, foreign sellers. Data on both U.S. import and export price indices for all commodities were obtained from the United States Bureau of Labor Statistics (USBLS, 2015). Figure 6.1 shows the U.S. import and export price indices for the selected commodities.



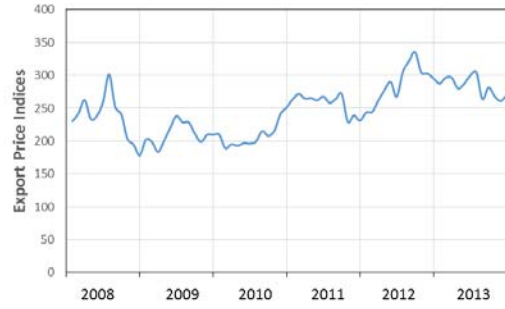
(a) Import price index for HS 22 (Beverages, etc.)



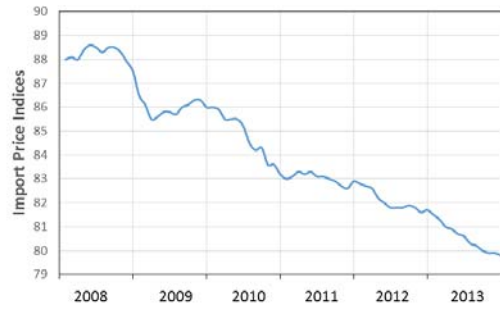
(f) Export price index for HS 10 (Cereals)



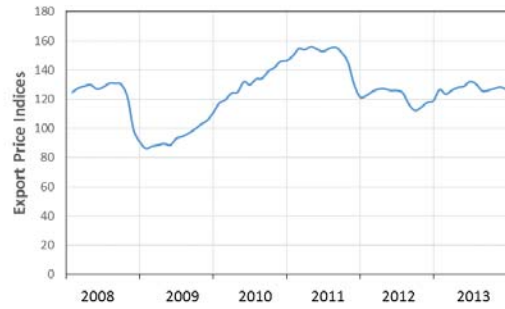
(b) Import price index for HS 84 (Nuclear mach.)



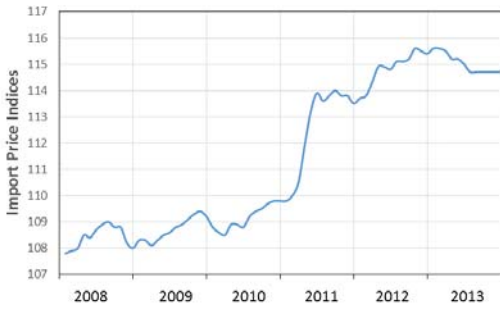
(g) Export price index for HS 12 (Oil seeds etc.)



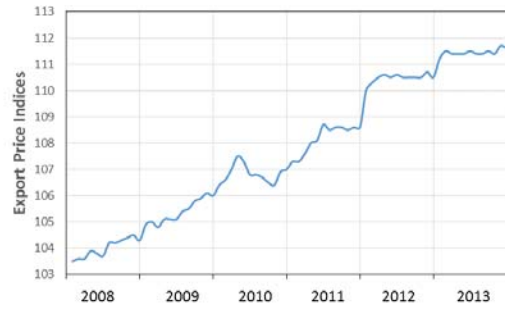
(c) Import price index for HS 85 (Electric mach.)



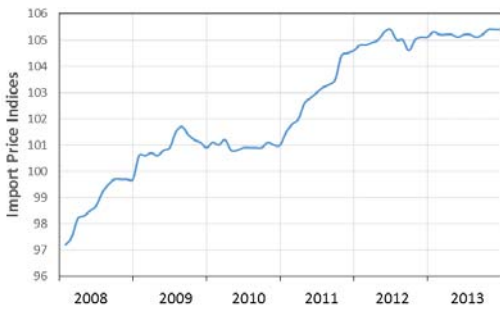
(h) Export price index for HS 47 (Wood pulp etc.)



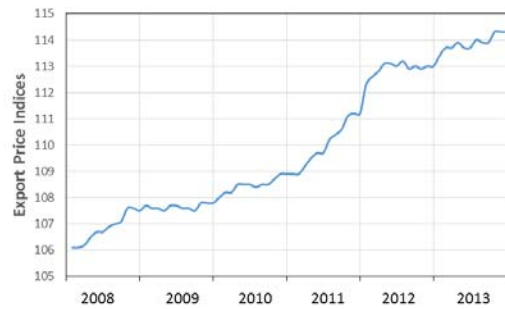
(d) Import price index for HS 87 (Vehicles & parts)



(i) Export price index for HS 84 (Nuclear mach.)



(e) Import price index for HS 95 (Toys&accessories)



(j) Export price index for HS 87 (Vehicles & parts)

Figure 6.1 U.S. Import and Export Price Indices for Selected Commodities

6.4.2 Conversion Model Configuration

Given the commodity value-weight ratio by sea mode and its corresponding price index for a given trade direction, the ARMAX model in Equation (3.69) can be rewritten as:

$$\Delta_{ci}^d VWR_{cit} = \mu_{ci} + \beta'_{ci} X_{cit} + \Delta_{ci}^d \sum_{j=1}^p \gamma_{cij} VWR_{cit-j} + \varepsilon_{cit} + \sum_{j=1}^q \theta_{cij} \varepsilon_{cit-j} \quad (6.1)$$

$$X_{cit} = \begin{cases} MPI_{cit} & \text{for U.S. imports} \\ XPI_{cit} & \text{for U.S. exports} \end{cases} \quad (6.2)$$

where VWR_{cit} represents the prevailing value-weight ratio in USD/kg of commodity type i imported from or exported to country c at time t by sea mode, MPI_{cit} and XPI_{cit} refer to the import and export price indices of commodity type i for trading partner c at time t respectively.

It must be emphasized that Equations (6.1) and (6.2) implicitly assume that different price indices are utilized in the proposed ARMAX model along different trade routes. Export price index are employed in models relating to U.S. exports whereas import price index are used in models relating to U.S. imports.

6.4.3 Model Suitability Test

Partial autocorrelation function (PACF) plot, which is a classical way to judge the lag order of time series model, is used to identify the lag order used in this model (Verbeek, 2008). It is found that the lag order of the ARMAX model is equal to 1, i.e. $p = 1$.

The value-weight ratio series for each commodity along a trade route with consideration of transport mode are first tested for non-stationarity by the Augmented Dickey-Fuller (ADF) test to examine its suitability for ARMAX

modeling (Verbeek, 2008). The ADF test is applied to the time series model Δy_t , as presented in Equation (6.1):

$$\Delta y_t = \alpha + \beta t + \gamma y_{t-1} + \delta_1 \Delta y_{t-1} + \dots + \delta_{p-1} \Delta y_{t-p+1} + \varepsilon_t \quad (6.1)$$

where α is a constant, β is the coefficient on a time trend and p is the lag order of the autoregressive process.

The ADF tests the null hypothesis of whether a unit root is present in a time series sample. The null hypothesis assumes no unit root is present, meaning that the series is non-stationary. The unit root test is then carried out under the null hypothesis $\gamma = 0$ against the alternative hypothesis of $\gamma < 0$. To test the null hypothesis that $\gamma = 0$, it is possible to use the standard t -statistic, as shown in Equation (6.2):

$$DF = \frac{\hat{\gamma}}{SE(\hat{\gamma})} \quad (6.2)$$

where $SE(\hat{\gamma})$ denotes the usual ordinary least square (OLS) error (Verbeek, 2008). This hypothesis is rejected if the test statistic is less than the critical value. The critical values DF_c for the ADF test are -3.59, -3.23 and -2.93 at 1%, 2.5% and 5% level respectively. When comparing the test statistics against the critical values, it was found that time series data of value-weight ratios for all commodity groups along different trade routes are stationary, meaning that the ARMAX model could be employed. The ADF test results are reported in Table 6.12.

Table 6.12 Results of ADF Stationarity Test

IMPORT		Value of <i>DF</i> of Time Series Data					
HS-2	Commodity Description	Australia	China	Japan	South Korea	ASEAN	EU-27
22	Beverages, Spirits And Vinegar	-4.822	-4.504	-3.678	-3.698	-3.928	-2.995
84	Nuclear Machinery & Parts	-3.55	-4.112	-4.059	-4.424	-4.5	-4.363
85	Electric Machinery & Parts	-4.055	-4.106	-4.072	-3.061	-4.125	-4.987
87	Vehicles & Parts	-4.382	-4.871	-4.012	-2.974	-4.038	-4.323
95	Toys & Accessories	-4.111	-3.607	-3.18	-3.752	-4.25	-3.47
EXPORT		Value of <i>DF</i> of Time Series Data					
HS-2	Commodity Description	Australia	China	Japan	South Korea	ASEAN	EU-27
10	Cereals	-3.112	-4.13	-3.353	-3.827	-3.952	-3.683
12	Oil Seeds Etc.	-3.904	-4.013	-3.932	-3.825	-3.765	-4.254
47	Wood Pulp Etc.	-3.669	-4.308	-3.452	-3.641	-3.588	-3.562
84	Nuclear Machinery & Parts	-3.498	-4.003	-3.62	-3.373	-4.076	-3.453
87	Vehicles & Parts	-3.548	-3.792	-4.28	-3.417	-3.054	-3.663

6.4.4 Model Calibration

The econometric package *LIMDEP* (LIMDEP, 2012) is used for the model estimations, simulations and forecasts. ARMAX models with order one in both autoregressive and moving-average terms were generated for twelve trade routes presented in this section. Calibrated models for selected import and export trade between U.S. and other regions are described in Tables 6.13 and 6.14 respectively. It appeared that regardless of model types, the predicted parameters for the models are spatial-specific, i.e. value-weight ratios for the same commodities vary for different trade routes.

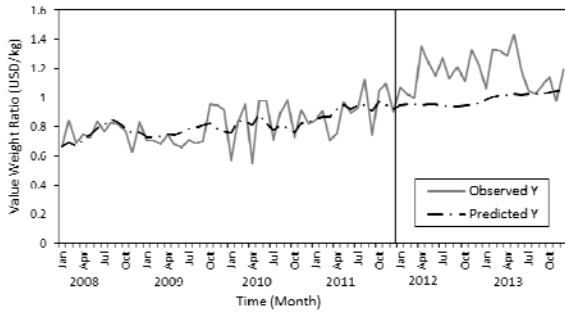
For better illustration, the actual and predicted value-weight ratio for selected commodity trade between USA and China are shown in Figure 6.2. It can be observed that the estimated models could fit the actual observations well from 2008 to 2011 and were able to make reasonable forecast for 2012 and 2013.

Table 6.13 Calibrated ARMAX Models for USA Import

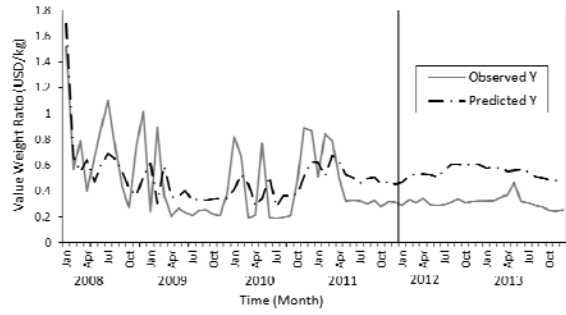
Region	HS Code	Commodity	μ	MPI	γ	θ	Sample size n
Australia	22	Beverages, spirits and vinegar	0.296	0.002	0.721	-0.140	48
	84	Nuclear machinery	16.955	-0.117	0.506	-0.370	48
	85	Electric machinery	36.601	-0.234	0.382	-0.256	48
	87	Vehicles & parts	27.265	-0.130	-0.011	0.409	48
	95	Toys & accessories	126.950	-0.977	-0.289	0.665	48
China	22	Beverages, spirits and vinegar	-1.298	0.014	0.590	-0.834	48
	84	Nuclear machinery	11.144	-0.100	0.744	-0.079	48
	85	Electric machinery	5.998	-0.028	0.662	-0.198	48
	87	Vehicles & parts	-1.326	0.018	0.799	-0.232	48
	95	Toys & accessories	1.549	0.007	0.723	-0.193	48
Japan	22	Beverages, spirits and vinegar	-0.363	0.054	0.842	-0.559	48
	84	Nuclear machinery	6.310	-0.209	0.122	-0.532	48
	85	Electric machinery	19.645	-0.627	1.105	-0.105	48
	87	Vehicles & parts	13.888	0.623	-0.152	0.691	48
	95	Toys & accessories	35.697	-0.058	0.881	0.431	48
South Korea	22	Beverages, spirits and vinegar	-0.714	0.356	1.196	-0.261	48
	84	Nuclear machinery	5.088	-0.595	1.088	-0.374	48
	85	Electric machinery	24.414	-0.575	0.893	0.363	48
	87	Vehicles & parts	18.413	0.265	-0.193	0.013	48
	95	Toys & accessories	47.858	-0.342	0.017	0.736	48
ASEAN	22	Beverages, spirits and vinegar	-1.274	-0.134	1.111	-0.344	48
	84	Nuclear machinery	0.681	-0.006	1.110	-0.740	48
	85	Electric machinery	19.375	-0.806	0.352	-0.279	48
	87	Vehicles & parts	15.107	0.780	0.753	-0.180	48
	95	Toys & accessories	21.011	-0.150	0.531	0.774	48
EU-27	22	Beverages, spirits and vinegar	-1.360	0.019	0.618	0.118	48
	84	Nuclear machinery	-8.167	0.121	0.824	-0.226	48
	85	Electric machinery	15.037	-0.091	0.483	-0.076	48
	87	Vehicles & parts	14.530	-0.069	0.535	-0.093	48
	95	Toys & accessories	-20.091	-0.485	0.217	0.236	48

Table 6.14 Calibrated ARMAX Models for USA Export

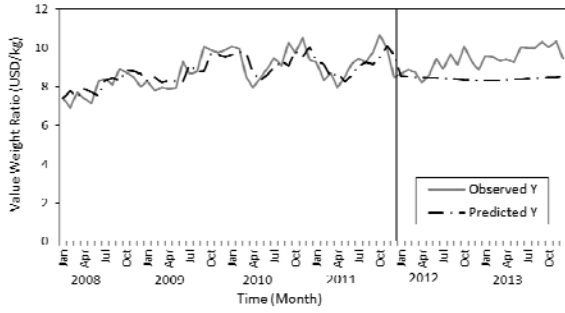
Region	HS Code	Commodity	μ	XPI	γ	θ	Sample size n
Australia	10	Cereals	0.626	-0.001	-0.013	0.226	48
	12	Oil seeds etc.	1.102	0.001	0.378	-0.520	48
	47	Wood pulp etc.	0.085	0.001	0.506	-0.147	48
	84	Nuclear machinery	-2.972	0.074	0.613	-0.093	48
	87	Vehicles & parts	-48.596	0.545	0.135	-0.163	48
China	10	Cereals	0.106	0.001	0.122	0.230	48
	12	Oil seeds etc.	-0.012	0.002	0.274	-0.036	48
	47	Wood pulp etc.	0.270	0.001	0.505	0.384	48
	84	Nuclear machinery	-8.094	0.119	0.744	-0.371	48
	87	Vehicles & parts	-35.406	0.416	0.206	-0.035	48
Japan	10	Cereals	0.673	0.473	-0.281	-0.198	48
	12	Oil seeds etc.	0.209	0.003	0.265	-0.706	48
	47	Wood pulp etc.	-0.358	-0.118	0.909	0.474	48
	84	Nuclear machinery	-3.869	-0.463	0.138	0.316	48
	87	Vehicles & parts	-35.318	0.588	0.280	-0.041	48
South Korea	10	Cereals	0.910	-0.189	-0.130	-0.041	48
	12	Oil seeds etc.	0.566	-0.303	0.052	-0.174	48
	47	Wood pulp etc.	-0.264	-0.045	0.305	0.112	48
	84	Nuclear machinery	-1.839	-0.375	0.354	0.539	48
	87	Vehicles & parts	-35.429	0.245	0.042	0.300	48
ASEAN	10	Cereals	1.121	0.691	0.100	-0.508	48
	12	Oil seeds etc.	0.227	0.372	0.812	-0.691	48
	47	Wood pulp etc.	0.025	0.036	0.209	0.063	48
	84	Nuclear machinery	-1.507	0.038	0.605	0.431	48
	87	Vehicles & parts	-30.826	0.753	-0.229	-0.314	48
EU-27	10	Cereals	1.146	-0.003	-0.149	0.222	48
	12	Oil seeds etc.	-0.334	0.003	0.512	-0.031	48
	47	Wood pulp etc.	0.181	0.000	0.709	0.096	48
	84	Nuclear machinery	0.458	0.027	0.764	-0.313	48
	87	Vehicles & parts	-22.216	0.287	0.276	0.093	48



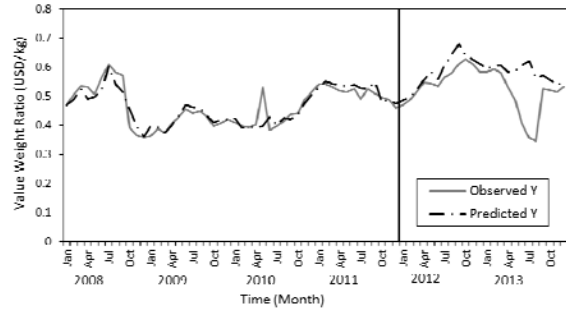
(a) Import V-W Prediction for HS 22 Beverages



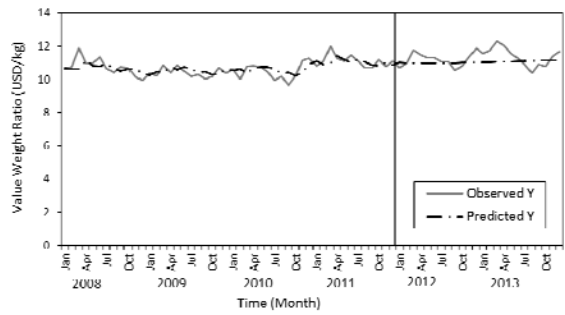
(f) Export V-W Prediction for HS 10 Cereals



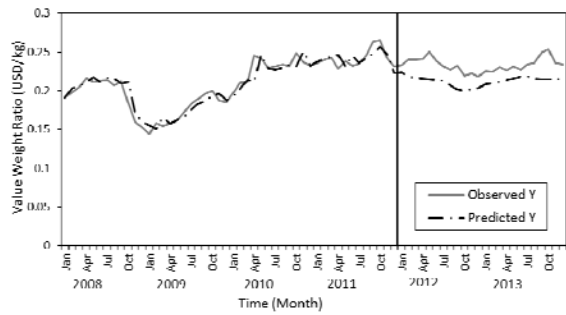
(b) Import V-W Prediction for HS 84 Nuclear Mach.



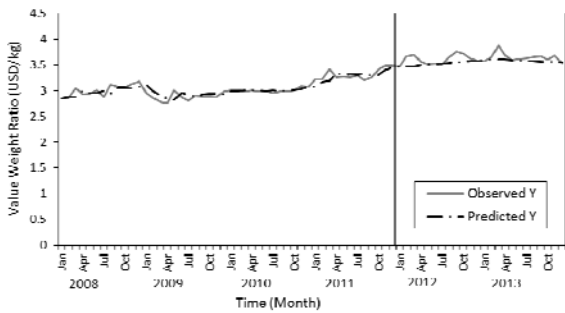
(g) Export V-W Prediction for HS 12 Oil Seeds



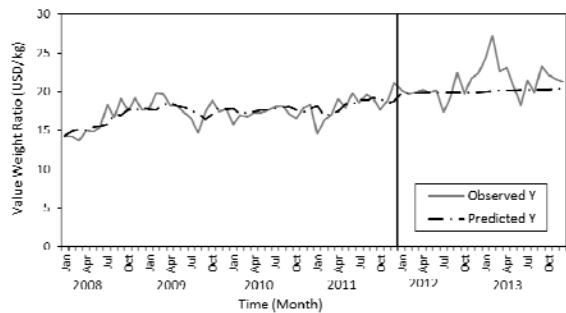
(c) Import V-W Prediction for HS 85 Electric Mach.



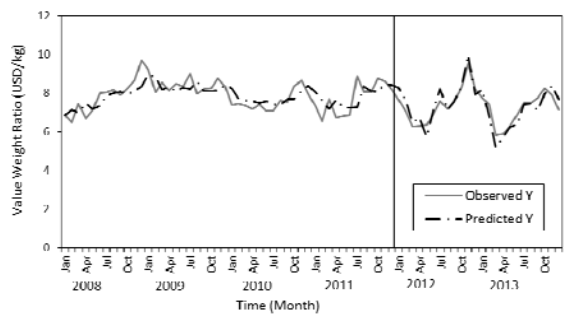
(h) Export V-W Prediction for HS 47 Wood Pulp



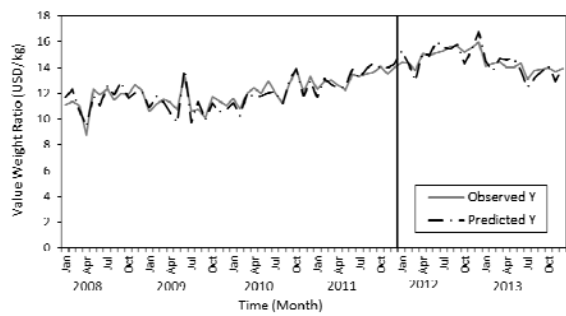
(d) Import V-W Prediction for HS 87 Vehicles



(i) Export V-W Prediction for HS 84 Nuclear Mach



(e) Import V-W Prediction for HS 95 Toys



(j) Export V-W Prediction for HS 87 Vehicles

Figure 6.2 Comparison between actual and predicted value-weight ratio for commodity traded between U.S. and China

6.4.5 Model Evaluation

In order to assess the effectiveness of the models as well as the prediction abilities, the RMSE and RMSPE are calculated for all models and the results are shown in Tables 6.15 and 6.16. It could be observed that most of the models provide a quite good fit with less than 20% in RMSPE with exception to a few models where over 100% error arises. This may be due to the high fluctuation in value of this commodity over time. In general, the estimated value-weight ratios from the developed models showed good agreement to the actual observations.

After evaluating the model effectiveness in predicting the trend of commodity value per unit weight along trade routes, it was shown that the developed time series models would be useful in performing such prediction. In particular, it could be utilized in the trade forecasting between regions where only monetary value is predicted. In this way, with the aids of the developed time series models, the corresponding forecasted value-weight ratio will be useful in transforming monetary value of commodity into physical amount of products. This is of particular interest to authorities and planners in the freight and logistic industries for their short-to-medium term planning in marketing and production development. Besides, these models could also possibly apply in trading companies as a reference in estimating the price of future trade products so as to stay competitive with other companies. These models could help giving a reference or baseline for future commodity value per unit weight so as to enable the trading company to perform market planning or to negotiate the price of products.

To complete the entire value-to-weight-to-container process, the next stage is to understand the weight-to-container conversion process and will be discussed in the next section.

Table 6.15 Prediction Errors in Models for USA Imports

Region	HS Code	Commodity	RMSE	RMSPE
Australia	22	Beverages, spirits and vinegar	0.1534	8.60%
	84	Nuclear machinery	2.1858	18.93%
	85	Electric machinery	7.3693	25.86%
	87	Vehicles & parts	1.4249	14.30%
	95	Toys & accessories	12.6764	59.68%
China	22	Beverages, spirits and vinegar	0.1574	15.35%
	84	Nuclear machinery	0.8290	8.78%
	85	Electric machinery	0.4547	4.06%
	87	Vehicles & parts	0.0954	2.87%
	95	Toys & accessories	0.8187	12.02%
Japan	22	Beverages, spirits and vinegar	-0.0376	5.93%
	84	Nuclear machinery	1.2702	8.04%
	85	Electric machinery	3.1982	13.50%
	87	Vehicles & parts	0.8771	3.61%
	95	Toys & accessories	4.8057	28.95%
Korea	22	Beverages, spirits and vinegar	0.1465	9.14%
	84	Nuclear machinery	1.2006	15.07%
	85	Electric machinery	3.9619	14.58%
	87	Vehicles & parts	1.2674	11.91%
	95	Toys & accessories	5.6113	30.64%
ASEAN	22	Beverages, spirits and vinegar	0.4015	4.50%
	84	Nuclear machinery	0.6660	13.31%
	85	Electric machinery	3.4205	9.47%
	87	Vehicles & parts	0.8766	6.16%
	95	Toys & accessories	3.2953	21.72%
European Union	22	Beverages, spirits and vinegar	0.1782	7.23%
	84	Nuclear machinery	0.7763	5.52%
	85	Electric machinery	1.7786	11.90%
	87	Vehicles & parts	1.1898	7.49%
	95	Toys & accessories	0.6710	9.47%

Note: $RMSE = \sqrt{\frac{1}{n} \sum_{i=1}^n (O_i - P_i)^2}$

$$RMSPE = \sqrt{\frac{1}{n} \sum_{i=1}^n \left(\frac{O_i - P_i}{O_i} \right)^2}$$

Table 6.16 Prediction Errors in Models for USA Exports

Region	HS Code	Commodity	RMSE	RMSPE
Australia	10	Cereals	0.2389	54.85%
	12	Oil seeds etc.	0.8815	55.60%
	47	Wood pulp etc.	0.1450	25.52%
	84	Nuclear machinery	1.4384	9.40%
	87	Vehicles & parts	0.9707	7.82%
China	10	Cereals	0.2370	66.61%
	12	Oil seeds etc.	0.0565	14.30%
	47	Wood pulp etc.	0.0150	6.56%
	84	Nuclear machinery	1.6565	8.09%
	87	Vehicles & parts	0.9207	7.60%
Japan	10	Cereals	0.5119	55.74%
	12	Oil seeds etc.	0.2781	45.17%
	47	Wood pulp etc.	-0.4040	8.82%
	84	Nuclear machinery	1.7223	11.35%
	87	Vehicles & parts	0.7353	5.85%
Korea	10	Cereals	0.0832	52.83%
	12	Oil seeds etc.	0.3300	54.04%
	47	Wood pulp etc.	0.0710	16.37%
	84	Nuclear machinery	1.4472	10.88%
	87	Vehicles & parts	0.5016	11.88%
ASEAN	10	Cereals	0.6330	50.56%
	12	Oil seeds etc.	-0.0057	53.46%
	47	Wood pulp etc.	-0.4980	6.62%
	84	Nuclear machinery	1.7591	6.32%
	87	Vehicles & parts	1.0629	8.81%
European Union	10	Cereals	0.2407	43.09%
	12	Oil seeds etc.	0.4827	65.61%
	47	Wood pulp etc.	0.0453	6.29%
	84	Nuclear machinery	0.9808	7.12%
	87	Vehicles & parts	0.8707	7.37%

Note: $RMSE = \sqrt{\frac{1}{n} \sum_{i=1}^n (O_i - P_i)^2}$

$$RMSPE = \sqrt{\frac{1}{n} \sum_{i=1}^n \left(\frac{O_i - P_i}{O_i} \right)^2}$$

6.5 Weight-to-Container Conversion Development

After analysing the commodity value-to-weight transformation, the next step is to explore the commodity weight-to-container conversion. First, the characteristic for container data will be described. Lesson learnt from literature on converting commodity weight to number of container will be discussed. At last, the method for converting commodity weight-to-container in this study will be presented.

6.5.1 Characteristic on Container Data

Unlike the commodity value and weight data, data related to container information is very limited. In this section, the data are mainly obtained from the U.S. Customs (as well as the Containerisation International database (CI, 2013)).

In contrast to value-to-weight transformation, this weight-to-container transformation will be bounded by the physical limitation and structural design of a container. The dimension of a standard twenty-TEU container is 20ft (length) x 8ft (width) x 8.5ft (height), i.e. 6.1m x 2.44m x 2.59m. The structural design of a twenty-footer limits the maximum load to 21 metric tons and the maximum volume (capacity) it can contain to be 38.5 cubic-metre. In this way, maximum loadable cargo weight inside a container will be bounded by its structural designed limits. However, due to the maximum capacity limitation, not all container can be loaded to the maximum load.

Besides, unlike commodity trade data which provides detailed commodity value and weight data by commodity classification, container data which can be obtained in public database is obscure, meaning that only the total number of container and corresponding total weight are listed. Interviews have

been conducted with industrial experts from shipping companies to learn from their past experiences and to understand their industrial norm in anticipating full-loaded container weight. Interview results are presented in Appendix IV. Furthermore, from the interviews, they commented that over 80% of the shipped cargos were declared as “Freight All Kind”, meaning that even the carriers also did not have clear idea the exact commodity type that was shipped inside a container. In this way, commodity differentiation is hardly possible to be considered in this conversion due to incomplete data.

Therefore, it is assumed that various commodity groups will employ the same commodity weight per container in order to approximate the number of containers flow between countries and regions.

6.5.3 Past Studies on Weight-to-Container Conversion

As there is limited database provide the container, a study from past literature to understand how other researchers attempt in overcoming this difficulty. Only limited studies have performed such conversion since most of the container trade forecasting studies are estimated at the basis of container boxes in the beginning using econometric models or statistical models rather than predicting it from the basis of economic transaction activities (Descalle *et al.*, 2006; Lee *et al.*, 2011; Shibasaki *at al.*, 2012; Cheong and Cho, 2013).

Past studies in the literature had made various assumptions on weight-to-container transformation. Most of the researchers either make assumption based on references or estimate it through the port throughput data. Shibasaki *et al.* (2012) took an approximation of 19.0 freight ton per TEU from the Description of Handbook of Port Investment Evaluation published by the Port Investment Evaluation Committee of Japan as the conversion factor. Cheong

and Cho (2013) estimated the conversion ratio by examining their port throughput data in Korea. Lee *et al.* (2011) assumed that the conversion value is 12 tons per TEU. Descalle *et al.* (2006) observed that average U.S. imported cargo weight to be 6.7 tons per TEU.

From interviews with industrial experts, the experts commented that the average tonnage per unit twenty-footer container was approximately 12 tons based on their long-timed experience in the shipping industry.

6.5.3 Study on Weight-to-Container Conversion Factors

In this section, a study on the commodity weight per container at major ports is carried out. Based on the results, it can be noted that commodity weight per container might be greatly affected by origin and destination.

Information on container flow and the composition of commodities within each container is rarely publicly available. Most studies either obtain this information from liner companies or port authorities. In this section, estimates of the weight-container conversion factors are derived using annual total TEU throughput and tonnages reported in the Containerisation International (CI) database (Containerisation International, 2013) over the past five years. However, it should be noted that both empty containers and transshipments are included in the reported annual total TEU throughput in the database. Besides, there is limited access to the empty container and transshipment information of the studied regions. Thus, this conversion factor includes full container as well as empty container and transshipment.

Table 6.17 shows the data obtained from the CI database (CI, 2013). A total of 32 ports around the world are being investigated. It could be observed that mostly the container throughput data in terms of TEU is complete but its

corresponding tonnage information is mostly missing, thus increases the difficulty in estimating a suitable conversion factor.

Table 6.17 Container Data Obtained from CI Online

Port		2007	2008	2009	2010	2011
Shanghai	TEU	26150000	27980000	25002000	29069000	31700000
	Tonnage	---	---	---	---	---
Singapore	TEU	27935500	29918200	25866600	28431100	29937700
	Tonnage	---	---	262897000	289694000	309379900
Hong Kong	TEU	23998449	24494229	21040096	23699242	24384000
	Tonnage	190035000	197566000	177478000	201379000	---
Shenzhen	TEU	21099169	21413888	18250100	22509700	22569800
	Tonnage	---	---	---	---	---
Busan	TEU	13261000	13452786	11980325	14194334	16184706
	Tonnage	217181000	---	---	---	---
Ningbo-Zhoushan	TEU	9360000	11226000	10502800	13144000	14686200
	Tonnage	---	---	---	---	---
Guangzhou	TEU	9200000	11001300	11190000	12550000	14400000
	Tonnage	---	---	---	---	---
Qingdao	TEU	9462000	10320000	10260000	12012000	13020000
	Tonnage	---	---	---	---	---
Jebel Ali	TEU	10653026	11827299	11100000	11600000	13000000
	Tonnage	---	---	---	---	---
Rotterdam	TEU	10790604	10800000	9743290	11145804	11876921
	Tonnage	79819018	106999000	100280000	112293000	123300000
Tianjin	TEU	7103000	8500000	8700000	10080000	11500000
	Tonnage	---	---	---	---	---
Kaohsiung	TEU	10256829	9676554	8581273	9181211	9636289
	Tonnage	149225026	146728880	123570262	124952433	---
Port Klang	TEU	7118714	7973579	7309779	8871745	---
	Tonnage	113372115	130156643	119276676	147081483	---
Hamburg	TEU	9890000	9737000	7007704	7900000	9021800
	Tonnage	95835000	95437000	71170240	---	---
Antwerp	TEU	8175952	8662891	7309639	8468475	8664243
	Tonnage	94539968	84487547	87247745	102539658	105109107
Los Angeles	TEU	8355039	7849985	6748995	7831902	7940511
	Tonnage	---	---	---	---	---
Keihin Ports - Yokohama	TEU	3428112	3481485	2797994	3281051	3083432
	Tonnage	53065208	52461375	44233853	52109100	---
Keihin Ports - Tokyo	TEU	4123923	4155997	3810769	4284944	4639664
	Tonnage	45906948	45877339	40704606	45475126	47437496
Keihin Ports - Kawasaki	TEU	43282	30189	34604	36912	---
	Tonnage	---	---	---	---	---
Tanjung Pelepas	TEU	5500000	5594341	6016452	6530000	7500000
	Tonnage	---	---	---	---	---
Xiamen	TEU	4627000	5034600	4680355	5820000	6460700
	Tonnage	---	---	49998302	---	---
Dalian	TEU	3813000	4502700	4552000	5242000	6400000
	Tonnage	---	---	---	---	---
Long Beach	TEU	7312465	6487816	5067597	6263314	6061099
	Tonnage	128389590	116004870	92416386	150592681	146262691

Table 6.17 Container Data Obtained from CI Online (cont'd)

Port		2007	2008	2009	2010	2011
Bremen/Bremerhaven	TEU	4892239	5500709	4535842	4871297	---
	Tonnage	---	---	---	---	---
Laem Chabang	TEU	4641914	5133930	4537833	5068076	5731063
	Tonnage	42883195	---	---	---	---
Tanjung Priok	TEU	3689783	3984278	3804805	4612512	---
	Tonnage	10491462	11109249	---	---	---
New York-New Jersey	TEU	5299105	5265053	4561831	5292020	5503486
	Tonnage	---	---	---	---	---
Lianyungang	TEU	2001000	2965200	3020800	3870000	4850000
	Tonnage	---	---	---	---	---
Hanshin - Kobe	TEU	2472808	2556300	2247024	2556291	---
	Tonnage	---	---	---	---	---
Suzhou	TEU	---	---	---	---	---
	Tonnage	---	---	---	---	---
Ho Chi Minh	TEU	3172000	3432000	3563246	3856000	---
	Tonnage	---	---	---	---	---
Jawaharlal Nehru	TEU	4059843	3952770	4752000	4617000	---
	Tonnage	51841074	50602180	---	---	---
Cambodia	TEU	253271	258775	207577	224206	---
	Tonnage	1358430	1314559	---	---	---
Manila	TEU	2869447	2977606	2874807	3154702	---
	Tonnage	33355362	---	31361419	33097053	---

Note: “---“denotes data not available

Table 6.18 shows the calculated conversion factor based on the data obtained from the CI database. The conversion factor was found to be rather stable, with fluctuations over the past five years within one tonne per TEU. It is interesting that this findings contradicts with that from the value-to-weight approximation model, which shows commodity unit value fluctuates along time. However, it is still consistent with the assumption that this conversion factor will vary according to regions. From the table, it can be observed that different ports have their own conversion number. Perhaps it is also related to the nature of production industry where the port is located at or nearby.

Therefore, to simplify the conversion procedures for this weight-to-container conversion, conversion factor per country or region will be calculated from the mean value of the ports where they located in the country or region, as shown in Table 6.19.

Table 6.18 Weight-to-Container Ratio (Ton/TEU) at Major Ports

	Port	2007	2008	2009	2010	2011	Average
1	Shanghai	---	---	---	---	---	---
2	Singapore	---	---	10.2	10.2	10.3	10.2
3	Hong Kong	7.9	8.1	8.4	8.5	---	8.2
4	Shenzhen	---	---	---	---	---	---
5	Busan	16.4	---	---	---	---	16.4
6	Ningbo-Zhoushan	---	---	---	---	---	---
7	Guangzhou	---	---	---	---	---	---
8	Qingdao	---	---	---	---	---	---
9	Jebel Ali	---	---	---	---	---	---
10	Rotterdam	7.4	9.9	10.3	10.1	10.4	9.6
11	Tianjin	---	---	---	---	---	---
12	Kaohsiung	14.5	15.2	14.4	13.6	---	14.4
13	Port Klang	15.9	16.3	16.3	16.6	---	16.2
14	Hamburg	9.7	9.8	10.2	---	---	9.9
15	Antwerp	11.6	9.8	11.9	12.1	12.1	11.5
16	Los Angeles	---	---	---	---	---	---
17	- Yokohama	15.5	15.1	15.8	15.9	---	15.6
	- Tokyo	11.1	11.0	10.7	10.6	10.2	10.7
	- Kawasaki	---	---	---	---	---	8.9
18	Tanjung Pelepas	---	---	---	---	---	---
19	Xiamen	---	---	10.7	---	---	10.7
20	Dalian	---	---	---	---	---	---
21	Long Beach	17.6	17.9	18.2	24.0	24.1	20.4
22	Bremen/Bremerhaven	---	---	---	---	---	---
23	Laem Chabang	9.2	---	---	---	---	9.2
24	Tanjung Priok	2.8	2.8	---	---	---	2.9
25	New York-New Jersey	---	---	---	---	---	---
26	Lianyungang	---	---	---	---	---	---
27	- Kobe	---	---	---	---	---	---
28	Suzhou	---	---	---	---	---	---
29	Ho Chi Minh	---	---	---	---	---	---
30	Jawaharlal Nehru	12.8	12.8	---	---	---	12.6
31	Cambodia	5.4	5.1	---	---	---	5.1
32	Manila	11.6	---	10.9	10.5	---	11.2

Table 6.19 Weight-Container Ratio (Tons/TEU) for Each Region

Country/Region	Weight-Container Ratio (Tons/TEU)
Australia	12.0
China	10.7
Japan	11.7
Korea	16.4
USA	20.4
ASEAN	9.6
EU27	10.3

6.6 Summary of Findings

This chapter presents the development of a two-step value-to-container conversion mechanism. The conversion model is divided mainly into two stages: (1) value-to-weight transformation, and (2) weight-to-container conversion. A comprehensive study on the commodity value-weight characteristics is performed so as to fully understand their specialities for building the conversion model. Commodity trade data for this study is mainly obtained from the USA Trade Online® database (United States Census Bureau, 2015) and the Containerisation International database (CI, 2013).

In the commodity value-weight characteristics analysis, it could be observed that both commodity traded value and weight increase along the study period, meaning that the international trade between US and foreign trading partners is growing annually, except the year after the global financial crisis. Besides, it could be noted that from the percentage of the selected commodities over the total U.S. foreign trade, the share of the commodity value over the total trade does not necessarily be the same as that of the commodity weight. Those commodities constitute approximately 35% of the total U.S. imports (in terms of value) but only contributes to around 5% of the total U.S. imports (in terms of weight), meaning that these products may possibly possess a high unit value. On the other hand, when looking into the percentage of these selected commodities over the total U.S. export trade, similar phenomenon can be observed.

Through investigating the commodity transport mode share per trade route, it could be noted that shippers are quite used to employ the transport mean which the goods is used to carry by as the changes in terms of mode share is

comparatively low. Besides, under same commodity group, the mode share phenomenon will be different along various import trade routes but when examining the USA export trade, consistent choice of transport mode is deployed for export to all destinations since the percentage fluctuation in mode share is minimal.

Through analysing the value-weight ratios in USA imports and exports by various transports, several interesting facts could be observed: (1) within the same commodity type, same trade flow direction and same transport mode, value-weight ratio appeared to have a wide range of value across regions, thus meaning that when applying the value-weight ratio for value-to-weight conversion, spatial effects has to be taken into account as different regions may have a unique ratio for conversion; (2) commodity value-weight ratio is dependent on trade flow direction between same country pair (i.e. import and export), thus meaning that commodity value-weight ratio is also trade-direction specific; (3) commodity value-weight ratio is dependent on the transport mean as well even under same country pair and same trade flow direction, thus this ratio is also transport-mode specific.

After analysing the commodity value-weight characteristics, the first stage of the conversion mechanism, i.e. the value-to-weight conversion model, is developed. ARMAX models are employed to predict value-weight ratio trends of various commodities transported by sea mode between different country pairs. Two price indices related to international trade, i.e. the export price index and the import price index, are included in the export and import models respectively. The models are calibrated using 2008 to 2011 data and validated using 2012 and 2013 data. The models can effectively predict the

value-weight ratio as the percentage errors are quite low when comparing to the actual reported commodity data.

After developing the value-to-weight conversion model, weight-to-container study is performed. However, unlike commodity value and weight data, data related to container information is very limited. Container data which can be obtained in public database is obscure, meaning that only the total number of container and corresponding total weight are listed while detailed container weight and boxes data by commodity classification is missing. In this way, commodity differentiation is hardly possible to be considered in this conversion due to incomplete data available.

A study based on the weight and container port throughput data explains that such conversion factors might be greatly affected by origin and destination information. Estimates of the weight-container conversion factors are derived using annual total TEU throughput and tonnages reported in the Containerisation International (CI) database over the past five years. The conversion factor was found to be relatively stable. It was also found that different ports have their own conversion factors. To simplify the conversion procedures for this weight-to-container conversion, conversion factor per country or region would be computed from the mean value of the ports where they located in the country or region.

CHAPTER 7 APPLICATION OF DEVELOPED FRAMEWORK

After developing each individual module involved in the global container trade forecasting framework as shown in Figure 3.1, a practical application of the entire framework on forecasting container trade demand over major trade routes is presented in this chapter. The trade forecasting module is used to derive the amount of total trade flow between countries. Then the model choice models developed in the second module is applied to extract the amount of seaborne trade between countries from the first module. Lastly, container trade flow between countries and regions are estimated through the commodity value-weight-container conversion process.

7.1 Introduction

As discussed in Chapter 3, the modelling framework is composed of three main modules: trade demand forecasting module, transport mode choice module and value-weight-container transformation module. In this study, in order to cover the major global trading routes, the geographical scope will include the Trans-Pacific trade, the Trans-Atlantic trade, and the Intra-Asian trade routes. Countries and regions involved are similar to those presented in the Chapter 4 and are shown in Table 7.1.

Table 7.1 Countries and Regions Considered in this Study

Code	Regional Descriptions
AUS	Australia
CHN	China PRC
JPN	Japan
KOR	South Korea
USA	United States
ASEAN	ASEAN 10 – Cambodia, Brunei Darussalam, Indonesia, Lao People’s Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam
EU-27	European Union 27 - Belgium, Bulgaria, Czech Republic, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, Netherlands, Austria, Poland, Portugal, Romania, Slovenia, Slovakia, Finland, Sweden and United Kingdom

In the trade forecasting module, total trade flow between countries/regions are predicted under various case scenarios.. In this study, it is assumed that external trade policies or regulations, such as free-trade-zone developments, trade barrier establishments, and other regional trading measures are not considered in this chapter even though they may have a positive or negative impact to the regional trade growth as discussed in other studies (Cheong and Cho, 2013; Kepaptsoglou, 2009; Russo and Assumma, 2005; Sharma and Kallummal, 2012; Strutt, 2008). This is because the aim of this implementation case study is to forecast the trade trend under the impact of global economic growth. Therefore, socio-economic variables are considered as the input parameters and are shown in Table 7.2

Table 7.2 Parameters Considered in Trade Forecasting Module	
Parameters Considered	
1	GDP Growth
2	Population Growth
3	Labour Force Growth

Freight mode choice model, as described in Chapter 5, is then applied to extract the amount of maritime trade between countries out from the total trade between them. Binary probit model is employed to determine the mode choice behaviour of commodity in this study, assuming only two major transport modes i.e. sea and air will be available to carried goods between countries while the use of land transport is negligible. A total of twelve mode choice models are developed using the commodity import and export data from the U.S. As there is a lack of detailed commodity data for freight mode choice development, further assumptions have to be made on deriving the commodity mode choice behaviours for goods trading between regions beyond the U.S.

In the last module, amount of container trade between countries are determined by converting maritime trade in monetary value to number of containers using the two-step commodity value-to-container conversion process as described in Chapter 6. This conversion process is divided into two stage: (1) value-to-weight transformation, and (2) weight-to-container conversion. Commodity value-to-weight transformation models are developed using the ARMAX models with commodity data from the U.S. The weight-to-container conversion process is estimated from the port data from other databases. Due to scarcity of publicly available detailed container trade data, further assumptions have to be made on deriving a suitable conversion process for goods trading between regions beyond the U.S.

In this chapter, assumptions made in each stage will be discussed. The results and discussion from each module will be presented sequentially and a summary of the findings will be presented at the end.

7.2 Module I - Global Trade Forecasting Model

The Global Trade Analysis Project (GTAP) CGE model, which is used as the global trade forecasting model in this Chapter 4, was applied in this case study to predict the future bilateral trade between countries under various economic growth conditions between 2015 and 2020. The model was calibrated and validated and are described in Chapter 4 in details. Three case scenarios, namely (1) median growth, (2) high growth and (3) low growth, are considered in the Chapter and are presented in Table 7.3. In the median growth scenario, global economy is assumed to grow in a steady manner (i.e. business-as-usual) without substantial growth or reduction. In the high growth scenario, global economy is predicted to grow in a fast pace with stimuli of economic boom. On the contrary,

the global economy is assumed to be growing in a slow pace where GDP is contracting and employment rate is low. The value of parameters applied are described in Chapter 4 and are presented in Tables 4.20 to 4.22.

Table 7.3 Case Scenario Settings

Parameters Considered	Case Scenario		
	Median	High	Low
GDP Growth	Median	High	Low
Population Growth	Median	High	Low
Labour Force Growth	Median	High	Low

In Chapter 4, only selected commodity groups for trade between the US and other trading partners were presented. In this Chapter, all commodity groups traded along all the routes under all case scenarios were studied. Selected routes (i.e. between U.S. and her trading partners, and EU-27 and her trading partners) were discussed in details in this Section.

7.2.1 Predicted Commodity Trade between U.S. and her Trading Partners

Annual growth rates in import and export trade between U.S. and her trading partners are predicted using the trade forecasting module under all three case scenarios (as shown in Table 7.3). Discussion on each case scenarios are presented in the following sub-sections.

7.2.1.1 Median Growth Case Scenario

In the median growth scenario, annual growth rate for each commodity group at HS 2-digit classification and section between US and her trading partners were predicted using the trade forecasting module and results are presented in Tables 7.4 to 7.9.

It could be observed from the tables that within the same broad section, each commodity group has different growth rates. This could be due to the fact

that under a broad classification with similar nature in products, commodity differentiation still exists inside the same group. For instance, for “Vegetables Products” commodity, annual growth rates for U.S. imports from Australia range from -2.04% (in the HS 10 “Cereals” commodity) to 1.51% (in the HS 11 “Products of milling industry” commodity) while annual growth rates for U.S. exports to Australia vary from -1.44% (in the HS 8 “Edible fruits and nuts” commodity) to 0.23% (in the HS 11 “Products of milling industry” commodity).

It could also be observed that when the import growth rate is negative (meaning contraction in its imports), the export growth rate tends to be also negative (albeit at a higher rate). One explanation to this phenomenon is that when consumption within the U.S. remains steady, consumptions of goods tends to shift from imported goods to domestic products while decreasing the amount of exported goods to maintain the domestic consumption within the US. For instance, under the section “Textiles and Textile Articles”, the annual fall in U.S. imports from Australia vary from -6.98% to -0.58% while the annual fall in its exports vary from -9.15% to -3.06%, decreasing at a much steeper rate than that for U.S. imports. On the other hand, it could also be observed in Tables 7.4 to 7.9 that even when the import growth rate is positive (i.e. expansion in its import trade), export growth rate is either negative or less than the import growth rate. One possible explanation to this phenomenon is that due to growing in the consumption of that commodity, more imports are required to cover the domestic needs of the country while less products are available to be exported. For instance, for the “Vehicles” commodity, the annual growth rates in U.S. imports from Australia were mostly positive (i.e. an expansion in its import

from Australia) while the annual rates are all negative in its exports trends (i.e. a contraction in U.S. export to Australia).

Furthermore, when comparing the same commodity group across different trading partners, it can be observed that different growth rates in commodity trade could be observed. This could be due to the fact that imported commodities are origin-specific. Goods from different origins have different competitive advantages, resulting in various annual growth rates in imports from these countries. For instance, for “HS 22 - Beverages” commodity, it can be observed that the growth in US imports from different trading partners vary from 0.53% (originated from EU-27) to 5.33% (originated from Japan).

Table 7.4 Predicted Annual Growth Rate in Commodity Trade between US and Australia (Median Growth Scenario)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	1.89%	1.82%	1.98%	1.84%	0.73%	0.67%	0.89%	1.05%	1.35%	1.56%	1.27%	1.38%
02		3.40%	3.22%	3.33%	3.05%	1.20%	1.05%	-1.46%	-1.18%	-0.93%	-0.66%	0.54%	0.68%
03		1.50%	1.31%	1.35%	1.02%	0.42%	0.50%	-1.23%	-1.18%	-0.91%	-0.74%	0.03%	-0.20%
04		2.84%	2.66%	2.73%	2.39%	0.79%	0.73%	-0.66%	-0.40%	-0.10%	0.19%	0.44%	0.15%
05		0.48%	-0.02%	-0.32%	-1.03%	-0.90%	-1.11%	0.14%	0.28%	0.58%	0.77%	0.56%	0.69%
06	VEGETABLE PRODUCTS	0.10%	0.01%	0.39%	0.34%	-0.70%	-0.43%	-0.14%	-0.34%	-0.25%	-0.55%	-0.16%	-0.16%
07		0.32%	0.21%	0.32%	0.20%	0.03%	-0.16%	-1.33%	-1.40%	-1.24%	-1.21%	-0.30%	-0.46%
08		0.01%	-0.05%	0.12%	0.12%	0.00%	-0.17%	-1.34%	-1.44%	-1.31%	-1.33%	-0.63%	-0.39%
09		0.54%	0.36%	0.57%	0.34%	-0.28%	-0.38%	-0.52%	-0.65%	-0.51%	-0.68%	-0.42%	-0.37%
10		-1.79%	-2.04%	-1.76%	-1.88%	-1.51%	-1.27%	-1.05%	-1.14%	-0.92%	-0.94%	-0.97%	-0.99%
11		1.51%	1.30%	1.24%	0.87%	0.11%	-0.01%	-1.02%	-0.98%	-0.71%	-0.53%	0.23%	0.05%
12		0.82%	0.78%	1.12%	1.08%	0.33%	0.54%	-0.11%	-0.23%	-0.12%	-0.27%	-0.17%	0.31%
13		1.13%	0.87%	0.84%	0.43%	-0.22%	-0.30%	-1.27%	-1.21%	-0.93%	-0.75%	-0.16%	0.12%
14		0.89%	0.83%	0.95%	0.75%	0.10%	0.28%	-0.69%	-0.49%	-0.06%	0.19%	-0.07%	0.15%
15	FATS & OILS	3.32%	3.15%	3.27%	2.99%	1.43%	1.42%	-1.57%	-1.46%	-1.13%	-0.98%	-0.56%	-0.36%
16	PREPARED FOODSTUFFS	1.53%	1.25%	1.20%	0.74%	-0.24%	-0.03%	-1.39%	-1.23%	-0.98%	-0.75%	0.20%	0.35%
17		2.63%	2.47%	2.56%	2.28%	0.83%	1.04%	-0.55%	-0.27%	0.03%	0.33%	0.77%	0.99%
18		1.11%	0.84%	0.82%	0.41%	-0.40%	-0.64%	-1.24%	-1.21%	-0.95%	-0.79%	-0.10%	-0.29%
19		1.14%	0.87%	0.84%	0.41%	-0.45%	-0.18%	-1.30%	-1.25%	-0.98%	-0.80%	-0.07%	-0.30%
20		1.14%	0.87%	0.84%	0.41%	-0.61%	-0.86%	-1.30%	-1.25%	-0.98%	-0.80%	-0.16%	-0.41%
21		1.61%	1.37%	1.38%	0.98%	-0.08%	0.05%	-1.24%	-1.18%	-0.91%	-0.72%	0.07%	0.29%
22		1.69%	1.50%	1.43%	1.09%	1.02%	1.00%	0.15%	0.18%	0.38%	0.56%	1.22%	1.18%
23		1.09%	0.85%	0.96%	0.59%	-0.46%	-0.67%	-1.36%	-1.33%	-1.02%	-0.91%	-0.12%	-0.41%
24		1.69%	1.50%	1.43%	1.08%	0.44%	0.68%	0.15%	0.17%	0.37%	0.53%	0.83%	0.96%
25	MINERAL PRODUCTS	1.14%	1.24%	1.39%	1.36%	0.45%	0.55%	-1.35%	-1.19%	-0.90%	-0.73%	-0.97%	-0.94%
26		1.15%	1.25%	1.40%	1.38%	0.89%	0.77%	-0.90%	-0.75%	-0.48%	-0.34%	-0.86%	-0.88%
27		4.92%	5.36%	5.19%	5.38%	3.85%	4.02%	5.30%	5.94%	6.82%	7.50%	4.72%	4.62%
28	CHEMICAL PRODUCTS	3.04%	3.16%	3.39%	3.23%	0.82%	0.65%	-1.48%	-1.20%	-0.77%	-0.40%	-0.15%	-0.04%
29		2.90%	3.00%	3.22%	3.05%	0.66%	0.40%	-1.71%	-1.46%	-1.07%	-0.74%	-0.46%	-0.75%
30		2.86%	2.97%	3.19%	3.01%	0.84%	0.78%	-1.75%	-1.50%	-1.11%	-0.78%	-0.30%	-0.55%
31		2.45%	2.56%	2.78%	2.65%	0.40%	0.32%	-1.71%	-1.46%	-1.07%	-0.74%	-0.26%	-0.36%
32		2.90%	3.01%	3.23%	3.06%	0.67%	0.93%	-1.71%	-1.46%	-1.07%	-0.74%	-0.45%	-0.66%
33		2.90%	3.01%	3.23%	3.06%	0.73%	0.75%	-1.71%	-1.46%	-1.07%	-0.74%	-0.71%	-0.64%
34		2.31%	2.40%	2.60%	2.42%	0.02%	0.27%	-1.87%	-1.62%	-1.23%	-0.90%	-0.49%	-0.63%
35		2.53%	2.45%	2.57%	2.29%	0.58%	0.53%	-1.62%	-1.39%	-1.02%	-0.70%	-0.51%	-0.36%
36		-0.79%	-0.95%	-0.96%	-1.34%	-2.58%	-2.42%	-3.27%	-3.03%	-2.66%	-2.33%	-1.69%	-1.43%
37		2.90%	3.01%	3.23%	3.06%	0.89%	0.85%	-1.71%	-1.46%	-1.07%	-0.74%	-0.18%	0.04%
38		2.68%	2.75%	2.94%	2.73%	0.30%	0.31%	-1.85%	-1.60%	-1.21%	-0.87%	-0.77%	-0.95%
39	PLASTICS	2.90%	3.01%	3.23%	3.06%	0.85%	0.98%	-1.71%	-1.46%	-1.07%	-0.74%	-0.68%	-0.95%
40		2.87%	2.98%	3.20%	3.02%	0.90%	0.74%	-1.71%	-1.46%	-1.07%	-0.74%	-0.60%	-0.50%
41	LEATHER GOODS	-3.39%	-3.46%	-3.34%	-3.57%	-5.35%	-5.48%	-9.96%	-9.79%	-9.53%	-9.30%	-8.31%	-8.08%
42		-4.00%	-4.47%	-4.80%	-5.56%	-5.80%	-5.88%	-7.80%	-7.71%	-7.54%	-7.38%	-5.82%	-6.06%
43		0.71%	0.52%	0.50%	0.20%	-0.11%	-0.24%	-0.33%	-0.44%	-0.33%	-0.27%	0.52%	0.62%
44	WOOD PRODUCTS	1.29%	1.00%	0.90%	0.43%	-0.46%	-0.27%	-2.50%	-2.31%	-1.91%	-1.60%	-1.06%	-1.05%
45		1.11%	0.81%	0.70%	0.24%	-0.58%	-0.87%	-2.53%	-2.34%	-1.94%	-1.63%	-1.43%	-1.20%
46		1.17%	0.79%	0.62%	0.07%	-0.78%	-0.59%	-2.77%	-2.60%	-2.21%	-1.91%	-1.60%	-1.34%
47	PAPER	1.86%	1.69%	1.66%	1.24%	-0.11%	-0.10%	-2.18%	-1.99%	-1.65%	-1.35%	-1.01%	-0.92%
48		1.86%	1.69%	1.66%	1.24%	-0.10%	0.16%	-2.18%	-1.99%	-1.65%	-1.35%	-0.74%	-0.57%
49		1.86%	1.69%	1.66%	1.24%	-0.19%	-0.33%	-2.18%	-1.99%	-1.65%	-1.35%	-0.29%	-0.37%

Table 7.4 Predicted Annual Growth Rate in Commodity Trade between US and Australia (Median Growth Scenario) (cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-2.33%	-3.64%	-4.94%	-6.98%	-3.68%	-3.91%	-7.23%	-7.01%	-6.71%	-6.44%	-5.45%	-5.38%
51		-2.40%	-3.76%	-5.12%	-7.25%	-3.79%	-3.66%	-6.93%	-6.67%	-6.34%	-6.05%	-5.73%	-5.59%
52		-1.13%	-1.44%	-1.56%	-2.14%	-2.83%	-2.72%	-8.25%	-8.14%	-7.97%	-7.82%	-6.34%	-6.26%
53		-1.13%	-1.44%	-1.56%	-2.14%	-3.03%	-2.90%	-6.89%	-6.67%	-6.37%	-6.10%	-5.19%	-5.42%
54		-1.13%	-1.44%	-1.56%	-2.14%	-2.80%	-2.69%	-8.29%	-8.19%	-8.03%	-7.88%	-6.70%	-6.41%
55		-1.13%	-1.44%	-1.56%	-2.14%	-3.08%	-3.04%	-8.29%	-8.19%	-8.03%	-7.88%	-6.83%	-7.00%
56		-1.13%	-1.44%	-1.56%	-2.14%	-3.19%	-2.92%	-8.29%	-8.19%	-8.03%	-7.88%	-6.74%	-6.83%
57		-1.13%	-1.44%	-1.56%	-2.14%	-3.31%	-3.24%	-8.29%	-8.19%	-8.03%	-7.88%	-6.55%	-6.41%
58		-1.13%	-1.44%	-1.56%	-2.14%	-3.22%	-3.50%	-8.29%	-8.19%	-8.03%	-7.88%	-6.66%	-6.94%
59		-1.36%	-1.61%	-1.71%	-2.20%	-3.21%	-2.93%	-4.43%	-4.20%	-3.85%	-3.52%	-2.91%	-3.06%
60		-1.13%	-1.44%	-1.56%	-2.14%	-3.23%	-3.37%	-8.29%	-8.19%	-8.03%	-7.88%	-6.83%	-7.02%
61		-1.31%	-1.70%	-1.85%	-2.49%	-3.37%	-3.55%	-8.89%	-8.76%	-8.56%	-8.37%	-7.02%	-7.18%
62		-1.39%	-1.80%	-1.97%	-2.64%	-3.26%	-2.98%	-9.15%	-9.01%	-8.80%	-8.59%	-7.11%	-7.03%
63	-0.58%	-0.90%	-1.04%	-1.62%	-2.82%	-2.61%	-6.16%	-5.91%	-5.56%	-5.22%	-4.29%	-4.29%	
64	FOOTWEAR	-7.70%	-8.03%	-8.17%	-8.73%	-9.69%	-9.40%	-10.16%	-10.00%	-9.76%	-9.55%	-8.74%	-8.92%
65		1.92%	1.94%	2.12%	1.89%	-0.54%	-0.42%	-2.72%	-2.41%	-1.98%	-1.60%	-1.48%	-1.65%
66		-3.35%	-3.87%	-4.28%	-5.11%	-5.21%	-5.26%	-6.73%	-6.72%	-6.61%	-6.51%	-4.36%	-4.53%
67		-3.35%	-3.87%	-4.28%	-5.11%	-5.04%	-5.08%	-6.73%	-6.72%	-6.61%	-6.51%	-4.75%	-4.83%
68	STONE & GLASS	1.16%	1.02%	1.03%	0.65%	-0.63%	-0.86%	-2.61%	-2.39%	-2.02%	-1.69%	-0.81%	-0.64%
69		1.16%	1.02%	1.03%	0.65%	-0.58%	-0.67%	-2.61%	-2.39%	-2.02%	-1.69%	-1.02%	-0.78%
70		1.14%	1.00%	1.01%	0.63%	-0.49%	-0.66%	-2.70%	-2.48%	-2.11%	-1.77%	-1.20%	-1.11%
71	PRECIOUS STONES	-0.80%	-0.94%	-0.92%	-1.29%	-2.45%	-2.19%	-5.17%	-4.95%	-4.59%	-4.24%	-3.03%	-3.22%
72	BASE METALS	1.13%	1.20%	1.38%	1.25%	-0.62%	-0.38%	-1.12%	-0.65%	-0.11%	0.44%	0.22%	0.19%
73		0.92%	0.90%	1.00%	0.77%	-0.89%	-0.77%	-3.41%	-3.09%	-2.66%	-2.22%	-1.76%	-1.65%
74		-0.22%	-0.33%	-0.27%	-0.64%	-1.81%	-1.87%	-1.16%	-0.88%	-0.48%	-0.10%	0.92%	1.08%
75		-0.58%	-0.70%	-0.64%	-1.02%	-2.22%	-2.00%	-2.28%	-1.74%	-1.00%	-0.38%	-0.89%	-0.85%
76		-0.56%	-0.68%	-0.63%	-1.01%	-2.08%	-2.10%	-3.02%	-2.58%	-1.97%	-1.42%	-1.43%	-1.46%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		-0.58%	-0.70%	-0.64%	-1.02%	-1.89%	-1.67%	-2.23%	-1.69%	-0.94%	-0.32%	-0.87%	-0.75%
79		-0.58%	-0.70%	-0.64%	-1.02%	-1.79%	-1.96%	-2.23%	-1.69%	-0.94%	-0.32%	-1.19%	-0.90%
80		-0.58%	-0.70%	-0.64%	-1.02%	-1.99%	-2.17%	-2.33%	-1.81%	-1.07%	-0.46%	-0.84%	-1.04%
81		-0.59%	-0.71%	-0.65%	-1.02%	-2.02%	-2.11%	-1.82%	-1.24%	-0.41%	0.24%	-0.88%	-1.02%
82		0.08%	-0.17%	-0.27%	-0.77%	-1.89%	-2.16%	-3.97%	-3.66%	-3.27%	-2.85%	-2.05%	-2.06%
83		0.08%	-0.17%	-0.27%	-0.77%	-2.22%	-2.00%	-3.97%	-3.66%	-3.27%	-2.85%	-2.00%	-1.76%
84	MACHINE	0.87%	0.54%	0.38%	-0.21%	-0.31%	-0.37%	-3.51%	-3.23%	-2.81%	-2.42%	-1.97%	-1.28%
85		0.16%	-0.15%	-0.28%	-0.86%	-1.02%	-1.23%	-4.67%	-4.43%	-4.02%	-3.67%	-2.72%	-2.67%
86	VEHICLES	2.33%	2.25%	2.24%	1.90%	0.13%	0.18%	-3.14%	-2.99%	-2.62%	-2.32%	-1.44%	-1.71%
87		2.47%	2.34%	2.31%	1.94%	1.87%	1.72%	-1.67%	-1.43%	-1.05%	-0.70%	-0.42%	-0.19%
88		2.32%	2.24%	2.23%	1.88%	0.31%	0.08%	-3.24%	-3.10%	-2.74%	-2.44%	-0.99%	-0.85%
89		2.32%	2.24%	2.23%	1.89%	0.00%	-0.27%	-3.24%	-3.09%	-2.73%	-2.44%	-1.45%	-1.16%
90	CLOCKS & MUSICAL INST.	0.84%	0.49%	0.29%	-0.32%	-1.51%	-1.68%	-3.34%	-3.06%	-2.63%	-2.23%	-1.28%	-1.51%
91		0.86%	0.51%	0.31%	-0.30%	-1.36%	-1.41%	-3.33%	-3.05%	-2.63%	-2.23%	-1.47%	-1.75%
92		-3.35%	-3.87%	-4.28%	-5.11%	-4.91%	-5.15%	-6.73%	-6.72%	-6.61%	-6.51%	-4.40%	-4.42%
93	ARMS	0.85%	0.50%	0.31%	-0.30%	-1.22%	-0.96%	-3.34%	-3.05%	-2.63%	-2.23%	-1.24%	-1.01%
94	MISC. ART.	-2.13%	-2.56%	-2.85%	-3.55%	-4.19%	-4.31%	-4.75%	-4.55%	-4.22%	-3.90%	-2.70%	-2.61%
95		-3.35%	-3.87%	-4.28%	-5.11%	-5.35%	-5.70%	-6.73%	-6.72%	-6.61%	-6.51%	-4.31%	-4.37%
96		-3.35%	-3.88%	-4.29%	-5.11%	-5.20%	-5.10%	-6.74%	-6.72%	-6.62%	-6.51%	-4.60%	-4.75%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

Table 7.5 Predicted Annual Growth Rate in Commodity Trade between US and China (Median Growth Scenario)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	3.46%	3.25%	3.16%	2.83%	2.94%	3.21%	1.64%	1.58%	1.56%	1.59%	2.46%	2.41%
02		22.76%	22.38%	22.13%	21.51%	21.41%	21.22%	-5.28%	-4.98%	-4.72%	-4.43%	-4.18%	-3.99%
03		7.54%	7.18%	7.04%	6.56%	6.75%	6.95%	-0.51%	-0.39%	-0.20%	0.00%	0.56%	0.64%
04		9.44%	9.26%	9.31%	9.06%	8.68%	8.73%	-2.68%	-2.47%	-2.30%	-2.08%	-1.46%	-1.75%
05		18.52%	18.24%	17.57%	16.14%	16.44%	16.14%	-0.10%	0.07%	0.20%	0.36%	0.66%	0.60%
06	VEGETABLE PRODUCTS	11.04%	11.09%	11.44%	11.53%	11.12%	10.87%	2.36%	2.34%	2.47%	2.37%	2.83%	3.10%
07		7.22%	6.96%	6.89%	6.57%	6.61%	6.53%	-0.89%	-0.89%	-0.67%	-0.59%	-0.01%	-0.22%
08		6.80%	6.66%	6.68%	6.54%	6.84%	6.78%	-1.05%	-1.18%	-0.93%	-0.98%	-0.19%	-0.45%
09		9.84%	9.74%	9.93%	9.84%	9.81%	9.56%	1.67%	1.55%	1.62%	1.41%	1.67%	1.84%
10		5.65%	5.41%	5.98%	6.00%	6.31%	6.13%	0.29%	0.25%	0.22%	0.18%	0.13%	0.08%
11		7.61%	7.23%	7.08%	6.58%	6.86%	7.09%	-0.62%	-0.48%	-0.29%	-0.07%	0.65%	0.67%
12		10.08%	10.07%	10.36%	10.38%	9.76%	9.76%	6.55%	6.67%	6.85%	6.98%	7.21%	7.34%
13		7.57%	7.21%	7.06%	6.58%	6.82%	6.80%	0.65%	0.84%	1.08%	1.30%	1.21%	1.36%
14		5.91%	5.97%	6.16%	6.12%	5.21%	5.28%	1.98%	2.19%	2.45%	2.62%	2.43%	2.63%
15	FATS & OILS	10.26%	9.98%	9.97%	9.59%	9.53%	9.34%	-3.33%	-3.25%	-2.91%	-2.81%	-2.66%	-2.56%
16	PREPARED FOODSTUFFS	8.33%	8.05%	7.99%	7.61%	7.63%	7.80%	-4.60%	-4.33%	-4.06%	-3.77%	-3.92%	-4.06%
17		14.29%	14.20%	14.30%	14.12%	13.12%	13.15%	-4.23%	-4.01%	-3.86%	-3.66%	-3.33%	-3.12%
18		7.76%	7.40%	7.27%	6.80%	6.74%	6.46%	-0.48%	-0.36%	-0.17%	0.01%	0.47%	0.53%
19		7.63%	7.25%	7.09%	6.60%	6.86%	6.74%	-0.69%	-0.54%	-0.35%	-0.13%	0.22%	0.16%
20		7.63%	7.25%	7.09%	6.60%	6.97%	6.77%	-0.69%	-0.54%	-0.35%	-0.13%	0.12%	0.13%
21		7.66%	7.29%	7.13%	6.65%	6.70%	6.51%	-0.99%	-0.83%	-0.63%	-0.40%	0.10%	0.16%
22		5.33%	5.08%	4.97%	4.59%	4.47%	4.43%	1.82%	1.88%	1.96%	2.11%	2.84%	2.91%
23		8.43%	8.15%	8.14%	7.77%	7.36%	7.62%	-2.77%	-2.72%	-2.40%	-2.32%	-2.19%	-2.47%
24		8.19%	8.23%	8.53%	8.58%	7.91%	8.06%	2.29%	2.23%	2.27%	2.22%	2.74%	2.97%
25	MINERAL PRODUCTS	5.26%	5.16%	5.14%	4.87%	4.17%	3.98%	7.59%	7.73%	7.89%	8.12%	8.06%	8.06%
26		3.12%	3.26%	3.44%	3.44%	2.28%	2.03%	7.73%	7.85%	8.00%	8.21%	8.55%	8.43%
27		7.53%	7.69%	7.86%	7.80%	5.97%	5.75%	9.27%	9.99%	10.67%	11.35%	8.87%	8.71%
28	CHEMICAL PRODUCTS	9.64%	9.43%	9.34%	8.96%	8.65%	8.39%	2.76%	3.23%	3.65%	4.10%	4.10%	4.19%
29		9.66%	9.44%	9.36%	8.97%	8.34%	8.29%	2.64%	3.10%	3.50%	3.94%	3.73%	3.87%
30		9.53%	9.28%	9.16%	8.74%	8.60%	8.88%	2.60%	3.06%	3.46%	3.90%	3.88%	3.98%
31		9.60%	9.39%	9.31%	8.93%	8.14%	7.96%	3.03%	3.47%	3.87%	4.31%	4.10%	3.81%
32		9.67%	9.45%	9.36%	8.97%	8.69%	8.69%	2.65%	3.10%	3.50%	3.94%	3.55%	3.48%
33		9.67%	9.45%	9.36%	8.97%	8.76%	9.02%	2.65%	3.10%	3.50%	3.94%	3.63%	3.75%
34		8.89%	8.50%	8.25%	7.71%	8.01%	7.90%	2.61%	3.07%	3.47%	3.91%	4.05%	4.33%
35		9.28%	9.04%	8.95%	8.55%	8.23%	8.36%	2.06%	2.50%	2.91%	3.35%	2.99%	2.75%
36		7.99%	7.37%	6.91%	6.14%	6.96%	6.81%	2.19%	2.66%	3.08%	3.53%	3.45%	3.21%
37		9.67%	9.45%	9.36%	8.97%	8.61%	8.35%	2.65%	3.10%	3.50%	3.94%	3.68%	3.78%
38		9.48%	9.21%	9.07%	8.64%	8.46%	8.66%	2.41%	2.87%	3.28%	3.74%	3.77%	4.00%
39	PLASTICS	9.67%	9.45%	9.36%	8.97%	8.21%	8.49%	2.65%	3.10%	3.50%	3.94%	3.88%	4.05%
40		9.65%	9.43%	9.34%	8.96%	8.21%	8.10%	2.62%	3.06%	3.45%	3.88%	3.49%	3.24%
41	LEATHER GOODS	3.75%	3.23%	2.87%	2.23%	3.07%	2.81%	-1.04%	-0.81%	-0.61%	-0.38%	0.25%	0.26%
42		5.18%	4.65%	4.29%	3.62%	4.48%	4.64%	-2.83%	-2.47%	-2.18%	-1.86%	-1.17%	-1.42%
43		3.46%	3.25%	3.16%	2.83%	2.99%	3.20%	1.64%	1.58%	1.57%	1.60%	2.48%	2.73%
44	WOOD PRODUCTS	6.05%	5.51%	5.18%	4.55%	5.30%	5.12%	1.04%	1.23%	1.47%	1.66%	1.90%	1.99%
45		6.01%	5.46%	5.13%	4.50%	4.92%	5.16%	1.39%	1.57%	1.80%	1.97%	1.93%	2.16%
46		6.01%	5.46%	5.12%	4.48%	5.13%	5.27%	-1.23%	-1.23%	-1.17%	-1.12%	-0.30%	-0.60%
47	PAPER	9.41%	9.05%	8.85%	8.36%	8.45%	8.72%	0.64%	0.90%	1.12%	1.40%	1.59%	1.72%
48		9.41%	9.05%	8.85%	8.36%	8.05%	7.88%	0.64%	0.90%	1.12%	1.40%	1.74%	1.45%
49		9.41%	9.05%	8.85%	8.36%	8.30%	8.56%	0.64%	0.90%	1.12%	1.40%	2.00%	1.88%

Table 7.5 Predicted Annual Growth Rate in Commodity Trade between US and China (Median Growth Scenario) (cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	10.76%	10.38%	10.07%	9.32%	9.70%	9.83%	-0.96%	-0.57%	-0.34%	-0.04%	0.43%	0.38%
51		11.38%	11.04%	10.73%	9.95%	10.08%	10.13%	-0.86%	-0.48%	-0.26%	0.03%	0.33%	0.46%
52		8.52%	7.95%	7.57%	6.86%	8.08%	8.11%	3.35%	3.68%	3.97%	4.23%	3.91%	3.62%
53		8.52%	7.95%	7.57%	6.86%	7.95%	8.23%	5.94%	6.05%	6.18%	6.27%	6.21%	6.02%
54		8.52%	7.95%	7.57%	6.86%	7.92%	7.74%	-1.36%	-0.94%	-0.67%	-0.31%	0.28%	0.53%
55		8.52%	7.95%	7.57%	6.86%	7.76%	7.97%	-1.36%	-0.94%	-0.67%	-0.31%	0.26%	0.04%
56		8.52%	7.95%	7.57%	6.86%	7.85%	7.80%	-1.36%	-0.94%	-0.67%	-0.31%	0.28%	0.41%
57		8.52%	7.95%	7.57%	6.86%	7.79%	7.82%	-1.36%	-0.94%	-0.67%	-0.31%	0.04%	-0.04%
58		8.52%	7.95%	7.57%	6.86%	7.97%	7.95%	-1.36%	-0.94%	-0.67%	-0.31%	0.18%	0.00%
59		8.14%	7.53%	7.09%	6.33%	7.09%	7.35%	0.63%	1.10%	1.48%	1.91%	1.60%	1.87%
60		8.52%	7.95%	7.57%	6.86%	8.10%	7.89%	-1.36%	-0.94%	-0.67%	-0.31%	0.13%	0.16%
61		8.06%	7.43%	7.06%	6.30%	7.21%	7.06%	-1.61%	-1.18%	-0.89%	-0.51%	-0.19%	-0.26%
62		8.04%	7.39%	7.03%	6.27%	6.97%	6.92%	-2.38%	-1.92%	-1.58%	-1.12%	-1.02%	-1.08%
63	8.58%	8.01%	7.62%	6.90%	8.01%	8.21%	-1.39%	-0.94%	-0.65%	-0.26%	0.20%	0.10%	
64	FOOTWEAR	3.75%	3.23%	2.87%	2.23%	3.25%	3.51%	-2.90%	-2.54%	-2.25%	-1.94%	-1.47%	-1.33%
65		8.10%	7.47%	7.12%	6.37%	7.09%	7.18%	2.43%	2.89%	3.30%	3.75%	3.46%	3.55%
66		7.82%	7.16%	6.66%	5.84%	6.85%	6.90%	-1.91%	-1.46%	-1.13%	-0.72%	-0.34%	-0.26%
67		7.82%	7.16%	6.66%	5.84%	7.27%	7.43%	-1.91%	-1.46%	-1.13%	-0.72%	0.06%	0.20%
68	STONE & GLASS	7.44%	7.06%	6.83%	6.31%	6.54%	6.49%	0.32%	0.75%	1.09%	1.53%	1.77%	1.67%
69		7.44%	7.06%	6.83%	6.31%	6.69%	6.41%	0.32%	0.75%	1.09%	1.53%	2.02%	1.98%
70		7.49%	7.11%	6.87%	6.34%	6.78%	7.02%	0.27%	0.71%	1.05%	1.48%	1.77%	1.72%
71	PRECIOUS STONES	7.99%	7.37%	6.90%	6.13%	7.21%	7.37%	3.03%	3.59%	4.06%	4.63%	4.09%	3.95%
72	BASE METALS	5.92%	5.59%	5.35%	4.89%	5.74%	6.00%	3.09%	3.78%	4.36%	5.08%	4.39%	4.42%
73		8.13%	7.55%	7.12%	6.41%	7.16%	6.96%	0.30%	0.94%	1.44%	2.08%	2.00%	2.08%
74		10.05%	9.80%	9.68%	9.31%	8.89%	8.66%	0.56%	1.05%	1.44%	1.97%	2.22%	2.37%
75		10.33%	10.10%	9.98%	9.64%	9.77%	9.77%	1.96%	2.60%	3.14%	3.79%	3.32%	3.07%
76		9.15%	8.69%	8.38%	7.82%	8.44%	8.72%	1.59%	2.22%	2.74%	3.39%	3.24%	3.05%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		10.44%	10.22%	10.12%	9.80%	9.71%	9.67%	1.98%	2.62%	3.15%	3.80%	3.46%	3.24%
79		10.44%	10.22%	10.12%	9.80%	9.67%	9.46%	1.98%	2.62%	3.15%	3.80%	3.40%	3.64%
80		10.21%	9.95%	9.82%	9.46%	9.31%	9.13%	1.94%	2.58%	3.12%	3.77%	3.19%	2.95%
81		11.65%	11.63%	11.68%	11.51%	10.91%	10.75%	2.09%	2.73%	3.27%	3.92%	3.75%	3.82%
82		8.34%	7.70%	7.23%	6.48%	7.37%	7.23%	-0.54%	0.01%	0.41%	0.94%	1.28%	1.37%
83		8.34%	7.70%	7.23%	6.48%	7.38%	7.36%	-0.54%	0.01%	0.41%	0.94%	1.25%	1.46%
84	MACHINE	8.30%	7.70%	7.30%	6.59%	6.24%	6.12%	-0.99%	-0.52%	-0.13%	0.32%	0.51%	0.68%
85		6.71%	6.15%	5.81%	5.15%	5.01%	4.87%	0.10%	0.43%	0.79%	1.09%	2.26%	2.41%
86	VEHICLES	12.01%	11.56%	11.24%	10.69%	10.83%	10.66%	-2.72%	-2.31%	-1.97%	-1.49%	-0.63%	-0.37%
87		9.61%	9.21%	8.94%	8.42%	8.02%	7.57%	-1.71%	-1.32%	-1.02%	-0.57%	-0.04%	0.28%
88		12.09%	11.63%	11.30%	10.73%	10.94%	10.67%	-2.75%	-2.34%	-2.00%	-1.52%	-1.06%	-0.78%
89		12.25%	11.79%	11.46%	10.89%	11.40%	11.59%	-2.75%	-2.34%	-2.00%	-1.52%	-0.85%	-0.86%
90	CLOCKS & MUSICAL INST.	9.83%	9.14%	8.63%	7.84%	8.85%	9.11%	-1.50%	-0.95%	-0.55%	-0.01%	0.45%	0.23%
91		9.62%	8.95%	8.46%	7.68%	9.00%	8.90%	-1.51%	-0.96%	-0.56%	-0.02%	0.56%	0.72%
92		7.82%	7.16%	6.66%	5.84%	7.27%	7.11%	-1.91%	-1.46%	-1.13%	-0.72%	-0.09%	-0.20%
93	ARMS	9.81%	9.12%	8.61%	7.82%	8.64%	8.69%	-1.49%	-0.94%	-0.54%	0.00%	0.55%	0.69%
94	MISC. ART.	7.98%	7.33%	6.83%	6.02%	7.39%	7.25%	-1.35%	-0.82%	-0.42%	0.08%	0.76%	0.60%
95		7.82%	7.16%	6.66%	5.84%	5.42%	5.02%	-1.91%	-1.46%	-1.13%	-0.72%	-0.08%	-0.15%
96		7.77%	7.12%	6.62%	5.80%	7.22%	7.26%	-1.97%	-1.52%	-1.20%	-0.79%	-0.43%	-0.66%
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

Table 7.6 Predicted Annual Growth Rate in Commodity Trade between US and Japan (Median Growth Scenario)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.69%	0.41%	0.33%	-0.01%	-0.16%	0.04%	-2.68%	-2.53%	-2.57%	-2.55%	-2.02%	-2.12%
02		2.74%	1.98%	1.80%	1.26%	0.92%	0.76%	-7.91%	-7.80%	-8.00%	-8.13%	-6.22%	-6.50%
03		1.08%	0.62%	0.51%	0.04%	-0.24%	-0.33%	-3.87%	-3.58%	-3.48%	-3.37%	-2.79%	-2.54%
04		0.79%	0.25%	0.09%	-0.44%	-0.26%	-0.09%	-2.65%	-2.12%	-1.97%	-1.72%	-1.26%	-1.39%
05		1.33%	0.94%	0.86%	0.44%	0.10%	0.19%	-3.48%	-3.20%	-3.10%	-2.99%	-2.62%	-2.44%
06	VEGETABLE PRODUCTS	0.06%	-0.54%	-0.53%	-0.96%	-0.73%	-0.67%	-3.44%	-3.44%	-3.44%	-3.62%	-3.09%	-3.19%
07		0.74%	0.22%	0.07%	-0.43%	-0.49%	-0.26%	-4.15%	-4.03%	-3.96%	-3.94%	-3.09%	-2.92%
08		0.65%	0.18%	0.06%	-0.38%	-0.08%	-0.04%	-4.18%	-4.12%	-4.06%	-4.07%	-3.36%	-3.46%
09		0.38%	-0.19%	-0.26%	-0.73%	-0.34%	-0.63%	-3.81%	-3.90%	-3.98%	-4.26%	-3.54%	-3.43%
10		-1.76%	-2.37%	-2.15%	-2.50%	-2.16%	-2.37%	-1.92%	-1.85%	-1.86%	-1.85%	-1.84%	-1.82%
11		0.84%	0.32%	0.17%	-0.35%	-0.15%	0.02%	-3.48%	-3.18%	-3.10%	-2.98%	-2.67%	-2.90%
12		0.35%	-0.19%	-0.20%	-0.63%	-0.30%	-0.52%	-2.21%	-2.23%	-2.26%	-2.41%	-2.37%	-2.39%
13		0.78%	0.23%	0.08%	-0.45%	-0.31%	-0.16%	-3.57%	-3.26%	-3.10%	-2.96%	-2.96%	-3.17%
14		-0.24%	-0.71%	-0.54%	-0.93%	-1.13%	-1.25%	-2.86%	-2.54%	-2.29%	-2.13%	-2.35%	-2.14%
15	FATS & OILS	-0.53%	-1.17%	-1.26%	-1.82%	-1.85%	-1.71%	-6.56%	-6.48%	-6.52%	-6.67%	-5.11%	-5.29%
16	PREPARED FOODSTUFFS	0.80%	0.25%	0.09%	-0.44%	-0.61%	-0.60%	-7.63%	-7.54%	-7.68%	-7.80%	-5.71%	-5.55%
17		2.00%	1.46%	1.38%	0.96%	0.64%	0.52%	-2.80%	-2.29%	-2.05%	-1.80%	-1.78%	-1.62%
18		0.76%	0.21%	0.06%	-0.46%	-0.33%	-0.06%	-4.04%	-3.79%	-3.72%	-3.66%	-3.02%	-3.19%
19		0.78%	0.23%	0.08%	-0.45%	-0.60%	-0.65%	-4.07%	-3.78%	-3.69%	-3.58%	-2.84%	-2.88%
20		0.78%	0.23%	0.08%	-0.45%	-0.40%	-0.39%	-4.07%	-3.78%	-3.69%	-3.58%	-3.18%	-3.05%
21		0.78%	0.23%	0.08%	-0.45%	-0.69%	-0.87%	-3.95%	-3.64%	-3.54%	-3.42%	-3.09%	-3.13%
22		1.51%	1.19%	1.08%	0.69%	0.71%	0.67%	-1.67%	-1.42%	-1.39%	-1.29%	-0.79%	-0.96%
23		0.16%	-0.37%	-0.36%	-0.83%	-0.82%	-0.72%	-5.56%	-5.44%	-5.38%	-5.45%	-4.67%	-4.59%
24		1.45%	1.13%	1.02%	0.64%	0.52%	0.29%	-1.77%	-1.53%	-1.51%	-1.43%	-1.33%	-1.51%
25	MINERAL PRODUCTS	0.00%	-0.50%	-0.65%	-1.10%	-1.49%	-1.26%	-0.75%	-0.71%	-0.60%	-0.48%	-0.55%	-0.61%
26		0.05%	-0.35%	-0.46%	-0.84%	-1.09%	-1.28%	-0.58%	-0.57%	-0.47%	-0.37%	-0.41%	-0.69%
27		5.09%	5.91%	7.27%	9.17%	3.91%	3.94%	2.07%	2.52%	2.97%	3.31%	1.46%	1.30%
28	CHEMICAL PRODUCTS	-0.52%	-1.19%	-1.47%	-2.09%	-1.98%	-2.26%	-2.82%	-2.33%	-2.01%	-1.68%	-1.82%	-1.59%
29		-0.76%	-1.49%	-1.81%	-2.49%	-1.91%	-1.96%	-3.09%	-2.61%	-2.32%	-2.00%	-2.08%	-2.30%
30		-0.77%	-1.50%	-1.82%	-2.50%	-1.94%	-2.10%	-3.12%	-2.64%	-2.34%	-2.02%	-2.14%	-2.00%
31		-0.76%	-1.49%	-1.81%	-2.49%	-1.76%	-1.62%	-2.98%	-2.52%	-2.23%	-1.92%	-1.93%	-1.82%
32		-0.76%	-1.49%	-1.81%	-2.49%	-1.95%	-2.06%	-3.09%	-2.61%	-2.31%	-2.00%	-2.46%	-2.25%
33		-0.76%	-1.49%	-1.81%	-2.49%	-1.78%	-1.53%	-3.09%	-2.61%	-2.31%	-2.00%	-2.46%	-2.23%
34		-0.92%	-1.65%	-1.98%	-2.66%	-2.12%	-2.18%	-3.29%	-2.80%	-2.50%	-2.18%	-2.28%	-2.23%
35		-0.69%	-1.41%	-1.72%	-2.39%	-1.87%	-1.96%	-3.24%	-2.78%	-2.53%	-2.26%	-2.57%	-2.57%
36		-2.24%	-3.06%	-3.43%	-4.15%	-3.22%	-3.17%	-4.90%	-4.36%	-4.09%	-3.76%	-3.59%	-3.59%
37		-0.76%	-1.49%	-1.81%	-2.49%	-2.03%	-1.92%	-3.09%	-2.61%	-2.31%	-2.00%	-2.34%	-2.07%
38		-0.71%	-1.46%	-1.78%	-2.46%	-2.22%	-2.25%	-3.28%	-2.78%	-2.48%	-2.16%	-2.38%	-2.16%
39	PLASTICS	-0.76%	-1.49%	-1.81%	-2.49%	-1.84%	-1.92%	-3.09%	-2.61%	-2.31%	-2.00%	-2.07%	-2.17%
40		-0.76%	-1.49%	-1.81%	-2.49%	-1.78%	-1.70%	-3.06%	-2.59%	-2.30%	-2.00%	-2.16%	-2.11%
41	LEATHER GOODS	-8.19%	-9.00%	-9.34%	-10.04%	-9.34%	-9.31%	-10.41%	-10.01%	-9.93%	-9.77%	-9.17%	-9.16%
42		-5.13%	-6.23%	-6.80%	-7.79%	-6.28%	-6.10%	-9.29%	-8.83%	-8.77%	-8.59%	-7.61%	-7.82%
43		0.69%	0.41%	0.33%	-0.01%	-0.13%	-0.16%	-4.16%	-4.08%	-4.15%	-4.17%	-3.50%	-3.29%
44	WOOD PRODUCTS	-0.13%	-0.83%	-1.14%	-1.80%	-1.68%	-1.78%	-3.08%	-2.77%	-2.55%	-2.40%	-2.13%	-2.31%
45		0.75%	0.08%	-0.22%	-0.86%	-0.49%	-0.41%	-2.94%	-2.63%	-2.40%	-2.25%	-2.14%	-2.03%
46		0.74%	0.07%	-0.24%	-0.89%	-0.71%	-0.96%	-4.04%	-3.88%	-3.83%	-3.83%	-3.32%	-3.37%
47	PAPER	0.77%	0.13%	-0.06%	-0.63%	-1.07%	-1.14%	-3.42%	-2.96%	-2.83%	-2.62%	-2.57%	-2.41%
48		0.77%	0.13%	-0.06%	-0.63%	-0.59%	-0.32%	-3.42%	-2.96%	-2.83%	-2.62%	-2.03%	-1.81%
49		0.77%	0.13%	-0.06%	-0.63%	-0.87%	-1.00%	-3.42%	-2.96%	-2.83%	-2.62%	-2.14%	-1.91%

Table 7.6 Predicted Annual Growth Rate in Commodity Trade between US and Japan (Median Growth Scenario) (cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-1.88%	-2.75%	-3.13%	-3.92%	-3.05%	-3.24%	-11.66%	-11.36%	-11.28%	-11.14%	-10.46%	-10.20%
51		-1.88%	-2.75%	-3.13%	-3.92%	-3.28%	-3.17%	-11.66%	-11.36%	-11.28%	-11.14%	-10.13%	-10.28%
52		-1.88%	-2.75%	-3.13%	-3.92%	-2.79%	-2.70%	-9.23%	-8.86%	-8.64%	-8.41%	-8.58%	-8.87%
53		-1.88%	-2.75%	-3.13%	-3.92%	-3.03%	-2.77%	-3.24%	-3.22%	-3.20%	-3.25%	-3.15%	-3.21%
54		-1.88%	-2.75%	-3.13%	-3.92%	-2.91%	-2.63%	-11.66%	-11.36%	-11.28%	-11.14%	-10.42%	-10.12%
55		-1.88%	-2.75%	-3.13%	-3.92%	-2.97%	-3.04%	-11.66%	-11.36%	-11.28%	-11.14%	-10.32%	-10.20%
56		-1.88%	-2.75%	-3.13%	-3.92%	-3.14%	-3.28%	-11.66%	-11.36%	-11.28%	-11.14%	-10.26%	-10.13%
57		-1.88%	-2.75%	-3.13%	-3.92%	-2.81%	-2.81%	-11.66%	-11.36%	-11.28%	-11.14%	-10.55%	-10.45%
58		-1.88%	-2.75%	-3.13%	-3.92%	-3.37%	-3.08%	-11.66%	-11.36%	-11.28%	-11.14%	-10.47%	-10.70%
59		-2.51%	-3.36%	-3.75%	-4.51%	-3.68%	-3.60%	-6.03%	-5.48%	-5.21%	-4.87%	-4.82%	-4.55%
60		-1.88%	-2.75%	-3.13%	-3.92%	-2.82%	-2.97%	-11.66%	-11.36%	-11.28%	-11.14%	-10.07%	-10.31%
61		-1.86%	-2.77%	-3.13%	-3.94%	-3.45%	-3.49%	-10.53%	-10.06%	-9.96%	-9.75%	-8.81%	-8.54%
62		-1.84%	-2.78%	-3.13%	-3.96%	-3.29%	-3.35%	-10.39%	-9.89%	-9.79%	-9.58%	-8.55%	-8.81%
63	-1.30%	-2.18%	-2.54%	-3.30%	-2.47%	-2.53%	-9.77%	-9.29%	-9.07%	-8.76%	-8.31%	-8.38%	
64	FOOTWEAR	-8.35%	-9.19%	-9.55%	-10.28%	-9.42%	-9.24%	-10.93%	-10.54%	-10.48%	-10.34%	-9.26%	-9.42%
65		-0.87%	-1.61%	-1.94%	-2.63%	-2.30%	-2.54%	-4.87%	-4.29%	-3.93%	-3.54%	-4.02%	-4.25%
66		-5.06%	-6.19%	-6.80%	-7.81%	-6.52%	-6.58%	-8.15%	-7.68%	-7.65%	-7.49%	-6.01%	-5.71%
67		-5.06%	-6.19%	-6.80%	-7.81%	-6.20%	-6.43%	-8.15%	-7.68%	-7.65%	-7.49%	-6.21%	-6.06%
68	STONE & GLASS	-0.26%	-0.92%	-1.15%	-1.73%	-1.39%	-1.13%	-4.44%	-3.90%	-3.64%	-3.31%	-2.96%	-3.19%
69		-0.26%	-0.92%	-1.15%	-1.73%	-1.89%	-1.73%	-4.44%	-3.90%	-3.64%	-3.31%	-3.03%	-2.73%
70		-0.29%	-0.94%	-1.17%	-1.76%	-1.93%	-2.06%	-4.49%	-3.94%	-3.68%	-3.35%	-3.34%	-3.55%
71	PRECIOUS STONES	-3.32%	-4.13%	-4.46%	-5.12%	-4.58%	-4.47%	-4.61%	-4.11%	-3.71%	-3.31%	-3.54%	-3.50%
72	BASE METALS	-1.38%	-1.91%	-2.12%	-2.60%	-1.97%	-1.82%	-1.83%	-1.22%	-0.76%	-0.21%	-1.27%	-1.04%
73		-1.15%	-1.93%	-2.22%	-2.86%	-2.64%	-2.46%	-5.78%	-5.13%	-4.82%	-4.40%	-4.28%	-4.52%
74		1.68%	1.10%	0.93%	0.43%	-0.03%	-0.11%	-2.96%	-2.47%	-2.08%	-1.71%	-1.66%	-1.54%
75		-0.09%	-0.54%	-0.62%	-0.98%	-1.15%	-0.93%	-3.06%	-2.58%	-2.05%	-1.59%	-2.00%	-1.76%
76		-0.82%	-1.48%	-1.67%	-2.18%	-2.28%	-2.06%	-3.40%	-2.89%	-2.38%	-1.93%	-2.71%	-2.71%
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78		-0.03%	-0.47%	-0.54%	-0.89%	-1.20%	-1.35%	-3.04%	-2.57%	-2.04%	-1.58%	-2.16%	-2.39%
79		-0.03%	-0.47%	-0.54%	-0.89%	-1.54%	-1.47%	-3.04%	-2.57%	-2.04%	-1.58%	-2.08%	-2.02%
80		-0.16%	-0.63%	-0.72%	-1.09%	-1.25%	-1.08%	-3.07%	-2.60%	-2.07%	-1.61%	-2.00%	-2.30%
81		0.55%	0.26%	0.26%	0.01%	-0.57%	-0.63%	-2.94%	-2.48%	-1.94%	-1.49%	-1.90%	-1.91%
82		-1.46%	-2.30%	-2.60%	-3.27%	-3.09%	-3.11%	-5.76%	-5.10%	-4.80%	-4.39%	-4.19%	-4.22%
83		-1.46%	-2.30%	-2.60%	-3.27%	-2.73%	-2.45%	-5.76%	-5.10%	-4.80%	-4.39%	-4.35%	-4.27%
84	MACHINE	-0.09%	-0.93%	-1.20%	-1.86%	-1.94%	-1.87%	-6.41%	-5.86%	-5.63%	-5.30%	-5.01%	-4.70%
85		-1.67%	-2.59%	-2.88%	-3.60%	-3.54%	-3.78%	-6.51%	-5.94%	-5.70%	-5.39%	-4.41%	-4.51%
86	VEHICLES	0.74%	0.08%	-0.10%	-0.61%	-0.57%	-0.61%	-4.79%	-4.48%	-4.47%	-4.35%	-3.18%	-3.02%
87		1.64%	1.05%	0.88%	0.38%	0.42%	0.57%	-4.11%	-3.71%	-3.62%	-3.41%	-3.18%	-2.91%
88		0.28%	-0.44%	-0.61%	-1.15%	-1.57%	-1.63%	-4.81%	-4.50%	-4.50%	-4.37%	-3.01%	-2.88%
89		0.28%	-0.43%	-0.61%	-1.14%	-1.23%	-1.16%	-4.81%	-4.50%	-4.50%	-4.37%	-3.29%	-3.03%
90	CLOCKS & MUSICAL INST.	-0.38%	-1.31%	-1.65%	-2.39%	-2.30%	-2.35%	-6.81%	-6.23%	-5.98%	-5.62%	-4.93%	-4.71%
91		-0.38%	-1.31%	-1.64%	-2.38%	-2.26%	-2.50%	-6.81%	-6.23%	-5.98%	-5.62%	-4.61%	-4.48%
92		-5.06%	-6.19%	-6.80%	-7.81%	-6.24%	-6.06%	-8.15%	-7.68%	-7.65%	-7.49%	-6.06%	-5.79%
93	ARMS	-0.39%	-1.32%	-1.66%	-2.39%	-2.06%	-2.06%	-6.78%	-6.20%	-5.95%	-5.59%	-4.62%	-4.77%
94	MISC. ART.	-2.24%	-3.18%	-3.56%	-4.33%	-3.96%	-4.03%	-7.51%	-7.00%	-6.86%	-6.62%	-5.73%	-5.68%
95		-5.06%	-6.19%	-6.80%	-7.81%	-7.54%	-7.67%	-8.15%	-7.68%	-7.65%	-7.49%	-6.33%	-6.40%
96		-5.06%	-6.19%	-6.80%	-7.81%	-6.20%	-6.08%	-8.15%	-7.69%	-7.65%	-7.50%	-6.06%	-6.09%
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Table 7.7 Predicted Annual Growth Rate in Commodity Trade between US and South Korea (Median Growth Scenario)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	2.12%	1.87%	1.75%	1.38%	1.33%	1.40%	-0.56%	-0.71%	-0.78%	-0.77%	-0.31%	-0.14%
02		8.11%	7.40%	6.83%	5.86%	5.62%	5.91%	-4.13%	-3.97%	-3.92%	-3.71%	-2.69%	-2.49%
03		2.88%	2.60%	2.51%	2.07%	1.52%	1.54%	-2.80%	-2.83%	-2.78%	-2.65%	-2.08%	-2.23%
04		4.49%	4.12%	3.94%	3.44%	2.92%	3.20%	-1.76%	-1.58%	-1.45%	-1.21%	-0.71%	-0.49%
05		2.83%	2.61%	2.57%	2.19%	1.49%	1.54%	-2.34%	-2.36%	-2.29%	-2.16%	-1.61%	-1.33%
06	VEGETABLE PRODUCTS	15.08%	14.38%	14.06%	13.42%	11.98%	11.76%	-4.41%	-4.51%	-4.41%	-4.38%	-3.68%	-3.89%
07		4.88%	4.53%	4.34%	3.98%	3.58%	3.42%	-5.19%	-5.17%	-4.93%	-4.79%	-4.44%	-4.36%
08		5.94%	5.55%	5.33%	5.00%	4.78%	4.77%	-6.10%	-6.08%	-5.80%	-5.68%	-5.10%	-4.82%
09		10.47%	10.20%	10.22%	9.88%	7.69%	7.95%	-6.33%	-6.71%	-6.90%	-7.23%	-5.71%	-5.98%
10		9.49%	9.05%	9.36%	9.05%	7.25%	7.16%	-2.61%	-2.78%	-2.87%	-2.90%	-3.10%	-3.24%
11		2.86%	2.52%	2.38%	1.90%	1.69%	1.56%	-2.80%	-2.83%	-2.78%	-2.66%	-2.21%	-2.14%
12		11.82%	11.46%	11.40%	11.00%	9.33%	9.55%	-4.22%	-4.52%	-4.73%	-5.01%	-5.28%	-5.42%
13		2.92%	2.57%	2.42%	1.92%	1.32%	1.41%	-1.34%	-1.24%	-1.05%	-0.81%	-0.51%	-0.61%
14		2.20%	2.26%	2.45%	2.35%	0.98%	0.93%	0.80%	0.98%	1.24%	1.52%	1.09%	0.82%
15	FATS & OILS	-0.97%	-1.66%	-2.14%	-2.93%	-1.78%	-1.88%	-2.61%	-2.64%	-2.54%	-2.54%	-1.82%	-2.04%
16	PREPARED FOODSTUFFS	2.96%	2.60%	2.44%	1.94%	1.51%	1.55%	-4.74%	-4.76%	-4.79%	-4.75%	-3.67%	-3.93%
17		5.63%	5.24%	5.03%	4.53%	3.59%	3.31%	-1.35%	-1.15%	-0.98%	-0.72%	-0.47%	-0.33%
18		3.38%	3.06%	2.95%	2.50%	1.99%	2.06%	-3.37%	-3.43%	-3.39%	-3.30%	-2.26%	-2.17%
19		2.93%	2.58%	2.42%	1.92%	1.32%	1.43%	-2.96%	-3.00%	-2.94%	-2.82%	-2.28%	-2.09%
20		2.93%	2.58%	2.42%	1.92%	1.88%	1.78%	-2.96%	-3.00%	-2.94%	-2.82%	-2.38%	-2.58%
21		2.98%	2.62%	2.46%	1.96%	1.86%	2.02%	-2.83%	-2.84%	-2.78%	-2.64%	-1.71%	-1.96%
22		2.45%	2.25%	2.16%	1.82%	1.78%	1.67%	-0.21%	-0.26%	-0.26%	-0.14%	0.36%	0.22%
23		2.96%	2.63%	2.51%	2.04%	1.89%	1.70%	-2.24%	-2.34%	-2.24%	-2.28%	-1.90%	-1.74%
24		2.90%	2.73%	2.69%	2.39%	1.72%	1.46%	-1.90%	-1.97%	-1.94%	-1.85%	-1.12%	-1.40%
25	MINERAL PRODUCTS	2.11%	1.83%	1.70%	1.27%	0.31%	0.04%	2.53%	2.71%	2.89%	3.14%	2.30%	2.51%
26		-1.61%	-2.33%	-2.90%	-3.72%	-2.22%	-2.20%	2.67%	2.84%	3.02%	3.26%	2.59%	2.48%
27		3.64%	3.75%	3.92%	3.83%	2.49%	2.42%	3.67%	3.98%	4.33%	4.70%	3.19%	3.15%
28	CHEMICAL PRODUCTS	-0.21%	-0.68%	-0.99%	-1.52%	-1.16%	-1.12%	0.29%	0.76%	1.18%	1.66%	0.63%	0.87%
29		-2.15%	-3.04%	-3.79%	-4.82%	-2.39%	-2.26%	0.15%	0.62%	1.03%	1.52%	0.82%	0.94%
30		-2.08%	-2.95%	-3.69%	-4.71%	-2.64%	-2.68%	0.13%	0.60%	1.02%	1.50%	0.57%	0.71%
31		-2.16%	-3.05%	-3.79%	-4.83%	-2.73%	-2.99%	0.28%	0.73%	1.14%	1.61%	0.81%	1.02%
32		-2.16%	-3.05%	-3.80%	-4.83%	-2.68%	-2.53%	0.15%	0.62%	1.04%	1.52%	0.65%	0.61%
33		-2.16%	-3.05%	-3.80%	-4.83%	-2.84%	-2.67%	0.15%	0.62%	1.04%	1.52%	0.85%	1.03%
34		-2.14%	-3.02%	-3.75%	-4.78%	-2.57%	-2.56%	0.09%	0.55%	0.97%	1.45%	0.91%	1.16%
35		-1.66%	-2.47%	-3.12%	-4.06%	-2.35%	-2.51%	-0.30%	0.11%	0.49%	0.94%	0.03%	0.21%
36		-1.95%	-2.75%	-3.42%	-4.39%	-3.11%	-3.10%	-0.64%	-0.20%	0.19%	0.67%	-0.14%	-0.28%
37		-2.16%	-3.05%	-3.80%	-4.83%	-2.78%	-2.89%	0.15%	0.62%	1.04%	1.52%	0.66%	0.85%
38		-1.46%	-2.24%	-2.86%	-3.76%	-2.36%	-2.47%	-0.04%	0.43%	0.84%	1.32%	0.27%	0.56%
39	PLASTICS	-2.16%	-3.05%	-3.80%	-4.83%	-2.36%	-2.53%	0.15%	0.62%	1.04%	1.52%	0.48%	0.62%
40		-2.15%	-3.04%	-3.79%	-4.82%	-2.33%	-2.08%	0.20%	0.65%	1.06%	1.53%	0.64%	0.54%
41	LEATHER GOODS	-5.65%	-6.07%	-6.31%	-6.89%	-6.92%	-7.21%	-5.82%	-5.73%	-5.63%	-5.44%	-4.70%	-4.70%
42		-1.89%	-2.40%	-2.74%	-3.45%	-3.45%	-3.16%	-7.35%	-7.30%	-7.31%	-7.20%	-5.64%	-5.53%
43		2.12%	1.87%	1.75%	1.38%	1.31%	1.30%	-0.71%	-0.89%	-0.99%	-1.01%	-0.50%	-0.54%
44	WOOD PRODUCTS	-0.61%	-1.30%	-1.81%	-2.60%	-1.36%	-1.42%	0.07%	0.30%	0.61%	0.93%	0.18%	0.17%
45		1.46%	1.02%	0.77%	0.23%	0.37%	0.47%	0.47%	0.66%	0.94%	1.24%	0.78%	1.06%
46		1.27%	0.69%	0.30%	-0.38%	0.32%	0.40%	-3.15%	-3.10%	-2.88%	-2.69%	-2.24%	-2.19%
47	PAPER	2.82%	2.45%	2.23%	1.67%	1.37%	1.30%	-1.30%	-1.17%	-0.97%	-0.71%	-0.34%	-0.01%
48		2.82%	2.45%	2.23%	1.67%	1.09%	1.37%	-1.30%	-1.17%	-0.97%	-0.71%	-0.27%	-0.25%
49		2.82%	2.45%	2.23%	1.67%	1.03%	1.27%	-1.30%	-1.17%	-0.97%	-0.71%	-0.38%	-0.46%

Table 7.7 Predicted Annual Growth Rate in Commodity Trade between US and South Korea (Median Growth Scenario) (cont'd)

HS-2	SECTION	IMPORT						EXPORT						
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020	
50	TEXTILES AND TEXTILE ARTICLES	-0.54%	-1.15%	-1.59%	-2.40%	-1.81%	-1.61%	-8.54%	-8.42%	-8.36%	-8.21%	-7.47%	-7.62%	
51		-0.54%	-1.15%	-1.59%	-2.40%	-2.17%	-2.34%	-8.54%	-8.42%	-8.36%	-8.21%	-7.32%	-7.33%	
52		-0.54%	-1.15%	-1.59%	-2.39%	-1.99%	-1.96%	-5.37%	-5.19%	-5.07%	-4.92%	-4.85%	-4.85%	
53		-0.54%	-1.15%	-1.59%	-2.39%	-2.09%	-1.81%	-1.16%	-1.21%	-1.31%	-1.44%	-1.52%	-1.25%	
54		-0.54%	-1.15%	-1.59%	-2.39%	-1.66%	-1.84%	-8.54%	-8.42%	-8.36%	-8.21%	-7.49%	-7.31%	
55		-0.54%	-1.15%	-1.59%	-2.39%	-1.93%	-1.91%	-8.54%	-8.42%	-8.36%	-8.21%	-7.30%	-7.36%	
56		-0.54%	-1.15%	-1.59%	-2.39%	-1.95%	-1.79%	-8.54%	-8.42%	-8.36%	-8.21%	-7.48%	-7.68%	
57		-0.54%	-1.15%	-1.59%	-2.39%	-1.94%	-1.89%	-8.54%	-8.42%	-8.36%	-8.21%	-7.21%	-6.97%	
58		-0.54%	-1.15%	-1.59%	-2.39%	-1.68%	-1.75%	-8.54%	-8.42%	-8.36%	-8.21%	-7.47%	-7.75%	
59		-0.97%	-1.63%	-2.13%	-2.97%	-2.52%	-2.52%	-1.99%	-1.56%	-1.17%	-0.69%	-1.23%	-1.33%	
60		-0.54%	-1.15%	-1.59%	-2.39%	-1.95%	-1.96%	-8.54%	-8.42%	-8.36%	-8.21%	-7.60%	-7.36%	
61		0.44%	-0.14%	-0.47%	-1.23%	-1.32%	-1.27%	-8.41%	-8.27%	-8.20%	-7.99%	-6.95%	-7.10%	
62		0.69%	0.12%	-0.20%	-0.95%	-0.98%	-1.15%	-8.38%	-8.24%	-8.17%	-7.95%	-7.06%	-6.82%	
63		-0.18%	-0.76%	-1.16%	-1.91%	-1.84%	-2.07%	-6.12%	-5.82%	-5.58%	-5.24%	-4.66%	-4.76%	
64	FOOTWEAR	-5.88%	-6.32%	-6.59%	-7.20%	-7.66%	-7.44%	-8.30%	-8.27%	-8.27%	-8.16%	-6.99%	-7.02%	
65		-0.15%	-0.79%	-1.21%	-2.01%	-1.34%	-1.12%	-1.15%	-0.63%	-0.16%	0.38%	-0.84%	-0.85%	
66		-1.57%	-2.23%	-2.75%	-3.62%	-3.49%	-3.67%	-5.28%	-5.30%	-5.41%	-5.36%	-3.55%	-3.75%	
67		-1.57%	-2.23%	-2.75%	-3.62%	-3.38%	-3.46%	-5.28%	-5.30%	-5.41%	-5.36%	-3.24%	-3.42%	
68	STONE & GLASS	2.61%	2.36%	2.25%	1.83%	0.69%	0.51%	-2.55%	-2.27%	-2.07%	-1.75%	-1.50%	-1.32%	
69		2.61%	2.36%	2.25%	1.83%	1.10%	0.91%	-2.55%	-2.27%	-2.07%	-1.75%	-1.35%	-1.50%	
70		2.48%	2.22%	2.10%	1.67%	0.85%	0.94%	-2.60%	-2.32%	-2.12%	-1.79%	-1.31%	-1.38%	
71	PRECIOUS STONES	-0.23%	-0.61%	-0.88%	-1.42%	-1.45%	-1.20%	-0.95%	-0.56%	-0.23%	0.20%	-0.43%	-0.34%	
72	BASE METALS	2.02%	1.94%	1.94%	1.71%	0.55%	0.77%	0.20%	0.67%	1.05%	1.58%	0.61%	0.56%	
73		2.44%	2.21%	2.11%	1.72%	0.79%	0.77%	-3.20%	-2.81%	-2.51%	-2.07%	-1.98%	-1.81%	
74		4.10%	3.85%	3.72%	3.30%	2.46%	2.69%	-0.89%	-0.54%	-0.27%	0.12%	-0.05%	-0.33%	
75		2.40%	2.30%	2.29%	2.03%	0.92%	1.02%	-0.69%	-0.19%	0.22%	0.71%	-0.22%	-0.20%	
76		2.44%	2.22%	2.13%	1.75%	0.72%	0.67%	-1.26%	-0.77%	-0.36%	0.14%	-0.48%	-0.73%	
77		---	---	---	---	---	---	---	---	---	---	---	---	
78		2.39%	2.31%	2.31%	2.05%	0.87%	0.71%	-0.67%	-0.17%	0.25%	0.73%	0.07%	0.08%	
79		2.39%	2.31%	2.31%	2.05%	0.82%	0.63%	-0.67%	-0.17%	0.25%	0.73%	0.23%	0.04%	
80		2.40%	2.30%	2.28%	2.00%	1.18%	1.24%	-0.72%	-0.22%	0.19%	0.68%	0.16%	0.16%	
81		2.36%	2.39%	2.45%	2.30%	1.27%	1.10%	-0.50%	0.00%	0.42%	0.90%	0.36%	0.26%	
82		2.47%	2.16%	2.01%	1.53%	0.50%	0.26%	-4.47%	-4.14%	-3.89%	-3.49%	-3.21%	-3.40%	
83		2.47%	2.16%	2.01%	1.53%	0.37%	0.62%	-4.47%	-4.14%	-3.89%	-3.49%	-3.19%	-2.98%	
84		MACHINE	3.27%	2.95%	2.81%	2.32%	2.12%	2.04%	-3.18%	-2.88%	-2.65%	-2.31%	-2.02%	-1.74%
85			1.67%	1.31%	1.21%	0.71%	0.81%	0.80%	-3.42%	-3.16%	-2.91%	-2.63%	-2.24%	-2.04%
86	VEHICLES	4.71%	4.52%	4.46%	4.11%	2.95%	2.92%	-2.91%	-2.92%	-2.95%	-2.80%	-1.00%	-0.79%	
87		4.16%	3.90%	3.77%	3.35%	3.24%	3.12%	-2.25%	-2.15%	-2.10%	-1.86%	-1.64%	-1.54%	
88		5.13%	5.00%	5.00%	4.70%	2.64%	2.91%	-2.93%	-2.94%	-2.98%	-2.83%	-1.14%	-1.38%	
89		5.20%	5.07%	5.07%	4.77%	2.71%	2.69%	-2.92%	-2.94%	-2.98%	-2.82%	-0.97%	-0.79%	
90	CLOCKS & MUSICAL INST.	3.57%	3.20%	3.02%	2.50%	1.05%	0.86%	-3.17%	-2.82%	-2.57%	-2.20%	-1.80%	-1.82%	
91		3.58%	3.21%	3.03%	2.50%	1.43%	1.31%	-3.18%	-2.83%	-2.57%	-2.21%	-1.65%	-1.47%	
92		-1.57%	-2.23%	-2.75%	-3.62%	-3.19%	-3.32%	-5.28%	-5.30%	-5.41%	-5.36%	-3.26%	-3.48%	
93	ARMS	3.54%	3.17%	3.00%	2.47%	1.11%	0.97%	-3.18%	-2.83%	-2.58%	-2.21%	-1.58%	-1.39%	
94	MISC. ART.	1.15%	0.72%	0.46%	-0.13%	-0.97%	-0.77%	-3.73%	-3.48%	-3.31%	-3.01%	-2.25%	-2.26%	
95		-1.57%	-2.23%	-2.75%	-3.62%	-3.67%	-3.78%	-5.28%	-5.30%	-5.41%	-5.36%	-3.30%	-3.05%	
96		-1.58%	-2.24%	-2.76%	-3.63%	-3.43%	-3.66%	-5.31%	-5.33%	-5.43%	-5.38%	-3.31%	-3.05%	
97		ARTS	---	---	---	---	---	---	---	---	---	---	---	

Table 7.8 Predicted Annual Growth Rate in Commodity Trade between US and ASEAN (Median Growth Scenario)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	2.69%	2.65%	2.27%	2.01%	1.53%	1.46%	-0.33%	-0.32%	-0.63%	-0.58%	0.11%	0.37%
02		6.50%	6.72%	5.84%	5.60%	5.18%	4.94%	-5.67%	-5.75%	-5.73%	-5.82%	-3.93%	-4.00%
03		3.50%	3.35%	2.80%	2.42%	2.43%	2.53%	-1.14%	-0.97%	-1.08%	-0.92%	-0.26%	-0.10%
04		3.59%	3.44%	2.85%	2.46%	2.32%	2.29%	-0.61%	-0.27%	-0.29%	-0.06%	0.38%	0.65%
05		3.51%	3.40%	2.89%	2.54%	2.58%	2.31%	-0.99%	-0.84%	-0.95%	-0.80%	-0.33%	-0.50%
06	VEGETABLE PRODUCTS	5.33%	5.69%	5.04%	5.12%	4.73%	4.99%	-2.41%	-2.56%	-2.63%	-2.90%	-2.37%	-2.29%
07		3.71%	3.69%	3.08%	2.85%	2.81%	2.72%	-2.74%	-2.73%	-2.75%	-2.71%	-2.23%	-2.15%
08		3.96%	4.08%	3.45%	3.38%	3.19%	3.35%	-3.38%	-3.46%	-3.45%	-3.49%	-2.99%	-3.13%
09		5.58%	5.81%	4.98%	4.96%	4.90%	5.15%	-2.15%	-2.26%	-2.37%	-2.56%	-2.16%	-2.23%
10		1.87%	1.83%	1.18%	1.08%	2.18%	1.95%	-2.42%	-2.89%	-4.16%	-4.96%	-5.10%	-5.27%
11		3.48%	3.31%	2.73%	2.32%	2.37%	2.19%	-1.16%	-0.98%	-1.10%	-0.92%	-0.76%	-0.85%
12		5.76%	6.02%	5.18%	5.18%	5.19%	5.31%	-0.26%	-0.32%	-0.39%	-0.47%	-0.51%	-0.61%
13		4.07%	4.21%	3.75%	3.64%	2.85%	2.57%	-1.31%	-1.13%	-1.22%	-1.06%	-0.98%	-1.13%
14		4.56%	4.93%	4.54%	4.64%	3.98%	3.90%	-1.59%	-1.45%	-1.42%	-1.36%	-1.51%	-1.23%
15	FATS & OILS	5.11%	5.21%	4.56%	4.39%	3.93%	4.20%	-1.74%	-1.72%	-1.62%	-1.67%	-1.55%	-1.70%
16	PREPARED FOODSTUFFS	3.49%	3.32%	2.74%	2.34%	2.33%	2.16%	-3.63%	-3.55%	-3.58%	-3.50%	-2.58%	-2.73%
17		6.54%	6.67%	5.94%	5.76%	5.13%	5.41%	-0.61%	-0.27%	-0.28%	-0.05%	0.45%	0.24%
18		3.72%	3.60%	3.00%	2.64%	2.92%	2.83%	-1.28%	-1.12%	-1.23%	-1.08%	-0.35%	-0.17%
19		3.49%	3.32%	2.74%	2.33%	2.57%	2.39%	-1.23%	-1.05%	-1.16%	-0.99%	-0.70%	-0.47%
20		3.49%	3.32%	2.74%	2.33%	2.65%	2.79%	-1.23%	-1.05%	-1.16%	-0.99%	-0.58%	-0.41%
21		3.49%	3.32%	2.74%	2.33%	2.50%	2.56%	-1.02%	-0.78%	-0.86%	-0.66%	0.00%	-0.22%
22		2.71%	2.54%	2.19%	1.84%	1.72%	1.67%	0.58%	0.74%	0.47%	0.63%	1.30%	1.37%
23		4.83%	4.95%	4.36%	4.21%	3.64%	3.35%	-1.61%	-1.60%	-1.53%	-1.57%	-1.47%	-1.58%
24		4.80%	4.98%	4.32%	4.27%	3.97%	3.77%	0.23%	0.33%	0.08%	0.17%	0.36%	0.45%
25	MINERAL PRODUCTS	3.27%	3.16%	2.50%	2.12%	2.46%	2.25%	3.26%	3.74%	3.24%	3.55%	3.36%	3.28%
26		3.97%	4.01%	3.49%	3.23%	2.95%	2.73%	3.71%	4.16%	3.60%	3.89%	4.04%	3.94%
27		10.07%	10.83%	10.01%	10.16%	7.64%	7.38%	5.67%	6.40%	6.25%	6.83%	5.05%	5.05%
28	CHEMICAL PRODUCTS	4.61%	4.61%	3.93%	3.60%	3.13%	3.33%	0.46%	1.06%	0.97%	1.43%	0.81%	0.65%
29		4.61%	4.60%	3.90%	3.56%	3.45%	3.43%	-0.09%	0.46%	0.34%	0.74%	0.70%	0.50%
30		4.38%	4.35%	3.65%	3.29%	3.27%	3.38%	-0.13%	0.43%	0.31%	0.71%	0.37%	0.46%
31		4.61%	4.60%	3.91%	3.56%	3.58%	3.64%	-0.04%	0.51%	0.39%	0.79%	0.95%	1.21%
32		4.62%	4.61%	3.91%	3.56%	3.29%	3.57%	-0.09%	0.46%	0.34%	0.74%	0.39%	0.58%
33		4.62%	4.61%	3.91%	3.56%	3.39%	3.50%	-0.09%	0.46%	0.34%	0.74%	0.46%	0.60%
34		3.88%	3.84%	3.11%	2.75%	2.55%	2.42%	-0.17%	0.38%	0.26%	0.66%	0.81%	0.89%
35		4.15%	4.08%	3.43%	3.07%	2.94%	2.98%	-0.33%	0.14%	0.05%	0.39%	0.44%	0.27%
36		0.96%	0.68%	-0.29%	-0.86%	-0.23%	-0.25%	-0.93%	-0.41%	-0.57%	-0.20%	0.22%	-0.02%
37		4.62%	4.61%	3.91%	3.56%	3.11%	3.19%	-0.09%	0.46%	0.34%	0.74%	0.93%	0.84%
38		4.57%	4.54%	3.83%	3.48%	3.21%	3.25%	-0.32%	0.24%	0.12%	0.52%	0.56%	0.58%
39	PLASTICS	4.62%	4.61%	3.91%	3.56%	3.57%	3.55%	-0.09%	0.46%	0.34%	0.74%	0.96%	1.05%
40		4.58%	4.72%	4.15%	3.98%	3.27%	3.16%	-0.13%	0.42%	0.30%	0.69%	0.91%	1.06%
41	LEATHER GOODS	-4.12%	-4.33%	-5.22%	-5.70%	-5.27%	-5.22%	-3.96%	-3.71%	-3.96%	-3.80%	-2.84%	-2.87%
42		-1.31%	-1.59%	-2.49%	-3.07%	-2.39%	-2.22%	-4.59%	-4.27%	-4.59%	-4.43%	-3.47%	-3.46%
43		2.69%	2.65%	2.27%	2.01%	2.03%	1.84%	-0.32%	-0.31%	-0.61%	-0.56%	0.33%	0.40%
44	WOOD PRODUCTS	3.92%	4.06%	3.62%	3.54%	2.74%	2.98%	-1.49%	-1.31%	-1.43%	-1.31%	-1.17%	-1.43%
45		4.18%	4.43%	4.02%	4.02%	3.20%	3.20%	-1.79%	-1.66%	-1.74%	-1.69%	-1.46%	-1.69%
46		2.60%	2.19%	1.58%	1.01%	1.54%	1.56%	-2.09%	-2.14%	-2.43%	-2.50%	-1.34%	-1.12%
47	PAPER	4.26%	4.10%	3.38%	2.94%	2.89%	2.72%	-0.35%	0.09%	-0.10%	0.24%	0.37%	0.42%
48		4.26%	4.10%	3.38%	2.94%	3.22%	3.20%	-0.35%	0.09%	-0.10%	0.24%	0.77%	1.01%
49		4.26%	4.10%	3.38%	2.94%	3.13%	3.11%	-0.35%	0.09%	-0.10%	0.24%	0.31%	0.46%

Table 7.8 Predicted Annual Growth Rate in Commodity Trade between US and ASEAN (Median Growth Scenario) (cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	1.28%	0.93%	-0.04%	-0.70%	0.40%	0.66%	-6.25%	-5.96%	-6.39%	-6.31%	-5.05%	-5.24%
51		1.28%	0.93%	-0.04%	-0.70%	0.13%	0.29%	-6.25%	-5.96%	-6.39%	-6.31%	-5.37%	-5.45%
52		1.28%	0.93%	-0.04%	-0.70%	0.56%	0.84%	-0.64%	-0.21%	-0.63%	-0.46%	-0.76%	-0.68%
53		1.28%	0.93%	-0.04%	-0.70%	0.23%	0.36%	2.20%	2.47%	1.83%	1.84%	1.49%	1.42%
54		1.28%	0.93%	-0.04%	-0.70%	0.22%	0.02%	-6.25%	-5.96%	-6.39%	-6.31%	-5.50%	-5.73%
55		1.28%	0.93%	-0.04%	-0.70%	0.57%	0.52%	-6.25%	-5.96%	-6.39%	-6.31%	-5.15%	-5.41%
56		1.28%	0.93%	-0.04%	-0.70%	0.48%	0.47%	-6.25%	-5.96%	-6.39%	-6.31%	-5.16%	-5.21%
57		1.28%	0.93%	-0.04%	-0.70%	0.64%	0.86%	-6.25%	-5.96%	-6.39%	-6.31%	-5.32%	-5.41%
58		1.28%	0.93%	-0.04%	-0.70%	0.14%	0.15%	-6.25%	-5.96%	-6.39%	-6.31%	-5.00%	-5.17%
59		0.90%	0.56%	-0.44%	-1.08%	-0.15%	0.08%	-2.16%	-1.67%	-1.84%	-1.49%	-1.02%	-1.21%
60		1.28%	0.93%	-0.04%	-0.70%	0.46%	0.34%	-6.25%	-5.96%	-6.39%	-6.31%	-5.39%	-5.54%
61		1.22%	0.84%	-0.05%	-0.71%	0.40%	0.59%	-6.33%	-6.04%	-6.39%	-6.26%	-5.47%	-5.41%
62		1.22%	0.83%	-0.05%	-0.72%	0.08%	0.08%	-6.42%	-6.13%	-6.38%	-6.21%	-5.08%	-4.80%
63		1.37%	1.02%	0.05%	-0.60%	0.33%	0.35%	-5.04%	-4.65%	-4.99%	-4.75%	-3.50%	-3.74%
64	FOOTWEAR	-4.31%	-4.54%	-5.47%	-5.98%	-5.07%	-5.23%	-6.20%	-5.94%	-6.28%	-6.17%	-4.76%	-4.56%
65		1.33%	0.97%	0.09%	-0.55%	0.28%	0.15%	-0.48%	0.08%	-0.02%	0.39%	0.31%	0.23%
66		-0.69%	-1.19%	-2.40%	-3.23%	-1.43%	-1.66%	-3.32%	-2.99%	-3.35%	-3.18%	-1.59%	-1.49%
67		-0.69%	-1.19%	-2.40%	-3.23%	-1.74%	-1.95%	-3.32%	-2.99%	-3.35%	-3.18%	-1.84%	-1.71%
68	STONE & GLASS	3.21%	3.03%	2.28%	1.82%	2.18%	1.91%	-1.33%	-0.81%	-0.88%	-0.47%	-0.06%	0.18%
69		3.21%	3.03%	2.28%	1.82%	2.29%	2.06%	-1.33%	-0.81%	-0.88%	-0.47%	-0.61%	-0.44%
70		3.00%	2.81%	2.04%	1.57%	1.89%	2.07%	-1.40%	-0.89%	-0.96%	-0.54%	-0.44%	-0.42%
71	PRECIOUS STONES	-0.12%	-0.51%	-1.62%	-2.32%	-1.12%	-1.41%	-1.32%	-0.75%	-0.97%	-0.56%	-0.21%	-0.01%
72	BASE METALS	3.10%	3.17%	2.68%	2.51%	2.42%	2.46%	1.36%	2.08%	1.83%	2.39%	2.20%	2.09%
73		3.03%	2.82%	1.97%	1.50%	1.86%	1.71%	-2.22%	-1.61%	-1.73%	-1.23%	-0.64%	-0.56%
74		4.92%	4.99%	4.35%	4.13%	3.94%	4.09%	-0.25%	0.34%	0.09%	0.53%	1.37%	1.13%
75		4.44%	4.64%	3.90%	3.78%	3.25%	3.07%	-0.13%	0.61%	0.47%	1.04%	0.86%	0.65%
76		3.56%	3.53%	2.71%	2.40%	2.27%	2.49%	-1.04%	-0.32%	-0.41%	0.15%	0.46%	0.28%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		4.50%	4.72%	3.98%	3.87%	3.51%	3.60%	-0.09%	0.66%	0.52%	1.09%	0.89%	0.65%
79		4.50%	4.72%	3.98%	3.87%	3.37%	3.47%	-0.09%	0.66%	0.52%	1.09%	0.98%	1.22%
80		4.37%	4.55%	3.81%	3.67%	3.38%	3.31%	-0.20%	0.55%	0.41%	0.98%	0.91%	1.12%
81		5.04%	5.40%	4.70%	4.69%	4.19%	4.19%	0.31%	1.06%	0.90%	1.46%	1.68%	1.87%
82		2.60%	2.29%	1.35%	0.77%	1.36%	1.21%	-2.74%	-2.13%	-2.18%	-1.68%	-1.49%	-1.77%
83		2.60%	2.29%	1.35%	0.77%	1.60%	1.41%	-2.74%	-2.13%	-2.18%	-1.68%	-1.16%	-1.08%
84	MACHINE	2.71%	2.46%	1.60%	1.09%	1.01%	0.97%	-2.90%	-2.43%	-2.70%	-2.35%	-2.31%	-2.17%
85		1.55%	1.27%	0.47%	-0.06%	-0.42%	-0.61%	-2.62%	-2.19%	-2.46%	-2.20%	-0.77%	-0.82%
86	VEHICLES	6.37%	6.42%	5.47%	5.18%	5.25%	5.43%	-2.67%	-2.38%	-2.74%	-2.47%	-0.37%	-0.24%
87		4.95%	4.84%	4.13%	3.77%	3.29%	3.01%	-2.07%	-1.72%	-2.05%	-1.74%	-1.99%	-1.67%
88		6.16%	6.20%	5.25%	4.96%	4.94%	4.68%	-2.69%	-2.40%	-2.76%	-2.49%	-0.45%	-0.34%
89		6.43%	6.49%	5.52%	5.23%	5.24%	5.08%	-2.69%	-2.40%	-2.76%	-2.49%	-0.42%	-0.42%
90	CLOCKS & MUSICAL INST.	4.25%	3.97%	3.00%	2.45%	2.74%	2.91%	-3.13%	-2.63%	-2.89%	-2.51%	-1.18%	-1.26%
91		4.15%	3.89%	2.94%	2.40%	3.01%	2.73%	-3.13%	-2.64%	-2.89%	-2.51%	-0.98%	-1.01%
92		-0.69%	-1.19%	-2.40%	-3.23%	-1.54%	-1.38%	-3.32%	-2.99%	-3.35%	-3.18%	-2.14%	-2.26%
93	ARMS	4.29%	4.01%	3.04%	2.49%	2.90%	3.01%	-3.12%	-2.63%	-2.88%	-2.50%	-1.15%	-1.30%
94	MISC. ART.	-0.01%	-0.45%	-1.59%	-2.34%	-0.90%	-0.70%	-3.11%	-2.68%	-2.96%	-2.66%	-1.08%	-1.11%
95		-0.69%	-1.19%	-2.40%	-3.23%	-3.46%	-3.89%	-3.32%	-2.99%	-3.35%	-3.18%	-1.61%	-1.32%
96		-0.72%	-1.22%	-2.43%	-3.25%	-1.70%	-1.85%	-3.33%	-3.00%	-3.36%	-3.19%	-2.12%	-2.21%
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

**Table 7.9 Predicted Annual Growth Rate in Commodity Trade
between US and EU-27 (Median Growth Scenario)**

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.89%	0.67%	0.59%	0.26%	0.01%	-0.22%	-1.36%	-1.16%	-1.01%	-0.80%	-1.34%	-1.20%
02		2.64%	1.87%	1.31%	0.34%	1.68%	1.76%	-2.51%	-1.77%	-1.25%	-0.60%	-2.02%	-1.90%
03		0.93%	0.53%	0.35%	-0.16%	0.14%	0.37%	-1.28%	-0.92%	-0.67%	-0.34%	-1.40%	-1.60%
04		2.39%	1.89%	1.61%	1.03%	1.35%	1.09%	-2.05%	-1.49%	-1.12%	-0.63%	-2.06%	-1.80%
05		1.07%	0.72%	0.59%	0.13%	0.03%	0.06%	-1.06%	-0.76%	-0.55%	-0.28%	-1.42%	-1.51%
06	VEGETABLE PRODUCTS	-0.55%	-0.82%	-0.75%	-1.02%	-0.89%	-0.62%	-0.48%	-0.32%	-0.18%	-0.20%	-1.26%	-1.14%
07		0.57%	0.27%	0.16%	-0.20%	0.19%	0.02%	-2.24%	-2.21%	-2.17%	-2.14%	-1.77%	-1.84%
08		0.33%	0.17%	0.17%	0.00%	-0.08%	-0.31%	-2.30%	-2.32%	-2.31%	-2.31%	-2.17%	-2.04%
09		-0.33%	-0.66%	-0.65%	-0.99%	-0.49%	-0.23%	-0.31%	-0.17%	-0.05%	-0.09%	-1.07%	-0.83%
10		-1.25%	-1.45%	-1.23%	-1.35%	-1.11%	-1.30%	-1.18%	-1.07%	-0.99%	-0.94%	-0.87%	-0.81%
11		1.27%	0.93%	0.75%	0.28%	0.28%	0.17%	-1.54%	-1.16%	-0.88%	-0.51%	-1.56%	-1.77%
12		-0.44%	-0.76%	-0.71%	-1.03%	-0.75%	-0.57%	-0.20%	-0.01%	0.16%	0.21%	0.31%	0.37%
13		0.85%	0.43%	0.24%	-0.29%	-0.14%	-0.06%	-1.90%	-1.48%	-1.17%	-0.77%	-2.09%	-1.95%
14		0.61%	0.40%	0.49%	0.18%	-0.10%	-0.25%	-2.21%	-1.79%	-1.47%	-1.08%	-1.97%	-1.82%
15	FATS & OILS	-0.08%	-0.58%	-0.57%	-1.12%	-0.78%	-0.94%	-1.44%	-0.94%	-0.53%	-0.14%	-1.68%	-1.92%
16	PREPARED FOODSTUFFS	1.37%	0.83%	0.51%	-0.17%	0.33%	0.16%	-1.90%	-1.44%	-1.11%	-0.67%	-1.76%	-1.60%
17		2.48%	1.98%	1.71%	1.13%	1.43%	1.51%	-1.50%	-0.97%	-0.61%	-0.13%	-1.80%	-1.82%
18		0.71%	0.27%	0.08%	-0.45%	0.17%	0.21%	-1.47%	-1.10%	-0.83%	-0.50%	-1.83%	-1.67%
19		0.82%	0.37%	0.16%	-0.40%	-0.21%	-0.20%	-1.72%	-1.30%	-1.00%	-0.60%	-1.73%	-1.80%
20		0.82%	0.37%	0.16%	-0.40%	0.02%	0.13%	-1.72%	-1.30%	-1.00%	-0.60%	-1.70%	-1.60%
21		1.14%	0.69%	0.46%	-0.10%	0.44%	0.35%	-1.74%	-1.31%	-1.01%	-0.60%	-1.62%	-1.63%
22		1.53%	1.25%	1.09%	0.68%	0.47%	0.35%	-1.07%	-0.79%	-0.60%	-0.30%	-1.04%	-0.87%
23		-0.04%	-0.53%	-0.51%	-1.03%	-0.72%	-0.50%	-1.45%	-1.03%	-0.70%	-0.39%	-1.96%	-1.74%
24		1.52%	1.24%	1.08%	0.67%	0.79%	0.60%	-0.99%	-0.72%	-0.54%	-0.27%	-1.04%	-1.23%
25	MINERAL PRODUCTS	0.98%	0.88%	0.87%	0.66%	0.62%	0.49%	0.08%	0.37%	0.62%	0.91%	-0.29%	-0.33%
26		1.27%	1.30%	1.39%	1.29%	0.51%	0.40%	0.16%	0.44%	0.67%	0.95%	0.18%	0.28%
27		3.49%	3.57%	3.67%	3.41%	2.05%	2.19%	1.57%	2.29%	2.93%	3.61%	0.70%	0.91%
28	CHEMICAL PRODUCTS	1.10%	0.73%	0.52%	-0.01%	0.47%	0.47%	-1.54%	-0.85%	-0.33%	0.32%	-1.59%	-1.40%
29		0.75%	0.31%	0.02%	-0.59%	0.25%	0.14%	-1.76%	-1.08%	-0.57%	0.06%	-1.71%	-1.52%
30		0.73%	0.28%	0.00%	-0.62%	-0.06%	-0.08%	-1.77%	-1.09%	-0.59%	0.05%	-1.43%	-1.65%
31		0.76%	0.32%	0.04%	-0.57%	-0.26%	-0.26%	-1.70%	-1.04%	-0.54%	0.09%	-1.57%	-1.41%
32		0.75%	0.31%	0.02%	-0.59%	-0.11%	-0.39%	-1.76%	-1.08%	-0.57%	0.06%	-1.52%	-1.80%
33		0.75%	0.31%	0.02%	-0.59%	0.03%	-0.04%	-1.76%	-1.08%	-0.57%	0.06%	-1.89%	-2.17%
34		0.60%	0.15%	-0.14%	-0.75%	0.04%	-0.24%	-1.84%	-1.17%	-0.66%	-0.03%	-1.46%	-1.28%
35		0.89%	0.44%	0.16%	-0.44%	0.04%	-0.24%	-1.76%	-1.09%	-0.60%	0.03%	-1.35%	-1.52%
36		-0.75%	-1.28%	-1.63%	-2.30%	-1.71%	-1.81%	-2.69%	-2.03%	-1.56%	-0.95%	-2.32%	-2.20%
37		0.75%	0.31%	0.02%	-0.59%	0.18%	0.00%	-1.76%	-1.08%	-0.57%	0.06%	-1.65%	-1.88%
38		0.70%	0.23%	-0.06%	-0.69%	-0.21%	-0.46%	-1.84%	-1.15%	-0.64%	0.00%	-1.42%	-1.62%
39	PLASTICS	0.75%	0.31%	0.02%	-0.59%	-0.13%	0.06%	-1.76%	-1.08%	-0.57%	0.06%	-1.84%	-1.64%
40		0.76%	0.31%	0.03%	-0.58%	0.18%	-0.07%	-1.76%	-1.09%	-0.59%	0.04%	-1.36%	-1.56%
41	LEATHER GOODS	-8.24%	-8.90%	-9.34%	-10.10%	-8.39%	-8.44%	-4.59%	-4.26%	-4.05%	-3.79%	-4.05%	-3.85%
42		-6.58%	-7.30%	-7.81%	-8.66%	-6.80%	-6.57%	-6.32%	-5.92%	-5.75%	-5.47%	-5.68%	-5.61%
43		0.73%	0.50%	0.41%	0.06%	-0.23%	-0.48%	-1.60%	-1.42%	-1.28%	-1.09%	-1.52%	-1.42%
44	WOOD PRODUCTS	0.89%	0.33%	-0.02%	-0.69%	0.04%	0.15%	-2.87%	-2.25%	-1.81%	-1.23%	-2.51%	-2.45%
45		0.93%	0.37%	0.04%	-0.62%	0.11%	-0.01%	-2.91%	-2.34%	-1.93%	-1.40%	-2.64%	-2.86%
46		0.89%	0.29%	-0.09%	-0.80%	0.11%	-0.07%	-3.27%	-2.62%	-2.16%	-1.55%	-3.02%	-3.09%
47	PAPER	1.14%	0.60%	0.25%	-0.42%	0.35%	0.37%	-2.19%	-1.51%	-1.05%	-0.42%	0.03%	0.27%
48		1.14%	0.60%	0.25%	-0.42%	0.27%	0.24%	-2.19%	-1.51%	-1.05%	-0.42%	-1.88%	-2.11%
49		1.14%	0.60%	0.25%	-0.42%	0.37%	0.27%	-2.19%	-1.51%	-1.05%	-0.42%	-2.03%	-2.15%

Table 7.9 Predicted Annual Growth Rate in Commodity Trade between US and EU-27 (Median Growth Scenario) (cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-2.66%	-3.41%	-3.94%	-4.84%	-3.22%	-3.51%	-4.91%	-4.43%	-4.17%	-3.82%	-4.15%	-4.40%
51		-2.66%	-3.41%	-3.95%	-4.84%	-2.84%	-2.89%	-4.91%	-4.43%	-4.18%	-3.83%	-4.68%	-4.41%
52		-2.65%	-3.40%	-3.93%	-4.82%	-3.40%	-3.54%	-4.80%	-4.31%	-4.04%	-3.67%	-4.55%	-4.62%
53		-2.52%	-3.24%	-3.73%	-4.58%	-2.77%	-2.66%	-2.85%	-2.50%	-2.28%	-2.05%	-3.10%	-2.85%
54		-2.65%	-3.40%	-3.93%	-4.82%	-3.26%	-3.34%	-4.92%	-4.42%	-4.15%	-3.77%	-4.11%	-3.85%
55		-2.65%	-3.40%	-3.93%	-4.82%	-2.83%	-2.81%	-4.92%	-4.42%	-4.15%	-3.77%	-4.16%	-4.38%
56		-2.65%	-3.40%	-3.93%	-4.82%	-2.91%	-2.63%	-4.92%	-4.42%	-4.15%	-3.77%	-4.24%	-4.08%
57		-2.65%	-3.40%	-3.93%	-4.82%	-3.10%	-3.25%	-4.92%	-4.42%	-4.15%	-3.77%	-4.65%	-4.87%
58		-2.65%	-3.40%	-3.93%	-4.82%	-2.85%	-3.01%	-4.92%	-4.42%	-4.15%	-3.77%	-4.23%	-4.37%
59		-1.56%	-2.17%	-2.59%	-3.33%	-1.88%	-1.58%	-3.33%	-2.70%	-2.27%	-1.70%	-3.28%	-2.98%
60		-2.65%	-3.40%	-3.93%	-4.82%	-3.38%	-3.45%	-4.92%	-4.42%	-4.15%	-3.77%	-4.21%	-4.01%
61		-2.93%	-3.73%	-4.25%	-5.19%	-3.73%	-3.58%	-5.64%	-5.18%	-4.95%	-4.61%	-5.00%	-5.30%
62		-2.96%	-3.77%	-4.29%	-5.23%	-3.51%	-3.47%	-5.86%	-5.41%	-5.20%	-4.87%	-5.45%	-5.42%
63		-2.00%	-2.75%	-3.27%	-4.15%	-2.64%	-2.79%	-4.47%	-3.86%	-3.49%	-2.97%	-4.08%	-3.88%
64	FOOTWEAR	-8.42%	-9.10%	-9.58%	-10.38%	-8.97%	-9.17%	-6.93%	-6.60%	-6.47%	-6.27%	-6.10%	-6.14%
65		-0.94%	-1.52%	-1.86%	-2.57%	-1.63%	-1.91%	-2.32%	-1.65%	-1.16%	-0.54%	-2.08%	-2.02%
66		-4.15%	-5.06%	-5.79%	-6.87%	-4.69%	-4.78%	-6.12%	-5.70%	-5.53%	-5.22%	-5.76%	-5.57%
67		-4.15%	-5.06%	-5.79%	-6.87%	-4.53%	-4.61%	-6.12%	-5.70%	-5.53%	-5.22%	-5.19%	-5.32%
68	STONE & GLASS	0.18%	-0.34%	-0.70%	-1.36%	-0.42%	-0.38%	-2.06%	-1.36%	-0.85%	-0.20%	-2.19%	-2.13%
69		0.18%	-0.34%	-0.70%	-1.36%	-0.69%	-0.45%	-2.06%	-1.36%	-0.85%	-0.20%	-2.17%	-2.14%
70		0.15%	-0.37%	-0.73%	-1.39%	-0.40%	-0.15%	-2.09%	-1.39%	-0.88%	-0.23%	-1.81%	-1.64%
71	PRECIOUS STONES	-1.08%	-1.48%	-1.70%	-2.18%	-1.79%	-1.81%	-3.05%	-2.40%	-1.93%	-1.33%	-2.43%	-2.60%
72	BASE METALS	0.27%	0.02%	-0.11%	-0.48%	-0.34%	-0.11%	-1.59%	-0.88%	-0.32%	0.38%	-1.49%	-1.68%
73		-0.15%	-0.69%	-1.04%	-1.68%	-0.66%	-0.82%	-3.18%	-2.42%	-1.89%	-1.18%	-2.96%	-2.86%
74		2.06%	1.64%	1.37%	0.82%	1.24%	1.37%	-1.71%	-1.02%	-0.54%	0.12%	-1.45%	-1.52%
75		1.28%	1.12%	1.07%	0.77%	0.75%	0.71%	-1.75%	-0.96%	-0.36%	0.40%	-1.53%	-1.72%
76		0.82%	0.54%	0.40%	0.01%	0.33%	0.17%	-2.21%	-1.42%	-0.84%	-0.09%	-1.52%	-1.52%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		1.30%	1.14%	1.10%	0.81%	1.05%	1.16%	-1.73%	-0.94%	-0.34%	0.42%	-1.59%	-1.41%
79		1.30%	1.14%	1.10%	0.81%	0.98%	1.06%	-1.73%	-0.94%	-0.34%	0.42%	-1.51%	-1.48%
80		1.25%	1.08%	1.03%	0.73%	0.75%	0.96%	-1.78%	-0.98%	-0.39%	0.37%	-1.49%	-1.69%
81		1.47%	1.35%	1.33%	1.07%	0.77%	0.49%	-1.57%	-0.77%	-0.17%	0.59%	-1.43%	-1.19%
82		-0.56%	-1.21%	-1.65%	-2.42%	-1.38%	-1.60%	-3.58%	-2.84%	-2.34%	-1.66%	-3.07%	-2.97%
83		-0.56%	-1.21%	-1.65%	-2.42%	-1.03%	-1.29%	-3.58%	-2.84%	-2.34%	-1.66%	-2.90%	-3.19%
84		MACHINE	0.14%	-0.59%	-1.10%	-1.94%	-2.10%	-2.27%	-3.66%	-2.88%	-2.35%	-1.64%	-1.04%
85	-0.74%		-1.50%	-2.01%	-2.88%	-3.12%	-3.46%	-4.47%	-3.78%	-3.30%	-2.66%	-3.56%	-3.47%
86	VEHICLES	1.19%	0.62%	0.22%	-0.46%	0.50%	0.39%	-3.05%	-2.40%	-1.96%	-1.33%	-2.23%	-2.41%
87		1.99%	1.52%	1.19%	0.58%	0.04%	-0.15%	-2.37%	-1.71%	-1.27%	-0.64%	-0.12%	0.42%
88		1.08%	0.51%	0.09%	-0.60%	0.56%	0.58%	-3.08%	-2.42%	-1.98%	-1.36%	-2.32%	-2.60%
89		1.09%	0.51%	0.10%	-0.60%	0.21%	0.31%	-3.08%	-2.42%	-1.98%	-1.36%	-2.52%	-2.62%
90	CLOCKS & MUSICAL INST.	-0.05%	-0.84%	-1.41%	-2.30%	-0.60%	-0.63%	-3.62%	-2.82%	-2.26%	-1.51%	-3.16%	-2.92%
91		-0.07%	-0.85%	-1.42%	-2.31%	-0.40%	-0.42%	-3.62%	-2.81%	-2.26%	-1.51%	-2.95%	-3.20%
92		-4.15%	-5.06%	-5.79%	-6.87%	-4.68%	-4.90%	-6.12%	-5.70%	-5.53%	-5.22%	-5.26%	-5.42%
93	ARMS	-0.05%	-0.83%	-1.40%	-2.29%	-0.61%	-0.83%	-3.62%	-2.81%	-2.26%	-1.51%	-2.78%	-2.67%
94	MISC. ART.	-2.22%	-3.01%	-3.60%	-4.52%	-2.49%	-2.38%	-4.68%	-4.04%	-3.63%	-3.06%	-4.16%	-4.16%
95		-4.15%	-5.06%	-5.79%	-6.87%	-6.47%	-6.38%	-6.12%	-5.70%	-5.53%	-5.22%	-5.40%	-5.60%
96		-4.19%	-5.09%	-5.82%	-6.89%	-4.74%	-4.73%	-6.12%	-5.70%	-5.53%	-5.23%	-5.21%	-5.04%
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

7.2.1.2 High Growth Case Scenario

In the high growth scenario, annual growth rate for each commodity group at HS 2-digit classification and section between U.S. and her trading partners were predicted using the trade forecasting module and results are presented in Tables 7.10 to 7.15.

Similar findings as the median growth scenario can be observed, except the magnitude of the annual growth rate in commodity trade which is relatively higher than those presented in the previous section. This could be due to the assumption that the global economy is growing in a faster pace and favourable socio-economic variables are input to the trade forecasting module to model this scenario.

**Table 7.10 Predicted Annual Growth Rate in Commodity Trade
between US and Australia (High Growth Scenario)**

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	2.19%	2.10%	2.13%	2.04%	0.82%	0.69%	0.98%	1.13%	1.51%	1.64%	1.49%	1.52%
02		3.72%	3.40%	3.60%	3.49%	1.26%	1.17%	-1.36%	-1.07%	-0.87%	-0.62%	0.63%	0.74%
03		1.58%	1.43%	1.52%	1.14%	0.47%	0.56%	-1.18%	-1.09%	-0.86%	-0.73%	0.03%	-0.20%
04		3.05%	3.08%	2.80%	2.55%	0.85%	0.83%	-0.64%	-0.36%	-0.10%	0.22%	0.51%	0.17%
05		0.55%	-0.01%	-0.31%	-0.85%	-0.80%	-0.94%	0.15%	0.31%	0.62%	0.84%	0.65%	0.71%
06	VEGETABLE PRODUCTS	0.11%	0.01%	0.41%	0.36%	-0.62%	-0.42%	-0.13%	-0.32%	-0.23%	-0.55%	-0.16%	-0.16%
07		0.34%	0.24%	0.34%	0.21%	0.03%	-0.14%	-1.20%	-1.31%	-1.20%	-1.19%	-0.28%	-0.44%
08		0.01%	-0.04%	0.13%	0.12%	0.00%	-0.16%	-1.29%	-1.30%	-1.30%	-1.32%	-0.58%	-0.39%
09		0.61%	0.38%	0.60%	0.40%	-0.26%	-0.32%	-0.52%	-0.65%	-0.47%	-0.67%	-0.39%	-0.34%
10		-1.70%	-1.94%	-1.53%	-1.62%	-1.38%	-1.14%	-1.02%	-1.06%	-0.89%	-0.90%	-0.97%	-0.91%
11		1.62%	1.51%	1.41%	0.94%	0.11%	-0.01%	-0.96%	-0.97%	-0.67%	-0.53%	0.26%	0.06%
12		0.95%	0.86%	1.24%	1.23%	0.36%	0.61%	-0.11%	-0.20%	-0.11%	-0.26%	-0.16%	0.31%
13		1.20%	0.95%	0.94%	0.46%	-0.21%	-0.25%	-1.16%	-1.20%	-0.93%	-0.71%	-0.14%	0.12%
14		0.94%	0.97%	1.11%	0.80%	0.12%	0.30%	-0.67%	-0.48%	-0.05%	0.19%	-0.06%	0.17%
15	FATS & OILS	3.85%	3.61%	3.49%	3.09%	1.62%	1.61%	-1.45%	-1.37%	-1.03%	-0.94%	-0.51%	-0.33%
16	PREPARED FOODSTUFFS	1.74%	1.40%	1.27%	0.86%	-0.20%	-0.03%	-1.37%	-1.12%	-0.96%	-0.74%	0.20%	0.36%
17		2.81%	2.65%	2.84%	2.51%	0.91%	1.08%	-0.50%	-0.26%	0.03%	0.38%	0.78%	1.12%
18		1.23%	0.89%	0.92%	0.46%	-0.35%	-0.60%	-1.16%	-1.21%	-0.92%	-0.77%	-0.09%	-0.29%
19		1.25%	0.94%	0.95%	0.44%	-0.40%	-0.17%	-1.21%	-1.18%	-0.90%	-0.76%	-0.07%	-0.29%
20		1.21%	0.94%	0.97%	0.42%	-0.57%	-0.72%	-1.18%	-1.18%	-0.95%	-0.76%	-0.15%	-0.40%
21		1.71%	1.44%	1.50%	1.08%	-0.08%	0.06%	-1.20%	-1.16%	-0.90%	-0.71%	0.08%	0.34%
22		1.81%	1.61%	1.65%	1.13%	1.14%	1.09%	0.17%	0.19%	0.41%	0.57%	1.34%	1.27%
23		1.14%	0.90%	0.99%	0.65%	-0.43%	-0.59%	-1.25%	-1.25%	-0.92%	-0.86%	-0.11%	-0.40%
24		1.81%	1.68%	1.65%	1.22%	0.46%	0.76%	0.17%	0.20%	0.39%	0.56%	0.86%	0.98%
25	MINERAL PRODUCTS	1.23%	1.45%	1.55%	1.46%	0.51%	0.63%	-1.30%	-1.12%	-0.86%	-0.68%	-0.96%	-0.88%
26		1.29%	1.29%	1.61%	1.53%	0.93%	0.84%	-0.84%	-0.68%	-0.45%	-0.31%	-0.84%	-0.82%
27		5.04%	5.64%	5.85%	5.97%	4.27%	4.32%	5.76%	6.84%	8.02%	7.75%	5.18%	5.22%
28	CHEMICAL PRODUCTS	3.38%	3.60%	3.63%	3.39%	0.88%	0.76%	-1.34%	-1.09%	-0.71%	-0.39%	-0.15%	-0.04%
29		3.35%	3.34%	3.71%	3.26%	0.72%	0.42%	-1.54%	-1.43%	-0.98%	-0.70%	-0.42%	-0.73%
30		3.12%	3.42%	3.52%	3.38%	0.93%	0.82%	-1.73%	-1.46%	-1.04%	-0.74%	-0.28%	-0.52%
31		2.74%	2.90%	3.03%	2.74%	0.46%	0.36%	-1.71%	-1.33%	-0.98%	-0.71%	-0.25%	-0.36%
32		3.11%	3.47%	3.58%	3.22%	0.76%	1.08%	-1.68%	-1.44%	-1.04%	-0.74%	-0.42%	-0.59%
33		3.09%	3.27%	3.49%	3.43%	0.81%	0.78%	-1.65%	-1.45%	-1.03%	-0.73%	-0.69%	-0.63%
34		2.60%	2.57%	2.95%	2.82%	0.02%	0.28%	-1.76%	-1.57%	-1.15%	-0.83%	-0.45%	-0.59%
35		2.82%	2.53%	3.00%	2.54%	0.64%	0.61%	-1.52%	-1.25%	-0.98%	-0.69%	-0.46%	-0.33%
36		-0.71%	-0.79%	-0.80%	-1.31%	-2.34%	-2.26%	-3.11%	-2.95%	-2.64%	-2.13%	-1.60%	-1.35%
37		3.06%	3.40%	3.59%	3.42%	0.94%	1.00%	-1.63%	-1.35%	-0.99%	-0.71%	-0.17%	0.05%
38		2.82%	2.92%	3.41%	2.87%	0.31%	0.34%	-1.68%	-1.48%	-1.19%	-0.80%	-0.70%	-0.92%
39	PLASTICS	2.97%	3.44%	3.35%	3.46%	0.95%	1.14%	-1.68%	-1.34%	-1.06%	-0.70%	-0.64%	-0.89%
40		3.36%	3.33%	3.33%	3.46%	1.03%	0.79%	-1.61%	-1.37%	-1.00%	-0.72%	-0.54%	-0.47%
41	LEATHER GOODS	-2.93%	-3.16%	-2.91%	-3.20%	-4.97%	-5.06%	-9.96%	-9.68%	-9.04%	-8.57%	-8.12%	-7.56%
42		-3.61%	-4.29%	-4.36%	-4.90%	-5.21%	-5.43%	-7.39%	-7.07%	-6.91%	-7.35%	-5.38%	-5.52%
43		0.76%	0.56%	0.58%	0.22%	-0.11%	-0.23%	-0.30%	-0.41%	-0.30%	-0.25%	0.57%	0.67%
44	WOOD PRODUCTS	1.43%	1.17%	0.98%	0.45%	-0.40%	-0.25%	-2.30%	-2.26%	-1.87%	-1.56%	-1.03%	-0.99%
45		1.23%	0.89%	0.82%	0.27%	-0.53%	-0.72%	-2.46%	-2.29%	-1.76%	-1.52%	-1.42%	-1.11%
46		1.31%	0.82%	0.72%	0.08%	-0.65%	-0.57%	-2.70%	-2.41%	-2.02%	-1.85%	-1.55%	-1.33%
47	PAPER	2.14%	1.77%	1.88%	1.28%	-0.10%	-0.09%	-1.98%	-1.93%	-1.64%	-1.26%	-1.00%	-0.84%
48		2.05%	1.78%	1.85%	1.33%	-0.09%	0.16%	-2.15%	-1.95%	-1.57%	-1.23%	-0.72%	-0.56%
49		2.05%	1.89%	1.76%	1.32%	-0.17%	-0.32%	-1.97%	-1.89%	-1.52%	-1.26%	-0.28%	-0.34%

Table 7.10 Predicted Annual Growth Rate in Commodity Trade between US and Australia (High Growth Scenario) (cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-2.15%	-3.54%	-4.26%	-6.11%	-3.50%	-3.46%	-7.02%	-6.86%	-6.40%	-6.02%	-5.23%	-5.15%
51		-2.33%	-3.63%	-4.53%	-6.24%	-3.59%	-3.28%	-6.91%	-6.34%	-5.73%	-5.88%	-5.46%	-5.22%
52		-1.08%	-1.30%	-1.37%	-1.95%	-2.39%	-2.65%	-7.86%	-7.80%	-7.61%	-7.69%	-5.90%	-5.97%
53		-1.05%	-1.34%	-1.40%	-1.97%	-2.57%	-2.67%	-6.31%	-6.09%	-6.24%	-5.84%	-4.67%	-4.92%
54		-1.02%	-1.37%	-1.36%	-1.83%	-2.40%	-2.32%	-7.84%	-8.07%	-7.89%	-7.09%	-6.49%	-5.96%
55		-1.00%	-1.32%	-1.41%	-1.94%	-2.91%	-2.64%	-7.89%	-7.37%	-7.74%	-7.62%	-6.26%	-6.59%
56		-0.97%	-1.23%	-1.41%	-2.10%	-2.79%	-2.85%	-7.54%	-7.67%	-7.96%	-7.42%	-6.32%	-6.64%
57		-1.09%	-1.39%	-1.48%	-1.92%	-3.01%	-2.70%	-7.87%	-7.73%	-7.29%	-7.66%	-5.96%	-6.20%
58		-1.04%	-1.29%	-1.53%	-1.94%	-3.13%	-2.93%	-7.57%	-8.00%	-7.64%	-7.18%	-6.41%	-6.33%
59		-1.16%	-1.49%	-1.44%	-2.13%	-3.00%	-2.56%	-4.30%	-3.89%	-3.85%	-3.47%	-2.88%	-2.90%
60		-1.05%	-1.20%	-1.34%	-1.96%	-3.13%	-3.02%	-7.47%	-7.86%	-7.68%	-7.22%	-6.78%	-6.32%
61		-1.14%	-1.45%	-1.67%	-2.40%	-3.28%	-3.08%	-8.71%	-8.27%	-8.16%	-8.19%	-6.75%	-6.57%
62		-1.32%	-1.51%	-1.79%	-2.28%	-2.89%	-2.52%	-8.74%	-8.31%	-8.68%	-8.22%	-6.92%	-6.72%
63	-0.50%	-0.87%	-0.96%	-1.59%	-2.48%	-2.18%	-5.61%	-5.45%	-5.16%	-5.21%	-4.28%	-3.91%	
64	FOOTWEAR	-7.49%	-7.73%	-7.52%	-8.26%	-8.66%	-7.91%	-9.75%	-9.75%	-9.41%	-8.78%	-8.58%	-8.04%
65		2.03%	2.21%	2.32%	1.96%	-0.53%	-0.38%	-2.51%	-2.31%	-1.81%	-1.59%	-1.35%	-1.51%
66		-2.79%	-3.50%	-4.13%	-4.85%	-4.34%	-5.08%	-6.30%	-6.27%	-6.52%	-5.99%	-4.05%	-4.18%
67		-3.24%	-3.66%	-3.70%	-4.85%	-4.56%	-4.33%	-6.53%	-6.23%	-5.98%	-6.23%	-4.61%	-4.73%
68	STONE & GLASS	1.19%	1.08%	1.06%	0.68%	-0.53%	-0.83%	-2.40%	-2.27%	-2.00%	-1.61%	-0.75%	-0.62%
69		1.35%	1.11%	1.17%	0.76%	-0.54%	-0.65%	-2.44%	-2.31%	-1.93%	-1.67%	-0.94%	-0.72%
70		1.26%	1.13%	1.14%	0.70%	-0.46%	-0.63%	-2.44%	-2.39%	-2.08%	-1.68%	-1.18%	-1.02%
71	PRECIOUS STONES	-0.77%	-0.82%	-0.81%	-1.07%	-2.38%	-2.10%	-4.92%	-4.68%	-4.55%	-3.95%	-3.00%	-3.02%
72	BASE METALS	1.31%	1.31%	1.59%	1.30%	-0.58%	-0.35%	-1.01%	-0.62%	-0.10%	0.47%	0.25%	0.20%
73		0.95%	1.01%	1.03%	0.79%	-0.77%	-0.70%	-3.11%	-2.84%	-2.65%	-2.21%	-1.62%	-1.51%
74		-0.18%	-0.32%	-0.23%	-0.54%	-1.66%	-1.69%	-1.12%	-0.79%	-0.47%	-0.10%	1.07%	1.26%
75		-0.56%	-0.61%	-0.56%	-0.97%	-2.14%	-1.68%	-2.09%	-1.58%	-0.99%	-0.37%	-0.80%	-0.82%
76		-0.49%	-0.61%	-0.60%	-0.92%	-1.87%	-1.78%	-2.90%	-2.47%	-1.86%	-1.28%	-1.42%	-1.43%
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78		-0.55%	-0.67%	-0.61%	-0.99%	-1.64%	-1.62%	-2.13%	-1.67%	-0.92%	-0.30%	-0.86%	-0.75%
79		-0.51%	-0.63%	-0.54%	-0.91%	-1.57%	-1.85%	-2.08%	-1.60%	-0.87%	-0.30%	-1.17%	-0.82%
80		-0.51%	-0.66%	-0.63%	-0.96%	-1.76%	-1.97%	-2.15%	-1.70%	-1.07%	-0.41%	-0.83%	-1.00%
81		-0.54%	-0.62%	-0.60%	-0.85%	-1.95%	-1.92%	-1.82%	-1.20%	-0.37%	0.24%	-0.85%	-1.00%
82		0.08%	-0.14%	-0.25%	-0.72%	-1.63%	-1.84%	-3.96%	-3.42%	-2.97%	-2.61%	-1.95%	-2.04%
83		0.09%	-0.14%	-0.27%	-0.68%	-1.85%	-1.85%	-3.94%	-3.43%	-3.24%	-2.79%	-1.87%	-1.75%
84	MACHINE	0.94%	0.60%	0.41%	-0.19%	-0.27%	-0.31%	-3.45%	-2.98%	-2.63%	-2.18%	-1.87%	-1.21%
85		0.17%	-0.14%	-0.24%	-0.75%	-0.88%	-1.13%	-4.65%	-4.11%	-3.83%	-3.58%	-2.57%	-2.55%
86	VEHICLES	2.54%	2.53%	2.56%	2.03%	0.13%	0.19%	-2.89%	-2.74%	-2.43%	-2.11%	-1.32%	-1.63%
87		2.75%	2.49%	2.67%	2.09%	1.96%	1.88%	-1.61%	-1.36%	-1.04%	-0.68%	-0.41%	-0.18%
88		2.40%	2.37%	2.28%	2.02%	0.33%	0.09%	-3.07%	-2.80%	-2.56%	-2.29%	-0.90%	-0.84%
89		2.55%	2.47%	2.53%	2.11%	0.00%	-0.23%	-2.91%	-2.95%	-2.48%	-2.29%	-1.34%	-1.06%
90	CLOCKS & MUSICAL INST.	0.89%	0.56%	0.33%	-0.29%	-1.40%	-1.43%	-3.18%	-3.01%	-2.50%	-2.08%	-1.25%	-1.41%
91		0.97%	0.56%	0.35%	-0.26%	-1.15%	-1.38%	-3.03%	-2.99%	-2.43%	-2.10%	-1.46%	-1.72%
92		-2.79%	-3.45%	-3.60%	-4.36%	-4.18%	-4.29%	-6.09%	-6.48%	-6.42%	-6.51%	-4.16%	-4.09%
93	ARMS	0.97%	0.53%	0.33%	-0.26%	-1.18%	-0.92%	-3.15%	-2.85%	-2.59%	-2.20%	-1.24%	-0.94%
94	MISC. ART.	-1.80%	-2.49%	-2.37%	-3.00%	-3.70%	-4.04%	-4.35%	-4.21%	-4.21%	-3.75%	-2.56%	-2.44%
95		-2.84%	-3.64%	-3.73%	-4.39%	-4.83%	-5.45%	-6.43%	-6.68%	-6.06%	-5.92%	-4.01%	-4.35%
96		-3.25%	-3.23%	-4.19%	-4.69%	-4.61%	-4.99%	-6.35%	-6.23%	-6.33%	-6.29%	-4.21%	-4.67%
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

Table 7.11 Predicted Annual Growth Rate in Commodity Trade between US and China (High Growth Scenario)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	3.84%	3.69%	3.40%	3.19%	3.30%	3.32%	1.93%	1.73%	1.74%	1.65%	2.76%	2.65%
02		24.08%	24.35%	24.30%	23.13%	23.21%	23.19%	-5.03%	-4.85%	-4.67%	-3.99%	-3.78%	-3.67%
03		8.02%	8.31%	8.16%	7.44%	7.75%	7.22%	-0.46%	-0.38%	-0.19%	0.00%	0.65%	0.68%
04		10.78%	10.24%	10.04%	10.11%	9.44%	8.95%	-2.61%	-2.35%	-2.28%	-2.04%	-1.38%	-1.72%
05		21.43%	18.66%	19.22%	18.00%	17.03%	18.85%	-0.10%	0.07%	0.22%	0.39%	0.77%	0.68%
06	VEGETABLE PRODUCTS	12.81%	11.66%	12.60%	12.89%	12.60%	12.72%	2.54%	2.58%	2.82%	2.40%	3.14%	3.40%
07		7.78%	7.57%	7.99%	7.60%	7.01%	7.40%	-0.82%	-0.89%	-0.65%	-0.59%	-0.01%	-0.21%
08		7.59%	7.27%	7.12%	7.61%	7.60%	7.60%	-1.00%	-1.09%	-0.91%	-0.89%	-0.19%	-0.41%
09		11.41%	10.53%	11.15%	11.28%	11.21%	10.30%	1.78%	1.62%	1.86%	1.61%	1.92%	2.12%
10		6.12%	6.24%	6.64%	6.55%	6.58%	7.08%	0.33%	0.27%	0.24%	0.19%	0.13%	0.09%
11		8.55%	8.26%	7.23%	6.75%	7.33%	7.73%	-0.60%	-0.47%	-0.26%	-0.06%	0.74%	0.75%
12		11.16%	10.78%	10.92%	11.39%	10.26%	11.28%	7.15%	6.99%	7.96%	7.29%	7.58%	7.49%
13		8.83%	7.43%	8.07%	7.33%	7.78%	7.01%	0.65%	0.97%	1.22%	1.41%	1.37%	1.58%
14		6.77%	6.43%	6.99%	6.45%	5.80%	5.91%	2.11%	2.47%	2.60%	2.89%	2.46%	2.83%
15	FATS & OILS	10.89%	10.91%	10.50%	9.81%	10.84%	10.01%	-3.09%	-3.19%	-2.66%	-2.55%	-2.56%	-2.34%
16	PREPARED FOODSTUFFS	8.69%	8.31%	8.83%	8.43%	8.88%	8.08%	-4.24%	-4.19%	-3.73%	-3.63%	-3.89%	-3.95%
17		15.21%	16.50%	15.96%	16.43%	13.71%	15.37%	-4.12%	-3.61%	-3.65%	-3.59%	-3.01%	-3.10%
18		9.04%	8.64%	8.17%	7.50%	7.68%	7.15%	-0.48%	-0.34%	-0.16%	0.01%	0.54%	0.54%
19		7.88%	7.94%	8.01%	7.29%	7.00%	7.21%	-0.68%	-0.51%	-0.35%	-0.12%	0.24%	0.19%
20		8.77%	7.80%	7.33%	6.96%	8.13%	7.33%	-0.65%	-0.52%	-0.31%	-0.12%	0.12%	0.13%
21		8.90%	7.81%	7.58%	7.46%	7.09%	7.24%	-0.93%	-0.80%	-0.59%	-0.40%	0.11%	0.17%
22		5.91%	5.54%	5.40%	4.93%	4.98%	4.97%	1.91%	1.93%	2.29%	2.30%	3.25%	2.94%
23		9.28%	8.76%	9.28%	8.31%	7.83%	8.00%	-2.60%	-2.61%	-2.38%	-2.16%	-1.99%	-2.46%
24		9.56%	9.62%	9.37%	9.54%	8.98%	9.16%	2.31%	2.28%	2.31%	2.37%	3.16%	3.09%
25	MINERAL PRODUCTS	6.01%	5.44%	5.43%	5.29%	4.81%	4.52%	8.46%	8.62%	8.08%	8.72%	8.88%	8.98%
26		3.46%	3.75%	3.98%	3.65%	2.43%	2.25%	8.78%	8.78%	8.18%	9.45%	9.82%	8.68%
27		8.73%	8.14%	8.39%	8.62%	6.71%	6.37%	9.41%	10.70%	11.50%	11.93%	9.95%	9.79%
28	CHEMICAL PRODUCTS	10.23%	10.37%	10.73%	9.56%	9.44%	8.84%	3.11%	3.65%	3.92%	4.39%	4.36%	4.51%
29		10.29%	10.12%	10.95%	10.34%	8.74%	9.23%	2.89%	3.11%	3.85%	4.06%	4.18%	4.54%
30		10.78%	9.94%	10.10%	10.22%	9.60%	10.20%	3.05%	3.56%	3.68%	4.37%	4.46%	4.16%
31		9.88%	10.06%	10.54%	10.02%	8.37%	8.25%	3.34%	3.82%	4.31%	4.96%	4.26%	4.47%
32		10.73%	11.00%	9.99%	9.95%	9.34%	9.28%	3.10%	3.49%	3.52%	4.08%	3.62%	3.58%
33		11.01%	10.74%	9.59%	9.39%	9.21%	9.54%	2.88%	3.51%	3.88%	3.98%	3.96%	3.88%
34		9.82%	9.50%	9.52%	8.42%	8.93%	9.18%	3.03%	3.53%	4.03%	4.20%	4.60%	4.40%
35		10.43%	9.35%	9.49%	9.09%	9.12%	8.58%	2.17%	2.88%	3.22%	3.83%	3.09%	3.24%
36		9.30%	7.95%	7.69%	6.42%	8.07%	7.23%	2.23%	2.98%	3.08%	3.84%	3.53%	3.34%
37		10.75%	9.90%	9.99%	10.28%	8.96%	9.43%	3.06%	3.46%	3.93%	4.63%	4.05%	4.09%
38		10.82%	9.82%	9.58%	8.86%	9.64%	10.10%	2.64%	3.29%	3.63%	4.17%	3.99%	4.23%
39	PLASTICS	10.18%	10.39%	10.21%	10.01%	9.03%	9.62%	2.96%	3.56%	3.60%	4.30%	3.92%	4.39%
40		11.20%	10.53%	10.88%	9.27%	9.20%	9.17%	2.92%	3.43%	3.79%	4.56%	4.12%	3.45%
41	LEATHER GOODS	3.87%	3.52%	3.07%	2.30%	3.43%	3.07%	-1.00%	-0.73%	-0.60%	-0.36%	0.27%	0.28%
42		5.65%	4.88%	4.68%	3.99%	4.94%	5.20%	-2.61%	-2.24%	-2.09%	-1.78%	-1.13%	-1.36%
43		3.96%	3.56%	3.51%	3.25%	3.12%	3.49%	1.65%	1.85%	1.76%	1.60%	2.67%	3.12%
44	WOOD PRODUCTS	7.02%	6.14%	5.43%	5.19%	5.69%	5.51%	1.07%	1.42%	1.64%	1.91%	2.03%	2.04%
45		6.77%	6.01%	5.58%	4.65%	5.40%	5.33%	1.63%	1.79%	2.00%	2.10%	2.02%	2.40%
46		6.39%	6.26%	5.57%	5.21%	5.27%	6.12%	-1.16%	-1.19%	-1.08%	-1.06%	-0.29%	-0.57%
47	PAPER	10.83%	9.74%	9.36%	9.50%	8.72%	9.30%	0.65%	1.02%	1.19%	1.41%	1.77%	1.81%
48		10.87%	9.68%	9.87%	9.38%	8.74%	9.07%	0.67%	0.91%	1.21%	1.62%	1.88%	1.52%
49		10.90%	9.76%	9.95%	9.46%	9.00%	8.81%	0.66%	0.92%	1.22%	1.61%	2.05%	1.99%

Table 7.11 Predicted Annual Growth Rate in Commodity Trade between US and China (High Growth Scenario) (cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	12.09%	10.80%	11.10%	9.57%	10.71%	11.01%	-0.93%	-0.55%	-0.33%	-0.04%	0.49%	0.43%
51		12.93%	12.32%	12.08%	11.25%	10.47%	10.39%	-0.85%	-0.45%	-0.25%	0.03%	0.37%	0.50%
52		9.63%	8.77%	8.74%	7.63%	9.03%	8.27%	3.66%	3.85%	4.50%	4.60%	4.60%	4.00%
53		9.07%	9.00%	8.20%	7.08%	9.28%	9.26%	6.47%	6.31%	6.39%	6.59%	6.79%	6.29%
54		8.85%	8.73%	8.76%	7.88%	9.03%	8.67%	-1.34%	-0.85%	-0.60%	-0.30%	0.31%	0.54%
55		9.46%	8.45%	8.18%	7.52%	8.42%	9.10%	-1.30%	-0.89%	-0.63%	-0.28%	0.30%	0.05%
56		8.75%	8.70%	8.78%	7.71%	8.98%	8.71%	-1.28%	-0.89%	-0.60%	-0.29%	0.30%	0.41%
57		9.16%	8.22%	7.78%	7.88%	8.79%	8.36%	-1.24%	-0.86%	-0.66%	-0.29%	0.04%	-0.04%
58		9.53%	8.90%	8.65%	7.99%	8.60%	8.33%	-1.23%	-0.91%	-0.61%	-0.28%	0.19%	0.00%
59		9.30%	7.91%	8.22%	6.85%	8.03%	7.52%	0.72%	1.20%	1.65%	2.06%	1.80%	2.13%
60		9.38%	8.18%	8.53%	7.64%	8.64%	8.89%	-1.32%	-0.88%	-0.64%	-0.31%	0.15%	0.18%
61		8.83%	7.60%	7.97%	7.30%	8.37%	7.70%	-1.59%	-1.09%	-0.81%	-0.47%	-0.18%	-0.24%
62		8.66%	8.57%	7.25%	7.13%	7.92%	7.12%	-2.15%	-1.74%	-1.49%	-1.01%	-0.93%	-0.98%
63	9.83%	8.75%	8.25%	7.79%	8.21%	9.44%	-1.27%	-0.88%	-0.58%	-0.25%	0.24%	0.11%	
64	FOOTWEAR	4.23%	3.30%	3.31%	2.59%	3.68%	3.69%	-2.74%	-2.31%	-2.03%	-1.92%	-1.44%	-1.29%
65		8.49%	7.93%	7.44%	6.77%	7.39%	8.05%	2.60%	3.20%	3.77%	4.30%	3.87%	3.60%
66		8.08%	7.39%	7.22%	6.78%	7.37%	7.47%	-1.90%	-1.37%	-1.03%	-0.67%	-0.31%	-0.24%
67		8.12%	7.78%	7.33%	6.10%	7.63%	7.75%	-1.77%	-1.33%	-1.10%	-0.66%	0.06%	0.24%
68	STONE & GLASS	7.79%	7.47%	7.41%	6.65%	6.69%	7.24%	0.34%	0.78%	1.28%	1.61%	1.87%	1.87%
69		8.35%	7.49%	7.34%	6.98%	7.82%	6.69%	0.37%	0.81%	1.14%	1.68%	2.19%	2.25%
70		8.10%	8.15%	7.43%	6.80%	7.82%	7.97%	0.29%	0.74%	1.19%	1.72%	2.00%	1.78%
71	PRECIOUS STONES	9.14%	7.90%	7.64%	6.31%	7.97%	7.59%	3.51%	3.63%	4.23%	5.05%	4.63%	4.04%
72	BASE METALS	6.15%	6.39%	5.59%	5.46%	6.15%	6.47%	3.26%	4.43%	5.08%	5.61%	5.07%	4.51%
73		8.89%	8.69%	8.28%	7.50%	7.56%	7.72%	0.31%	0.94%	1.54%	2.34%	2.20%	2.22%
74		11.57%	10.93%	10.00%	10.72%	9.10%	8.85%	0.62%	1.23%	1.48%	2.16%	2.36%	2.77%
75		11.35%	10.82%	10.92%	11.15%	10.92%	10.46%	2.24%	3.07%	3.39%	4.46%	3.87%	3.46%
76		10.33%	9.55%	9.27%	8.91%	9.04%	9.56%	1.87%	2.23%	2.92%	3.61%	3.50%	3.40%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		11.80%	11.37%	10.68%	10.90%	10.72%	9.94%	2.06%	3.00%	3.71%	4.42%	3.61%	3.33%
79		12.16%	11.36%	11.61%	10.45%	10.77%	10.85%	2.17%	2.97%	3.71%	4.10%	3.66%	3.69%
80		10.86%	10.64%	10.21%	10.38%	10.37%	9.92%	2.08%	2.75%	3.48%	4.37%	3.32%	3.06%
81		12.93%	13.27%	12.08%	13.22%	12.32%	11.96%	2.16%	2.99%	3.65%	4.47%	3.92%	4.19%
82		9.35%	8.46%	7.43%	7.56%	8.07%	7.90%	-0.52%	0.02%	0.46%	1.06%	1.50%	1.40%
83		9.71%	8.96%	8.23%	7.52%	8.33%	7.59%	-0.53%	0.01%	0.43%	0.94%	1.37%	1.70%
84		MACHINE	9.10%	8.28%	7.90%	7.57%	7.07%	6.40%	-0.96%	-0.48%	-0.13%	0.32%	0.52%
85	6.90%		6.40%	6.62%	5.84%	5.31%	5.01%	0.11%	0.44%	0.89%	1.22%	2.51%	2.72%
86	VEHICLES	13.91%	12.44%	11.72%	12.34%	11.38%	12.25%	-2.53%	-2.30%	-1.90%	-1.34%	-0.58%	-0.33%
87		10.62%	9.49%	9.15%	9.83%	9.32%	8.55%	-1.70%	-1.22%	-0.95%	-0.54%	-0.04%	0.28%
88		13.06%	12.76%	12.63%	12.42%	12.21%	12.08%	-2.60%	-2.15%	-1.83%	-1.48%	-1.04%	-0.75%
89		14.25%	12.05%	11.87%	12.58%	13.08%	11.92%	-2.58%	-2.27%	-1.90%	-1.37%	-0.82%	-0.83%
90	CLOCKS & MUSICAL INST.	10.26%	9.58%	9.40%	8.49%	9.46%	9.64%	-1.42%	-0.91%	-0.50%	-0.01%	0.52%	0.25%
91		10.29%	9.83%	9.51%	8.64%	9.23%	9.47%	-1.44%	-0.87%	-0.51%	-0.02%	0.60%	0.78%
92		8.08%	7.38%	7.04%	6.68%	7.77%	8.10%	-1.88%	-1.38%	-1.06%	-0.69%	-0.09%	-0.19%
93	ARMS	11.31%	9.80%	9.58%	8.95%	9.18%	9.70%	-1.48%	-0.86%	-0.51%	0.00%	0.56%	0.71%
94	MISC. ART.	9.15%	8.28%	7.54%	6.72%	7.61%	7.88%	-1.34%	-0.77%	-0.40%	0.10%	0.78%	0.68%
95		7.98%	7.60%	7.06%	6.63%	5.86%	5.21%	-1.86%	-1.34%	-1.10%	-0.66%	-0.07%	-0.14%
96		8.80%	8.10%	7.67%	5.96%	7.40%	8.41%	-1.84%	-1.50%	-1.09%	-0.79%	-0.41%	-0.62%
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

Table 7.12 Predicted Annual Growth Rate in Commodity Trade between US and Japan (High Growth Scenario)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.74%	0.42%	0.36%	-0.01%	-0.14%	0.05%	-2.43%	-2.51%	-2.42%	-2.51%	-1.82%	-1.93%
02		3.05%	2.29%	1.88%	1.40%	0.99%	0.87%	-7.59%	-7.16%	-7.72%	-8.06%	-6.07%	-6.01%
03		1.18%	0.70%	0.53%	0.05%	-0.22%	-0.31%	-3.68%	-3.55%	-3.21%	-3.11%	-2.66%	-2.48%
04		0.81%	0.29%	0.10%	-0.40%	-0.21%	-0.08%	-2.42%	-2.00%	-1.91%	-1.71%	-1.26%	-1.26%
05		1.37%	0.98%	0.98%	0.50%	0.10%	0.21%	-3.45%	-3.04%	-2.98%	-2.72%	-2.58%	-2.42%
06	VEGETABLE PRODUCTS	0.06%	-0.53%	-0.48%	-0.90%	-0.63%	-0.61%	-3.36%	-3.34%	-3.33%	-3.44%	-2.87%	-3.03%
07		0.85%	0.23%	0.08%	-0.41%	-0.44%	-0.24%	-4.14%	-3.84%	-3.85%	-3.59%	-2.80%	-2.67%
08		0.76%	0.20%	0.07%	-0.34%	-0.07%	-0.03%	-3.80%	-4.09%	-3.71%	-4.06%	-3.31%	-3.22%
09		0.40%	-0.18%	-0.24%	-0.65%	-0.33%	-0.53%	-3.48%	-3.71%	-3.97%	-4.05%	-3.20%	-3.24%
10		-1.50%	-2.29%	-1.94%	-2.31%	-1.97%	-2.21%	-1.83%	-1.81%	-1.80%	-1.78%	-1.76%	-1.69%
11		0.92%	0.32%	0.17%	-0.31%	-0.13%	0.02%	-3.16%	-3.18%	-3.03%	-2.89%	-2.41%	-2.63%
12		0.38%	-0.19%	-0.18%	-0.53%	-0.25%	-0.50%	-2.04%	-2.10%	-2.16%	-2.37%	-2.27%	-2.17%
13		0.80%	0.25%	0.09%	-0.39%	-0.30%	-0.16%	-3.51%	-3.07%	-2.81%	-2.84%	-2.82%	-3.14%
14		-0.20%	-0.59%	-0.52%	-0.79%	-0.98%	-1.11%	-2.71%	-2.29%	-2.24%	-2.07%	-2.22%	-1.93%
15	FATS & OILS	-0.45%	-1.04%	-1.09%	-1.64%	-1.54%	-1.62%	-6.03%	-6.43%	-5.93%	-6.11%	-4.79%	-4.77%
16	PREPARED FOODSTUFFS	0.83%	0.26%	0.11%	-0.42%	-0.54%	-0.57%	-6.99%	-7.40%	-7.02%	-7.31%	-5.28%	-5.36%
17		2.05%	1.53%	1.48%	1.00%	0.66%	0.58%	-2.53%	-2.15%	-1.88%	-1.75%	-1.60%	-1.56%
18		0.85%	0.23%	0.07%	-0.45%	-0.32%	-0.06%	-3.87%	-3.53%	-3.43%	-3.35%	-3.00%	-3.12%
19		0.88%	0.25%	0.08%	-0.39%	-0.56%	-0.55%	-3.79%	-3.63%	-3.67%	-3.46%	-2.72%	-2.62%
20		0.82%	0.26%	0.08%	-0.44%	-0.33%	-0.33%	-3.89%	-3.59%	-3.54%	-3.42%	-2.98%	-2.88%
21		0.87%	0.26%	0.08%	-0.41%	-0.65%	-0.81%	-3.89%	-3.54%	-3.36%	-3.28%	-2.91%	-2.98%
22		1.67%	1.36%	1.12%	0.81%	0.76%	0.73%	-1.53%	-1.29%	-1.34%	-1.27%	-0.78%	-0.90%
23		0.17%	-0.33%	-0.31%	-0.76%	-0.69%	-0.61%	-5.24%	-5.08%	-5.38%	-5.03%	-4.37%	-4.25%
24		1.70%	1.29%	1.10%	0.69%	0.55%	0.31%	-1.71%	-1.47%	-1.48%	-1.31%	-1.26%	-1.48%
25	MINERAL PRODUCTS	0.00%	-0.46%	-0.62%	-0.96%	-1.24%	-1.13%	-0.74%	-0.68%	-0.56%	-0.44%	-0.50%	-0.58%
26		0.06%	-0.31%	-0.44%	-0.74%	-0.95%	-1.06%	-0.57%	-0.54%	-0.44%	-0.35%	-0.38%	-0.64%
27		5.49%	6.43%	8.19%	9.64%	4.50%	4.11%	2.42%	2.56%	3.39%	3.35%	1.50%	1.47%
28	CHEMICAL PRODUCTS	-0.44%	-1.10%	-1.42%	-1.74%	-1.88%	-1.98%	-2.80%	-2.31%	-1.91%	-1.55%	-1.70%	-1.57%
29		-0.71%	-1.40%	-1.68%	-2.33%	-1.70%	-1.66%	-2.81%	-2.61%	-2.13%	-1.98%	-1.94%	-2.14%
30		-0.66%	-1.30%	-1.57%	-2.18%	-1.81%	-1.85%	-2.89%	-2.59%	-2.29%	-1.95%	-1.95%	-1.94%
31		-0.64%	-1.29%	-1.65%	-2.19%	-1.68%	-1.56%	-2.84%	-2.27%	-2.19%	-1.75%	-1.92%	-1.70%
32		-0.65%	-1.27%	-1.62%	-2.10%	-1.75%	-1.77%	-2.80%	-2.40%	-2.21%	-1.82%	-2.35%	-2.20%
33		-0.73%	-1.24%	-1.51%	-2.18%	-1.54%	-1.39%	-3.05%	-2.56%	-2.10%	-1.98%	-2.44%	-2.01%
34		-0.81%	-1.59%	-1.74%	-2.43%	-1.92%	-1.85%	-2.99%	-2.58%	-2.44%	-1.96%	-2.08%	-2.17%
35		-0.60%	-1.17%	-1.62%	-2.34%	-1.68%	-1.89%	-3.06%	-2.73%	-2.32%	-2.05%	-2.34%	-2.35%
36		-2.15%	-2.79%	-2.97%	-4.07%	-2.82%	-3.07%	-4.90%	-4.35%	-3.97%	-3.65%	-3.45%	-3.40%
37		-0.64%	-1.38%	-1.56%	-2.19%	-1.93%	-1.74%	-2.94%	-2.59%	-2.12%	-1.85%	-2.29%	-1.88%
38		-0.64%	-1.25%	-1.65%	-2.16%	-1.92%	-2.02%	-3.10%	-2.50%	-2.42%	-1.99%	-2.36%	-2.14%
39	PLASTICS	-0.70%	-1.29%	-1.55%	-2.21%	-1.58%	-1.66%	-2.85%	-2.59%	-2.09%	-1.97%	-1.94%	-2.07%
40		-0.63%	-1.34%	-1.64%	-2.23%	-1.58%	-1.46%	-2.85%	-2.40%	-2.14%	-1.87%	-1.95%	-2.11%
41	LEATHER GOODS	-7.26%	-7.86%	-8.88%	-9.71%	-7.94%	-8.38%	-9.70%	-9.09%	-9.60%	-8.88%	-8.78%	-8.73%
42		-4.71%	-5.57%	-5.79%	-7.25%	-5.68%	-5.17%	-9.09%	-8.36%	-8.02%	-8.01%	-7.35%	-7.74%
43		0.76%	0.44%	0.35%	-0.01%	-0.12%	-0.14%	-4.12%	-3.68%	-3.90%	-4.10%	-3.28%	-2.97%
44	WOOD PRODUCTS	-0.12%	-0.79%	-1.01%	-1.73%	-1.58%	-1.55%	-3.00%	-2.54%	-2.54%	-2.16%	-2.03%	-2.17%
45		0.78%	0.09%	-0.20%	-0.84%	-0.44%	-0.36%	-2.81%	-2.58%	-2.36%	-2.05%	-2.04%	-1.92%
46		0.84%	0.08%	-0.24%	-0.82%	-0.66%	-0.86%	-3.80%	-3.81%	-3.45%	-3.68%	-3.08%	-3.25%
47	PAPER	0.86%	0.14%	-0.06%	-0.60%	-0.94%	-1.08%	-3.29%	-2.91%	-2.78%	-2.38%	-2.34%	-2.17%
48		0.82%	0.14%	-0.06%	-0.61%	-0.57%	-0.31%	-3.21%	-2.89%	-2.58%	-2.60%	-1.91%	-1.73%
49		0.87%	0.14%	-0.06%	-0.58%	-0.85%	-0.85%	-3.31%	-2.81%	-2.66%	-2.58%	-2.04%	-1.82%

Table 7.12 Predicted Annual Growth Rate in Commodity Trade between US and Japan (High Growth Scenario) (cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-1.57%	-2.59%	-2.92%	-3.54%	-2.95%	-3.03%	-11.34%	-10.98%	-10.43%	-10.57%	-9.79%	-9.50%
51		-1.83%	-2.45%	-3.02%	-3.45%	-3.09%	-2.66%	-11.03%	-11.13%	-10.49%	-10.57%	-9.12%	-9.46%
52		-1.68%	-2.38%	-2.82%	-3.58%	-2.59%	-2.50%	-8.59%	-8.63%	-8.02%	-7.98%	-8.27%	-8.55%
53		-1.56%	-2.29%	-2.89%	-3.57%	-2.79%	-2.59%	-3.01%	-3.19%	-3.15%	-3.09%	-2.88%	-3.09%
54		-1.76%	-2.53%	-2.74%	-3.83%	-2.58%	-2.39%	-11.46%	-10.92%	-10.90%	-10.87%	-9.70%	-9.83%
55		-1.79%	-2.56%	-3.01%	-3.53%	-2.83%	-2.82%	-11.36%	-10.34%	-10.45%	-10.94%	-9.81%	-9.96%
56		-1.79%	-2.62%	-2.65%	-3.52%	-2.99%	-2.84%	-11.02%	-10.87%	-10.96%	-10.03%	-10.11%	-9.86%
57		-1.65%	-2.40%	-2.75%	-3.49%	-2.45%	-2.35%	-11.54%	-10.99%	-10.92%	-10.31%	-9.70%	-10.25%
58		-1.70%	-2.68%	-2.85%	-3.41%	-3.20%	-2.84%	-10.78%	-11.07%	-10.95%	-10.57%	-9.56%	-9.80%
59		-2.15%	-3.26%	-3.17%	-4.16%	-3.58%	-3.38%	-5.75%	-5.22%	-4.79%	-4.52%	-4.71%	-4.23%
60		-1.64%	-2.44%	-2.98%	-3.38%	-2.74%	-2.64%	-11.13%	-10.68%	-10.72%	-10.75%	-9.24%	-9.38%
61		-1.73%	-2.61%	-2.91%	-3.39%	-3.00%	-3.24%	-9.76%	-9.57%	-9.81%	-9.70%	-7.99%	-7.84%
62		-1.62%	-2.44%	-3.00%	-3.77%	-2.92%	-3.13%	-9.40%	-9.14%	-9.50%	-9.12%	-8.18%	-8.80%
63	-1.24%	-1.83%	-2.21%	-3.24%	-2.41%	-2.13%	-9.49%	-8.66%	-8.41%	-8.73%	-7.88%	-7.88%	
64	FOOTWEAR	-7.59%	-8.83%	-8.17%	-9.95%	-7.92%	-8.04%	-10.40%	-10.45%	-9.46%	-10.07%	-8.69%	-8.89%
65		-0.83%	-1.50%	-1.86%	-2.57%	-2.23%	-2.47%	-4.69%	-4.02%	-3.76%	-3.34%	-3.96%	-3.88%
66		-4.30%	-5.92%	-5.73%	-7.27%	-5.54%	-5.80%	-7.56%	-7.10%	-7.03%	-7.39%	-5.67%	-5.21%
67		-4.92%	-5.46%	-5.73%	-6.67%	-5.81%	-6.28%	-8.01%	-7.19%	-6.93%	-7.35%	-6.13%	-5.95%
68	STONE & GLASS	-0.24%	-0.80%	-1.00%	-1.64%	-1.31%	-1.04%	-4.25%	-3.85%	-3.35%	-3.22%	-2.90%	-3.02%
69		-0.24%	-0.79%	-1.02%	-1.55%	-1.79%	-1.63%	-4.22%	-3.83%	-3.31%	-3.15%	-3.02%	-2.63%
70		-0.24%	-0.78%	-1.12%	-1.55%	-1.84%	-1.95%	-4.14%	-3.56%	-3.55%	-3.14%	-3.21%	-3.49%
71	PRECIOUS STONES	-2.93%	-3.99%	-4.10%	-4.99%	-4.35%	-4.10%	-4.57%	-4.06%	-3.49%	-3.24%	-3.45%	-3.37%
72	BASE METALS	-1.18%	-1.65%	-1.91%	-2.41%	-1.87%	-1.78%	-1.75%	-1.12%	-0.75%	-0.20%	-1.16%	-0.96%
73		-1.12%	-1.61%	-2.00%	-2.53%	-2.57%	-2.11%	-5.26%	-5.13%	-4.65%	-4.17%	-4.03%	-4.47%
74		1.88%	1.20%	1.04%	0.47%	-0.03%	-0.10%	-2.86%	-2.41%	-1.98%	-1.65%	-1.56%	-1.38%
75		-0.08%	-0.45%	-0.60%	-0.93%	-0.97%	-0.77%	-2.88%	-2.37%	-1.89%	-1.54%	-1.94%	-1.63%
76		-0.73%	-1.27%	-1.57%	-1.91%	-2.16%	-2.01%	-3.23%	-2.62%	-2.17%	-1.93%	-2.63%	-2.44%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		-0.03%	-0.45%	-0.45%	-0.87%	-1.07%	-1.26%	-3.02%	-2.42%	-1.86%	-1.52%	-2.07%	-2.38%
79		-0.03%	-0.43%	-0.45%	-0.87%	-1.42%	-1.24%	-2.81%	-2.34%	-2.01%	-1.45%	-1.95%	-2.01%
80		-0.14%	-0.53%	-0.65%	-1.06%	-1.20%	-0.98%	-2.85%	-2.40%	-1.89%	-1.54%	-1.97%	-2.10%
81		0.56%	0.28%	0.27%	0.01%	-0.54%	-0.59%	-2.68%	-2.46%	-1.85%	-1.49%	-1.76%	-1.82%
82		-1.23%	-1.91%	-2.34%	-2.90%	-2.92%	-3.00%	-5.56%	-5.01%	-4.42%	-4.16%	-4.00%	-3.87%
83		-1.28%	-1.94%	-2.29%	-3.02%	-2.28%	-2.12%	-5.31%	-4.74%	-4.42%	-4.20%	-4.13%	-3.95%
84		MACHINE	-0.08%	-0.77%	-1.15%	-1.54%	-1.72%	-1.71%	-5.86%	-5.35%	-5.40%	-5.10%	-4.91%
85	-1.60%		-2.38%	-2.44%	-3.46%	-3.47%	-3.23%	-6.16%	-5.58%	-5.38%	-5.11%	-3.97%	-4.31%
86	VEHICLES	0.81%	0.08%	-0.08%	-0.53%	-0.48%	-0.57%	-4.37%	-4.35%	-4.11%	-4.05%	-3.06%	-2.98%
87		1.68%	1.08%	1.01%	0.42%	0.45%	0.66%	-3.87%	-3.56%	-3.60%	-3.20%	-2.87%	-2.65%
88		0.29%	-0.42%	-0.54%	-1.10%	-1.34%	-1.38%	-4.64%	-4.05%	-4.31%	-4.09%	-2.78%	-2.85%
89		0.29%	-0.38%	-0.55%	-0.95%	-1.08%	-1.10%	-4.67%	-4.16%	-4.30%	-4.29%	-3.19%	-2.90%
90	CLOCKS & MUSICAL INST.	-0.33%	-1.10%	-1.59%	-2.30%	-1.97%	-2.15%	-6.30%	-5.72%	-5.54%	-5.52%	-4.74%	-4.60%
91		-0.37%	-1.12%	-1.37%	-2.14%	-2.00%	-2.19%	-6.37%	-5.67%	-5.51%	-5.45%	-4.35%	-4.38%
92		-4.74%	-5.59%	-6.01%	-7.37%	-5.60%	-5.31%	-7.76%	-6.91%	-7.27%	-7.37%	-5.51%	-5.75%
93	ARMS	-0.36%	-1.14%	-1.59%	-1.99%	-1.71%	-1.83%	-6.51%	-6.15%	-5.73%	-5.42%	-4.41%	-4.65%
94	MISC. ART.	-2.13%	-2.87%	-3.17%	-3.59%	-3.35%	-3.93%	-7.41%	-6.49%	-6.71%	-6.59%	-5.29%	-5.36%
95		-4.89%	-5.40%	-6.51%	-6.97%	-6.66%	-7.13%	-7.83%	-7.50%	-7.62%	-7.48%	-6.06%	-6.37%
96		-4.36%	-5.49%	-5.90%	-7.11%	-5.57%	-5.52%	-7.83%	-7.10%	-7.12%	-7.25%	-5.89%	-5.75%
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

**Table 7.13 Predicted Annual Growth Rate in Commodity Trade
between US and South Korea (High Growth Scenario)**

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	2.38%	2.17%	1.80%	1.49%	1.49%	1.52%	-0.56%	-0.65%	-0.70%	-0.70%	-0.31%	-0.13%
02		9.11%	7.64%	7.45%	6.36%	6.56%	6.36%	-4.11%	-3.75%	-3.71%	-3.53%	-2.49%	-2.47%
03		2.98%	2.76%	2.58%	2.37%	1.62%	1.76%	-2.55%	-2.82%	-2.63%	-2.50%	-2.00%	-2.10%
04		4.89%	4.66%	4.45%	3.86%	3.30%	3.58%	-1.63%	-1.57%	-1.37%	-1.10%	-0.66%	-0.49%
05		3.27%	2.80%	2.66%	2.53%	1.61%	1.72%	-2.29%	-2.26%	-2.14%	-2.07%	-1.56%	-1.29%
06	VEGETABLE PRODUCTS	17.52%	16.30%	15.25%	14.26%	12.68%	12.76%	-4.13%	-4.26%	-4.22%	-4.02%	-3.62%	-3.85%
07		5.07%	5.03%	4.73%	4.54%	3.98%	4.00%	-4.95%	-4.94%	-4.72%	-4.39%	-4.14%	-4.26%
08		6.69%	6.39%	5.98%	5.76%	4.90%	4.94%	-5.87%	-5.51%	-5.27%	-5.64%	-5.09%	-4.60%
09		12.08%	10.99%	11.26%	11.15%	7.86%	8.78%	-6.25%	-6.49%	-6.65%	-7.23%	-5.44%	-5.76%
10		9.91%	9.86%	9.76%	9.96%	8.48%	7.46%	-2.42%	-2.66%	-2.67%	-2.71%	-2.81%	-3.15%
11		3.22%	2.60%	2.74%	2.16%	1.88%	1.71%	-2.64%	-2.67%	-2.54%	-2.62%	-2.19%	-2.08%
12		12.51%	12.00%	12.18%	12.75%	10.15%	10.51%	-3.95%	-4.51%	-4.37%	-4.94%	-4.84%	-5.11%
13		3.29%	2.78%	2.50%	2.20%	1.36%	1.57%	-1.23%	-1.20%	-0.98%	-0.75%	-0.50%	-0.58%
14		2.30%	2.48%	2.53%	2.41%	1.01%	1.03%	0.92%	1.03%	1.25%	1.55%	1.21%	0.88%
15	FATS & OILS	-0.93%	-1.60%	-1.96%	-2.45%	-1.51%	-1.60%	-2.41%	-2.44%	-2.42%	-2.40%	-1.68%	-1.88%
16	PREPARED FOODSTUFFS	3.03%	2.79%	2.53%	2.26%	1.73%	1.71%	-4.67%	-4.45%	-4.31%	-4.39%	-3.56%	-3.92%
17		6.24%	5.97%	5.33%	4.65%	3.97%	3.59%	-1.27%	-1.15%	-0.92%	-0.66%	-0.46%	-0.33%
18		3.46%	3.35%	3.01%	2.87%	2.33%	2.12%	-3.10%	-3.18%	-3.07%	-3.21%	-2.18%	-2.03%
19		3.07%	2.75%	2.74%	1.97%	1.44%	1.52%	-2.82%	-2.91%	-2.93%	-2.73%	-2.19%	-1.98%
20		3.38%	2.88%	2.52%	2.04%	2.12%	2.03%	-2.93%	-2.95%	-2.78%	-2.62%	-2.31%	-2.37%
21		3.06%	2.76%	2.62%	2.04%	2.15%	2.27%	-2.66%	-2.72%	-2.68%	-2.61%	-1.63%	-1.91%
22		2.59%	2.47%	2.44%	1.95%	2.06%	1.82%	-0.20%	-0.26%	-0.24%	-0.14%	0.37%	0.23%
23		3.04%	2.86%	2.61%	2.09%	2.17%	1.79%	-2.21%	-2.33%	-2.11%	-2.15%	-1.80%	-1.68%
24		3.13%	2.81%	3.00%	2.45%	1.83%	1.61%	-1.84%	-1.89%	-1.84%	-1.71%	-1.11%	-1.33%
25	MINERAL PRODUCTS	2.32%	1.87%	1.92%	1.32%	0.34%	0.04%	2.88%	3.10%	3.31%	3.67%	2.70%	2.67%
26		-1.50%	-1.94%	-2.55%	-3.31%	-1.87%	-1.83%	2.95%	3.20%	3.07%	3.45%	2.69%	2.56%
27		4.10%	4.11%	4.33%	4.22%	2.56%	2.65%	3.96%	4.53%	4.57%	5.55%	3.23%	3.40%
28	CHEMICAL PRODUCTS	-0.20%	-0.57%	-0.85%	-1.28%	-0.96%	-1.03%	0.30%	0.77%	1.30%	1.95%	0.73%	1.00%
29		-1.85%	-2.65%	-3.40%	-4.16%	-2.26%	-2.03%	0.17%	0.65%	1.17%	1.75%	0.92%	0.99%
30		-1.89%	-2.51%	-3.07%	-3.98%	-2.23%	-2.36%	0.14%	0.65%	1.03%	1.65%	0.61%	0.84%
31		-1.80%	-2.65%	-3.55%	-4.12%	-2.52%	-2.66%	0.30%	0.86%	1.16%	1.74%	0.91%	1.09%
32		-2.04%	-2.69%	-3.57%	-4.11%	-2.56%	-2.26%	0.16%	0.65%	1.15%	1.77%	0.71%	0.64%
33		-2.07%	-2.95%	-3.63%	-4.48%	-2.71%	-2.32%	0.17%	0.73%	1.22%	1.69%	0.99%	1.20%
34		-2.04%	-2.54%	-3.47%	-4.50%	-2.50%	-2.13%	0.10%	0.57%	1.11%	1.55%	0.98%	1.23%
35		-1.38%	-2.17%	-2.78%	-3.76%	-2.23%	-2.20%	-0.27%	0.12%	0.57%	0.95%	0.03%	0.22%
36		-1.76%	-2.36%	-3.22%	-3.80%	-2.72%	-2.96%	-0.61%	-0.19%	0.19%	0.70%	-0.14%	-0.26%
37		-1.96%	-2.84%	-3.63%	-4.28%	-2.40%	-2.82%	0.16%	0.65%	1.15%	1.53%	0.68%	0.85%
38		-1.28%	-1.88%	-2.42%	-3.41%	-2.24%	-2.31%	-0.03%	0.46%	0.94%	1.49%	0.31%	0.64%
39	PLASTICS	-2.01%	-2.70%	-3.57%	-4.15%	-2.01%	-2.29%	0.18%	0.66%	1.05%	1.54%	0.55%	0.68%
40		-2.04%	-2.59%	-3.45%	-4.58%	-2.05%	-1.92%	0.23%	0.68%	1.10%	1.63%	0.67%	0.56%
41	LEATHER GOODS	-5.22%	-5.89%	-5.43%	-6.26%	-6.06%	-7.06%	-5.32%	-5.69%	-5.16%	-4.94%	-4.36%	-4.54%
42		-1.57%	-2.07%	-2.52%	-2.92%	-2.99%	-3.10%	-6.67%	-6.84%	-7.24%	-6.76%	-5.47%	-5.44%
43		2.47%	2.00%	2.04%	1.49%	1.41%	1.39%	-0.64%	-0.89%	-0.91%	-0.95%	-0.49%	-0.53%
44	WOOD PRODUCTS	-0.54%	-1.17%	-1.73%	-2.22%	-1.28%	-1.25%	0.08%	0.36%	0.62%	1.01%	0.18%	0.19%
45		1.64%	1.09%	0.87%	0.23%	0.42%	0.53%	0.47%	0.67%	1.09%	1.39%	0.89%	1.10%
46		1.36%	0.78%	0.34%	-0.33%	0.37%	0.46%	-2.91%	-3.03%	-2.82%	-2.60%	-2.09%	-2.18%
47	PAPER	3.19%	2.58%	2.43%	1.84%	1.59%	1.49%	-1.23%	-1.07%	-0.88%	-0.64%	-0.33%	-0.01%
48		3.26%	2.62%	2.47%	1.90%	1.19%	1.47%	-1.30%	-1.06%	-0.92%	-0.64%	-0.26%	-0.23%
49		2.88%	2.62%	2.28%	1.83%	1.19%	1.46%	-1.27%	-1.10%	-0.87%	-0.66%	-0.38%	-0.42%

Table 7.13 Predicted Annual Growth Rate in Commodity Trade between US and South Korea (High Growth Scenario) (cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-0.51%	-1.00%	-1.40%	-2.02%	-1.73%	-1.41%	-7.92%	-8.16%	-8.05%	-7.54%	-6.75%	-7.21%
51		-0.48%	-1.05%	-1.50%	-2.09%	-2.11%	-2.23%	-7.80%	-8.16%	-7.53%	-7.81%	-6.81%	-6.92%
52		-0.50%	-1.12%	-1.41%	-2.17%	-1.77%	-1.80%	-5.17%	-5.17%	-4.76%	-4.83%	-4.47%	-4.80%
53		-0.49%	-0.99%	-1.44%	-2.30%	-1.92%	-1.71%	-1.09%	-1.09%	-1.30%	-1.42%	-1.45%	-1.20%
54		-0.46%	-0.98%	-1.52%	-2.29%	-1.39%	-1.63%	-8.18%	-7.58%	-7.59%	-7.81%	-7.43%	-6.90%
55		-0.49%	-0.97%	-1.41%	-2.14%	-1.81%	-1.72%	-7.72%	-8.15%	-7.71%	-7.74%	-6.66%	-7.25%
56		-0.49%	-1.05%	-1.38%	-2.25%	-1.90%	-1.56%	-8.18%	-8.33%	-7.78%	-7.65%	-7.48%	-7.44%
57		-0.48%	-1.07%	-1.39%	-2.35%	-1.75%	-1.58%	-8.28%	-8.00%	-8.13%	-8.21%	-6.57%	-6.53%
58		-0.49%	-1.06%	-1.43%	-2.28%	-1.63%	-1.60%	-8.46%	-8.06%	-7.81%	-7.96%	-7.01%	-7.35%
59		-0.88%	-1.45%	-1.99%	-2.71%	-2.23%	-2.10%	-1.94%	-1.44%	-1.07%	-0.63%	-1.21%	-1.20%
60		-0.46%	-1.10%	-1.54%	-2.33%	-1.89%	-1.92%	-7.89%	-8.32%	-8.04%	-7.93%	-6.85%	-7.12%
61		0.49%	-0.13%	-0.45%	-1.15%	-1.23%	-1.08%	-7.63%	-7.58%	-8.14%	-7.54%	-6.89%	-6.57%
62		0.71%	0.14%	-0.17%	-0.87%	-0.93%	-1.06%	-7.85%	-7.85%	-7.82%	-7.53%	-6.73%	-6.42%
63	-0.16%	-0.74%	-1.04%	-1.83%	-1.53%	-1.81%	-5.56%	-5.59%	-5.30%	-5.14%	-4.35%	-4.48%	
64	FOOTWEAR	-5.40%	-5.95%	-6.44%	-6.31%	-6.82%	-6.60%	-7.65%	-7.97%	-8.19%	-7.69%	-6.92%	-6.38%
65		-0.14%	-0.69%	-1.04%	-1.79%	-1.23%	-1.08%	-1.06%	-0.59%	-0.16%	0.39%	-0.79%	-0.79%
66		-1.37%	-2.06%	-2.53%	-3.27%	-3.38%	-3.30%	-5.19%	-4.98%	-4.96%	-5.09%	-3.35%	-3.45%
67		-1.43%	-2.01%	-2.42%	-3.39%	-3.24%	-2.98%	-4.84%	-5.26%	-5.27%	-4.97%	-3.05%	-3.18%
68	STONE & GLASS	2.69%	2.65%	2.31%	2.00%	0.76%	0.59%	-2.49%	-2.16%	-2.06%	-1.71%	-1.47%	-1.26%
69		2.87%	2.58%	2.48%	2.06%	1.18%	1.03%	-2.40%	-2.17%	-2.04%	-1.58%	-1.33%	-1.36%
70		2.88%	2.37%	2.30%	1.82%	0.91%	1.10%	-2.41%	-2.28%	-2.02%	-1.66%	-1.30%	-1.26%
71	PRECIOUS STONES	-0.20%	-0.51%	-0.79%	-1.26%	-1.32%	-1.12%	-0.87%	-0.55%	-0.22%	0.22%	-0.41%	-0.31%
72	BASE METALS	2.36%	2.24%	2.22%	1.92%	0.61%	0.82%	0.22%	0.77%	1.17%	1.61%	0.68%	0.63%
73		2.77%	2.33%	2.43%	1.79%	0.85%	0.85%	-2.99%	-2.66%	-2.33%	-2.07%	-1.85%	-1.68%
74		4.72%	4.40%	4.20%	3.67%	2.81%	3.09%	-0.87%	-0.49%	-0.26%	0.14%	-0.05%	-0.32%
75		2.76%	2.67%	2.43%	2.24%	0.97%	1.15%	-0.67%	-0.19%	0.24%	0.83%	-0.19%	-0.18%
76		2.61%	2.52%	2.21%	1.80%	0.78%	0.76%	-1.19%	-0.75%	-0.33%	0.14%	-0.45%	-0.73%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		2.73%	2.69%	2.46%	2.10%	1.00%	0.82%	-0.66%	-0.15%	0.29%	0.74%	0.07%	0.08%
79		2.56%	2.63%	2.46%	2.16%	0.87%	0.68%	-0.64%	-0.16%	0.28%	0.81%	0.26%	0.04%
80		2.71%	2.66%	2.48%	2.17%	1.36%	1.39%	-0.71%	-0.21%	0.21%	0.80%	0.18%	0.17%
81		2.62%	2.59%	2.77%	2.55%	1.46%	1.29%	-0.50%	0.01%	0.44%	1.05%	0.41%	0.27%
82		2.69%	2.37%	2.23%	1.72%	0.59%	0.30%	-4.22%	-4.02%	-3.85%	-3.39%	-3.12%	-3.20%
83		2.57%	2.42%	2.14%	1.62%	0.41%	0.64%	-4.06%	-3.79%	-3.57%	-3.32%	-3.03%	-2.73%
84		MACHINE	3.59%	3.36%	2.93%	2.47%	2.36%	2.38%	-2.99%	-2.86%	-2.59%	-2.12%	-1.99%
85	1.73%		1.34%	1.33%	0.79%	0.91%	0.89%	-3.40%	-3.13%	-2.80%	-2.53%	-2.06%	-1.95%
86	VEHICLES	4.86%	4.94%	4.67%	4.45%	3.36%	3.36%	-2.80%	-2.85%	-2.74%	-2.78%	-0.94%	-0.78%
87		4.50%	4.22%	3.93%	3.85%	3.79%	3.21%	-2.10%	-2.15%	-2.06%	-1.84%	-1.54%	-1.40%
88		5.34%	5.65%	5.20%	5.13%	2.73%	3.21%	-2.87%	-2.85%	-2.78%	-2.80%	-1.14%	-1.35%
89		5.47%	5.18%	5.80%	4.93%	2.96%	2.87%	-2.80%	-2.79%	-2.70%	-2.80%	-0.95%	-0.75%
90	CLOCKS & MUSICAL INST.	3.83%	3.62%	3.47%	2.90%	1.13%	0.92%	-3.08%	-2.60%	-2.44%	-2.07%	-1.75%	-1.75%
91		4.08%	3.43%	3.20%	2.59%	1.64%	1.46%	-3.04%	-2.75%	-2.57%	-2.17%	-1.54%	-1.45%
92		-1.46%	-1.91%	-2.50%	-3.06%	-3.05%	-3.24%	-5.27%	-4.96%	-5.05%	-4.87%	-3.10%	-3.34%
93	ARMS	3.80%	3.36%	3.44%	2.64%	1.27%	1.08%	-3.01%	-2.76%	-2.35%	-2.17%	-1.55%	-1.31%
94	MISC. ART.	1.32%	0.82%	0.49%	-0.12%	-0.85%	-0.69%	-3.71%	-3.32%	-2.99%	-2.84%	-2.18%	-2.13%
95		-1.43%	-1.93%	-2.51%	-3.07%	-3.34%	-3.42%	-5.20%	-5.29%	-5.16%	-5.08%	-3.16%	-3.02%
96		-1.45%	-2.08%	-2.46%	-3.54%	-3.09%	-3.45%	-4.91%	-5.30%	-5.12%	-5.04%	-3.10%	-3.02%
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

**Table 7.14 Predicted Annual Growth Rate in Commodity Trade
between US and ASEAN (High Growth Scenario)**

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	3.09%	2.72%	2.53%	2.23%	1.62%	1.60%	-0.32%	-0.30%	-0.60%	-0.53%	0.12%	0.38%
02		7.19%	7.29%	6.60%	6.33%	5.45%	5.77%	-5.56%	-5.71%	-5.69%	-5.54%	-3.82%	-3.85%
03		3.58%	3.51%	3.24%	2.61%	2.82%	2.92%	-1.07%	-0.92%	-1.03%	-0.90%	-0.24%	-0.10%
04		3.77%	3.69%	3.07%	2.72%	2.64%	2.58%	-0.59%	-0.24%	-0.28%	-0.06%	0.42%	0.70%
05		4.05%	3.80%	3.02%	2.78%	3.00%	2.52%	-0.98%	-0.83%	-0.92%	-0.74%	-0.33%	-0.45%
06	VEGETABLE PRODUCTS	5.73%	6.20%	5.25%	5.25%	4.92%	5.65%	-2.26%	-2.44%	-2.47%	-2.70%	-2.17%	-2.21%
07		4.30%	3.97%	3.47%	3.13%	3.21%	2.86%	-2.66%	-2.71%	-2.71%	-2.67%	-2.21%	-2.12%
08		4.63%	4.29%	3.70%	3.59%	3.43%	3.58%	-3.32%	-3.13%	-3.24%	-3.24%	-2.73%	-2.87%
09		5.87%	6.65%	5.60%	5.37%	5.05%	5.32%	-2.01%	-2.18%	-2.29%	-2.31%	-2.08%	-2.23%
10		2.06%	2.04%	1.38%	1.15%	2.55%	2.17%	-2.37%	-2.61%	-3.97%	-4.87%	-4.73%	-4.97%
11		4.00%	3.41%	2.82%	2.69%	2.62%	2.54%	-1.15%	-0.93%	-1.08%	-0.88%	-0.75%	-0.78%
12		6.06%	7.03%	6.06%	6.03%	5.39%	5.71%	-0.26%	-0.30%	-0.39%	-0.43%	-0.48%	-0.61%
13		4.45%	4.74%	4.20%	4.21%	3.32%	2.63%	-1.19%	-1.08%	-1.15%	-1.01%	-0.94%	-1.03%
14		4.88%	5.30%	4.79%	4.79%	4.44%	4.45%	-1.54%	-1.34%	-1.42%	-1.28%	-1.49%	-1.18%
15	FATS & OILS	5.91%	5.71%	5.03%	4.91%	4.47%	4.31%	-1.74%	-1.62%	-1.53%	-1.61%	-1.42%	-1.67%
16	PREPARED FOODSTUFFS	3.85%	3.51%	2.97%	2.52%	2.51%	2.40%	-3.39%	-3.27%	-3.32%	-3.16%	-2.49%	-2.72%
17		7.54%	7.11%	6.59%	6.47%	5.26%	6.22%	-0.56%	-0.25%	-0.27%	-0.04%	0.47%	0.29%
18		4.04%	4.08%	3.24%	3.02%	3.21%	3.22%	-1.28%	-1.05%	-1.16%	-1.02%	-0.34%	-0.17%
19		3.73%	3.84%	3.01%	2.44%	2.96%	2.56%	-1.14%	-0.95%	-1.13%	-0.95%	-0.69%	-0.44%
20		4.01%	3.88%	2.95%	2.69%	2.83%	3.01%	-1.21%	-1.02%	-1.12%	-0.93%	-0.57%	-0.39%
21		3.75%	3.85%	2.88%	2.47%	2.72%	2.91%	-0.94%	-0.73%	-0.86%	-0.64%	0.00%	-0.21%
22		3.07%	2.74%	2.36%	2.14%	1.77%	1.82%	0.63%	0.84%	0.51%	0.70%	1.51%	1.39%
23		5.40%	5.52%	5.09%	4.68%	4.18%	3.71%	-1.47%	-1.44%	-1.49%	-1.52%	-1.33%	-1.46%
24		5.62%	5.67%	4.84%	4.67%	4.10%	4.23%	0.24%	0.36%	0.08%	0.19%	0.40%	0.49%
25	MINERAL PRODUCTS	3.58%	3.53%	2.88%	2.30%	2.74%	2.56%	3.73%	4.06%	3.29%	4.03%	3.78%	3.49%
26		4.11%	4.33%	3.58%	3.70%	3.07%	3.01%	4.17%	4.21%	4.17%	4.44%	4.40%	3.97%
27		11.52%	11.43%	11.34%	10.83%	8.31%	7.92%	6.09%	6.40%	7.30%	7.07%	5.24%	5.13%
28	CHEMICAL PRODUCTS	4.73%	5.00%	4.06%	3.97%	3.47%	3.58%	0.54%	1.16%	0.99%	1.61%	0.82%	0.71%
29		4.80%	4.95%	4.18%	3.68%	3.67%	4.01%	-0.09%	0.47%	0.40%	0.86%	0.81%	0.57%
30		4.81%	4.48%	3.83%	3.63%	3.36%	3.57%	-0.12%	0.47%	0.32%	0.73%	0.38%	0.52%
31		5.00%	4.75%	4.26%	4.05%	3.77%	3.92%	-0.04%	0.57%	0.44%	0.91%	1.01%	1.29%
32		5.20%	4.76%	4.03%	3.81%	3.68%	4.02%	-0.09%	0.49%	0.36%	0.82%	0.41%	0.66%
33		5.06%	4.75%	4.51%	3.95%	3.67%	3.77%	-0.08%	0.47%	0.35%	0.82%	0.48%	0.63%
34		4.16%	4.32%	3.49%	2.84%	2.97%	2.64%	-0.16%	0.39%	0.27%	0.71%	0.89%	0.98%
35		4.43%	4.65%	3.79%	3.13%	3.15%	3.39%	-0.31%	0.14%	0.05%	0.44%	0.48%	0.29%
36		1.01%	0.72%	-0.27%	-0.79%	-0.23%	-0.22%	-0.84%	-0.41%	-0.51%	-0.19%	0.24%	-0.02%
37		5.23%	5.32%	4.08%	3.70%	3.38%	3.35%	-0.09%	0.47%	0.39%	0.82%	0.94%	0.86%
38		4.80%	4.99%	3.94%	3.60%	3.41%	3.42%	-0.30%	0.25%	0.14%	0.60%	0.61%	0.59%
39	PLASTICS	5.25%	4.76%	4.21%	4.09%	4.06%	3.71%	-0.09%	0.52%	0.40%	0.84%	1.11%	1.16%
40		5.32%	5.05%	4.55%	4.46%	3.60%	3.45%	-0.13%	0.43%	0.34%	0.75%	1.04%	1.13%
41	LEATHER GOODS	-4.00%	-4.24%	-4.71%	-5.25%	-4.78%	-4.49%	-3.68%	-3.48%	-3.60%	-3.59%	-2.80%	-2.78%
42		-1.19%	-1.44%	-2.29%	-2.55%	-2.28%	-1.86%	-4.45%	-4.00%	-4.33%	-4.26%	-3.35%	-3.33%
43		3.04%	2.77%	2.45%	2.07%	2.22%	1.91%	-0.29%	-0.31%	-0.60%	-0.52%	0.33%	0.47%
44	WOOD PRODUCTS	4.05%	4.24%	4.03%	3.92%	3.16%	3.15%	-1.40%	-1.27%	-1.35%	-1.20%	-1.08%	-1.33%
45		4.33%	5.10%	4.51%	4.63%	3.36%	3.59%	-1.68%	-1.64%	-1.60%	-1.54%	-1.35%	-1.62%
46		2.82%	2.32%	1.78%	1.04%	1.80%	1.81%	-1.88%	-2.07%	-2.32%	-2.41%	-1.30%	-1.07%
47	PAPER	4.83%	4.54%	3.83%	3.06%	3.10%	3.09%	-0.35%	0.10%	-0.09%	0.26%	0.41%	0.46%
48		4.60%	4.73%	3.88%	3.01%	3.68%	3.34%	-0.33%	0.10%	-0.09%	0.26%	0.84%	1.11%
49		4.60%	4.41%	3.65%	3.26%	3.44%	3.53%	-0.35%	0.10%	-0.09%	0.26%	0.37%	0.46%

Table 7.14 Predicted Annual Growth Rate in Commodity Trade between US and ASEAN (High Growth Scenario) (cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	1.32%	1.04%	-0.04%	-0.58%	0.46%	0.72%	-6.19%	-5.66%	-6.35%	-5.97%	-4.86%	-5.03%
51		1.47%	1.04%	-0.04%	-0.68%	0.14%	0.31%	-5.70%	-5.44%	-6.34%	-6.31%	-5.10%	-5.17%
52		1.38%	1.03%	-0.04%	-0.68%	0.66%	0.97%	-0.58%	-0.19%	-0.61%	-0.46%	-0.75%	-0.65%
53		1.50%	1.05%	-0.04%	-0.58%	0.25%	0.38%	2.45%	2.53%	2.01%	2.08%	1.57%	1.49%
54		1.33%	0.96%	-0.04%	-0.66%	0.24%	0.02%	-6.18%	-5.78%	-6.10%	-6.00%	-5.06%	-5.65%
55		1.32%	0.98%	-0.04%	-0.67%	0.62%	0.55%	-6.16%	-5.93%	-5.89%	-6.26%	-5.14%	-5.05%
56		1.37%	0.96%	-0.04%	-0.63%	0.49%	0.53%	-6.00%	-5.67%	-6.29%	-6.25%	-4.78%	-5.21%
57		1.44%	1.07%	-0.04%	-0.64%	0.70%	0.92%	-5.70%	-5.37%	-6.19%	-6.25%	-5.25%	-4.94%
58		1.48%	1.07%	-0.04%	-0.64%	0.15%	0.15%	-6.23%	-5.56%	-6.39%	-6.07%	-4.78%	-5.10%
59		1.04%	0.61%	-0.38%	-1.00%	-0.13%	0.08%	-2.06%	-1.61%	-1.69%	-1.40%	-0.97%	-1.12%
60		1.37%	1.02%	-0.04%	-0.65%	0.49%	0.35%	-6.15%	-5.61%	-6.12%	-5.99%	-5.15%	-5.02%
61		1.28%	0.86%	-0.05%	-0.60%	0.44%	0.67%	-5.78%	-5.65%	-6.14%	-5.80%	-4.96%	-4.89%
62		1.40%	0.96%	-0.05%	-0.63%	0.09%	0.08%	-6.29%	-6.12%	-6.22%	-6.10%	-4.59%	-4.71%
63	1.58%	1.14%	0.05%	-0.56%	0.34%	0.37%	-4.95%	-4.49%	-4.74%	-4.69%	-3.44%	-3.54%	
64	FOOTWEAR	-4.18%	-4.31%	-5.11%	-5.15%	-4.84%	-4.37%	-6.17%	-5.87%	-5.67%	-5.63%	-4.57%	-4.22%
65		1.37%	1.03%	0.10%	-0.52%	0.30%	0.17%	-0.47%	0.09%	-0.02%	0.41%	0.36%	0.27%
66		-0.59%	-1.12%	-2.04%	-2.97%	-1.24%	-1.55%	-3.15%	-2.70%	-3.25%	-2.89%	-1.58%	-1.39%
67		-0.63%	-0.99%	-2.22%	-2.86%	-1.63%	-1.80%	-3.24%	-2.75%	-3.25%	-3.13%	-1.68%	-1.65%
68	STONE & GLASS	3.61%	3.12%	2.66%	1.88%	2.43%	2.19%	-1.28%	-0.76%	-0.81%	-0.46%	-0.06%	0.20%
69		3.39%	3.34%	2.65%	2.08%	2.40%	2.17%	-1.27%	-0.80%	-0.86%	-0.43%	-0.56%	-0.41%
70		3.09%	2.98%	2.27%	1.76%	2.00%	2.17%	-1.26%	-0.84%	-0.86%	-0.49%	-0.44%	-0.38%
71	PRECIOUS STONES	-0.10%	-0.49%	-1.35%	-1.93%	-0.94%	-1.30%	-1.22%	-0.73%	-0.96%	-0.52%	-0.20%	-0.01%
72	BASE METALS	3.37%	3.36%	2.86%	2.93%	2.56%	2.55%	1.36%	2.31%	1.97%	2.68%	2.43%	2.09%
73		3.41%	3.04%	2.10%	1.68%	1.97%	1.81%	-2.12%	-1.46%	-1.57%	-1.11%	-0.58%	-0.54%
74		5.61%	5.49%	5.08%	4.58%	4.05%	4.29%	-0.24%	0.36%	0.09%	0.62%	1.46%	1.22%
75		5.05%	4.74%	4.52%	4.19%	3.52%	3.13%	-0.13%	0.72%	0.54%	1.20%	0.93%	0.76%
76		3.66%	3.85%	2.79%	2.73%	2.46%	2.66%	-0.97%	-0.31%	-0.41%	0.15%	0.51%	0.30%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		5.01%	5.32%	4.12%	4.11%	4.03%	4.04%	-0.09%	0.67%	0.59%	1.11%	0.93%	0.68%
79		5.11%	5.07%	4.25%	4.25%	3.75%	3.81%	-0.09%	0.68%	0.61%	1.27%	1.02%	1.32%
80		4.92%	4.91%	4.35%	4.14%	3.48%	3.41%	-0.19%	0.60%	0.43%	1.07%	0.93%	1.14%
81		5.49%	5.92%	4.82%	5.07%	4.28%	4.41%	0.31%	1.17%	1.05%	1.51%	1.76%	2.00%
82		2.80%	2.41%	1.51%	0.88%	1.48%	1.40%	-2.54%	-2.03%	-2.15%	-1.52%	-1.36%	-1.63%
83		2.79%	2.41%	1.46%	0.90%	1.64%	1.55%	-2.68%	-1.94%	-2.16%	-1.66%	-1.16%	-1.02%
84	MACHINE	2.87%	2.79%	1.64%	1.14%	1.13%	1.07%	-2.90%	-2.22%	-2.59%	-2.29%	-2.29%	-2.06%
85		1.74%	1.41%	0.48%	-0.05%	-0.40%	-0.55%	-2.41%	-2.03%	-2.27%	-2.06%	-0.74%	-0.76%
86	VEHICLES	6.95%	6.69%	5.59%	5.52%	5.96%	5.89%	-2.47%	-2.26%	-2.64%	-2.26%	-0.36%	-0.23%
87		5.17%	4.98%	4.46%	4.34%	3.44%	3.18%	-1.98%	-1.65%	-1.86%	-1.62%	-1.96%	-1.58%
88		6.81%	6.62%	5.50%	5.56%	5.23%	4.80%	-2.59%	-2.24%	-2.55%	-2.31%	-0.45%	-0.33%
89		7.13%	7.47%	6.11%	5.76%	5.58%	5.23%	-2.62%	-2.23%	-2.64%	-2.44%	-0.42%	-0.39%
90	CLOCKS & MUSICAL INST.	4.77%	4.47%	3.25%	2.80%	2.99%	3.39%	-2.91%	-2.45%	-2.61%	-2.40%	-1.10%	-1.19%
91		4.34%	4.33%	3.02%	2.53%	3.34%	3.09%	-3.03%	-2.63%	-2.67%	-2.39%	-0.95%	-1.01%
92		-0.60%	-1.06%	-2.05%	-2.94%	-1.49%	-1.16%	-3.05%	-2.91%	-3.31%	-2.94%	-2.07%	-2.09%
93	ARMS	4.82%	4.54%	3.36%	2.76%	2.96%	3.33%	-2.99%	-2.51%	-2.86%	-2.40%	-1.12%	-1.23%
94	MISC. ART.	-0.01%	-0.38%	-1.43%	-2.09%	-0.80%	-0.58%	-2.84%	-2.58%	-2.83%	-2.58%	-1.05%	-1.05%
95		-0.59%	-1.08%	-2.31%	-3.12%	-3.29%	-3.43%	-3.30%	-2.82%	-3.02%	-2.92%	-1.48%	-1.27%
96		-0.63%	-1.17%	-2.13%	-2.89%	-1.59%	-1.59%	-3.29%	-2.99%	-3.29%	-3.08%	-2.01%	-2.20%
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

Table 7.15 Predicted Annual Growth Rate in Commodity Trade between US and EU-27 (High Growth Scenario)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.96%	0.78%	0.65%	0.27%	0.01%	-0.18%	-1.33%	-1.12%	-0.91%	-0.77%	-1.33%	-1.17%
02		2.82%	2.05%	1.40%	0.36%	1.78%	1.93%	-2.33%	-1.75%	-1.18%	-0.57%	-1.91%	-1.82%
03		0.99%	0.54%	0.37%	-0.14%	0.16%	0.39%	-1.21%	-0.90%	-0.67%	-0.32%	-1.38%	-1.56%
04		2.45%	2.11%	1.87%	1.16%	1.51%	1.19%	-2.04%	-1.48%	-1.09%	-0.57%	-2.02%	-1.69%
05		1.21%	0.83%	0.63%	0.14%	0.03%	0.07%	-0.97%	-0.71%	-0.55%	-0.26%	-1.31%	-1.43%
06	VEGETABLE PRODUCTS	-0.47%	-0.79%	-0.63%	-0.87%	-0.78%	-0.58%	-0.44%	-0.31%	-0.18%	-0.19%	-1.16%	-1.12%
07		0.59%	0.29%	0.18%	-0.18%	0.21%	0.02%	-2.09%	-2.04%	-2.12%	-2.02%	-1.76%	-1.80%
08		0.35%	0.19%	0.18%	0.00%	-0.08%	-0.30%	-2.14%	-2.30%	-2.24%	-2.28%	-2.16%	-1.84%
09		-0.29%	-0.59%	-0.60%	-0.83%	-0.41%	-0.20%	-0.31%	-0.15%	-0.04%	-0.08%	-1.03%	-0.78%
10		-1.07%	-1.27%	-1.07%	-1.29%	-1.01%	-1.08%	-1.14%	-0.96%	-0.98%	-0.87%	-0.80%	-0.78%
11		1.34%	0.98%	0.82%	0.32%	0.29%	0.19%	-1.41%	-1.14%	-0.86%	-0.48%	-1.41%	-1.63%
12		-0.40%	-0.66%	-0.69%	-0.97%	-0.73%	-0.55%	-0.20%	-0.01%	0.16%	0.24%	0.34%	0.43%
13		0.87%	0.46%	0.26%	-0.25%	-0.14%	-0.06%	-1.75%	-1.35%	-1.13%	-0.72%	-1.96%	-1.79%
14		0.67%	0.40%	0.53%	0.19%	-0.09%	-0.22%	-2.14%	-1.67%	-1.38%	-1.03%	-1.88%	-1.71%
15	FATS & OILS	-0.07%	-0.53%	-0.49%	-0.93%	-0.73%	-0.91%	-1.31%	-0.89%	-0.50%	-0.14%	-1.60%	-1.91%
16	PREPARED FOODSTUFFS	1.57%	0.86%	0.53%	-0.17%	0.37%	0.17%	-1.75%	-1.36%	-1.09%	-0.65%	-1.59%	-1.58%
17		2.73%	2.05%	1.93%	1.31%	1.65%	1.56%	-1.44%	-0.93%	-0.61%	-0.13%	-1.72%	-1.69%
18		0.79%	0.31%	0.09%	-0.40%	0.17%	0.24%	-1.47%	-1.07%	-0.78%	-0.46%	-1.80%	-1.60%
19		0.96%	0.38%	0.17%	-0.34%	-0.19%	-0.17%	-1.63%	-1.24%	-0.98%	-0.60%	-1.73%	-1.70%
20		0.92%	0.38%	0.17%	-0.39%	0.02%	0.15%	-1.69%	-1.24%	-0.96%	-0.57%	-1.59%	-1.59%
21		1.26%	0.76%	0.48%	-0.09%	0.49%	0.37%	-1.67%	-1.28%	-0.91%	-0.54%	-1.58%	-1.59%
22		1.59%	1.41%	1.25%	0.77%	0.48%	0.38%	-1.00%	-0.78%	-0.54%	-0.27%	-0.96%	-0.83%
23		-0.04%	-0.47%	-0.45%	-0.98%	-0.69%	-0.46%	-1.41%	-0.97%	-0.64%	-0.36%	-1.84%	-1.72%
24		1.66%	1.39%	1.14%	0.75%	0.90%	0.70%	-0.94%	-0.66%	-0.50%	-0.25%	-0.95%	-1.16%
25	MINERAL PRODUCTS	1.11%	0.95%	0.93%	0.73%	0.64%	0.51%	0.10%	0.39%	0.70%	0.94%	-0.27%	-0.30%
26		1.31%	1.39%	1.55%	1.38%	0.57%	0.45%	0.17%	0.50%	0.72%	0.96%	0.20%	0.32%
27		3.60%	3.98%	4.06%	3.67%	2.09%	2.35%	1.71%	2.56%	3.08%	4.25%	0.74%	1.02%
28	CHEMICAL PRODUCTS	1.19%	0.77%	0.57%	-0.01%	0.54%	0.50%	-1.46%	-0.78%	-0.30%	0.33%	-1.59%	-1.34%
29		0.88%	0.33%	0.03%	-0.54%	0.29%	0.16%	-1.70%	-1.04%	-0.56%	0.06%	-1.58%	-1.47%
30		0.81%	0.32%	0.00%	-0.60%	-0.06%	-0.07%	-1.60%	-0.99%	-0.57%	0.05%	-1.36%	-1.57%
31		0.79%	0.35%	0.04%	-0.55%	-0.22%	-0.25%	-1.64%	-1.00%	-0.53%	0.09%	-1.46%	-1.41%
32		0.87%	0.32%	0.03%	-0.52%	-0.10%	-0.38%	-1.62%	-1.03%	-0.57%	0.06%	-1.41%	-1.63%
33		0.84%	0.34%	0.03%	-0.52%	0.03%	-0.03%	-1.59%	-1.07%	-0.54%	0.07%	-1.77%	-2.16%
34		0.64%	0.16%	-0.12%	-0.71%	0.05%	-0.20%	-1.75%	-1.06%	-0.65%	-0.03%	-1.34%	-1.28%
35		0.94%	0.51%	0.17%	-0.42%	0.04%	-0.20%	-1.75%	-1.09%	-0.59%	0.03%	-1.22%	-1.43%
36		-0.72%	-1.22%	-1.44%	-1.95%	-1.66%	-1.70%	-2.55%	-1.89%	-1.47%	-0.89%	-2.22%	-2.17%
37		0.81%	0.33%	0.03%	-0.54%	0.19%	0.00%	-1.59%	-1.01%	-0.57%	0.07%	-1.50%	-1.73%
38		0.76%	0.24%	-0.05%	-0.58%	-0.18%	-0.40%	-1.69%	-1.14%	-0.59%	0.00%	-1.30%	-1.48%
39	PLASTICS	0.77%	0.31%	0.03%	-0.53%	-0.12%	0.07%	-1.63%	-1.07%	-0.52%	0.06%	-1.70%	-1.57%
40		0.87%	0.34%	0.03%	-0.53%	0.21%	-0.07%	-1.61%	-0.99%	-0.57%	0.05%	-1.28%	-1.49%
41	LEATHER GOODS	-8.00%	-8.23%	-8.99%	-9.42%	-7.85%	-7.52%	-4.45%	-3.93%	-4.01%	-3.64%	-3.81%	-3.63%
42		-6.41%	-6.12%	-6.93%	-7.47%	-6.33%	-6.11%	-5.80%	-5.35%	-5.28%	-5.20%	-5.17%	-5.47%
43		0.82%	0.55%	0.48%	0.06%	-0.20%	-0.46%	-1.50%	-1.42%	-1.20%	-1.03%	-1.51%	-1.34%
44	WOOD PRODUCTS	0.94%	0.38%	-0.02%	-0.60%	0.05%	0.17%	-2.71%	-2.07%	-1.70%	-1.19%	-2.46%	-2.21%
45		1.03%	0.42%	0.04%	-0.56%	0.13%	-0.01%	-2.82%	-2.29%	-1.79%	-1.34%	-2.50%	-2.85%
46		0.95%	0.31%	-0.08%	-0.75%	0.12%	-0.06%	-3.15%	-2.44%	-2.00%	-1.50%	-2.75%	-3.08%
47	PAPER	1.18%	0.67%	0.26%	-0.41%	0.38%	0.41%	-1.98%	-1.38%	-1.00%	-0.40%	0.03%	0.28%
48		1.28%	0.67%	0.26%	-0.39%	0.28%	0.28%	-2.06%	-1.47%	-1.04%	-0.39%	-1.82%	-1.92%
49		1.32%	0.70%	0.27%	-0.37%	0.40%	0.31%	-2.02%	-1.43%	-0.98%	-0.40%	-1.85%	-2.03%

Table 7.15 Predicted Annual Growth Rate in Commodity Trade between US and EU-27 (High Growth Scenario) (cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-2.37%	-3.07%	-3.61%	-4.42%	-2.89%	-3.04%	-4.55%	-4.03%	-3.79%	-3.66%	-3.86%	-4.24%
51		-2.60%	-3.05%	-3.86%	-4.56%	-2.40%	-2.71%	-4.83%	-4.36%	-3.97%	-3.62%	-4.30%	-4.27%
52		-2.53%	-3.27%	-3.73%	-4.27%	-3.07%	-3.07%	-4.55%	-4.00%	-3.75%	-3.65%	-4.49%	-4.43%
53		-2.44%	-2.79%	-3.32%	-4.20%	-2.56%	-2.25%	-2.64%	-2.46%	-2.14%	-2.00%	-2.87%	-2.78%
54		-2.30%	-3.10%	-3.69%	-4.21%	-3.18%	-3.15%	-4.69%	-4.35%	-4.01%	-3.77%	-3.84%	-3.82%
55		-2.25%	-3.16%	-3.29%	-4.18%	-2.48%	-2.38%	-4.70%	-3.99%	-3.92%	-3.77%	-4.12%	-4.20%
56		-2.49%	-2.93%	-3.73%	-4.35%	-2.59%	-2.29%	-4.75%	-4.34%	-3.95%	-3.52%	-3.88%	-4.02%
57		-2.36%	-3.27%	-3.63%	-4.72%	-2.67%	-2.96%	-4.48%	-4.07%	-4.13%	-3.55%	-4.64%	-4.66%
58		-2.48%	-3.21%	-3.31%	-4.70%	-2.79%	-2.89%	-4.78%	-4.18%	-3.99%	-3.75%	-4.03%	-4.31%
59		-1.37%	-1.94%	-2.37%	-2.78%	-1.76%	-1.43%	-3.18%	-2.48%	-2.06%	-1.68%	-3.00%	-2.91%
60		-2.55%	-3.23%	-3.47%	-4.03%	-2.95%	-3.01%	-4.57%	-4.26%	-3.78%	-3.54%	-3.82%	-3.88%
61		-2.80%	-3.14%	-3.85%	-4.78%	-3.12%	-3.12%	-5.28%	-4.81%	-4.47%	-4.52%	-4.58%	-4.85%
62		-2.69%	-3.60%	-4.04%	-4.58%	-3.15%	-3.27%	-5.73%	-5.38%	-4.99%	-4.69%	-5.28%	-5.25%
63	-1.77%	-2.45%	-2.92%	-3.67%	-2.40%	-2.39%	-4.32%	-3.50%	-3.19%	-2.91%	-3.78%	-3.56%	
64	FOOTWEAR	-7.83%	-8.82%	-9.31%	-9.57%	-8.63%	-8.33%	-6.48%	-6.50%	-5.82%	-5.98%	-5.90%	-5.77%
65		-0.81%	-1.35%	-1.78%	-2.17%	-1.40%	-1.65%	-2.21%	-1.54%	-1.07%	-0.49%	-2.01%	-1.98%
66		-3.50%	-4.41%	-5.08%	-6.68%	-4.07%	-4.08%	-5.89%	-5.37%	-5.05%	-4.74%	-5.50%	-5.14%
67		-4.05%	-4.27%	-5.64%	-6.06%	-3.98%	-4.02%	-5.65%	-5.37%	-5.41%	-4.71%	-4.94%	-4.83%
68	STONE & GLASS	0.18%	-0.32%	-0.68%	-1.26%	-0.37%	-0.36%	-1.92%	-1.23%	-0.84%	-0.19%	-2.03%	-2.03%
69		0.19%	-0.31%	-0.59%	-1.31%	-0.67%	-0.38%	-1.99%	-1.26%	-0.81%	-0.18%	-2.09%	-1.96%
70		0.16%	-0.32%	-0.64%	-1.17%	-0.36%	-0.15%	-2.06%	-1.38%	-0.84%	-0.21%	-1.71%	-1.56%
71	PRECIOUS STONES	-1.03%	-1.23%	-1.42%	-2.07%	-1.69%	-1.77%	-2.95%	-2.27%	-1.90%	-1.32%	-2.35%	-2.57%
72	BASE METALS	0.28%	0.02%	-0.10%	-0.44%	-0.32%	-0.10%	-1.49%	-0.82%	-0.31%	0.42%	-1.44%	-1.53%
73		-0.15%	-0.60%	-0.99%	-1.62%	-0.57%	-0.78%	-2.87%	-2.39%	-1.86%	-1.13%	-2.85%	-2.76%
74		2.40%	1.75%	1.51%	0.95%	1.41%	1.46%	-1.57%	-1.02%	-0.53%	0.12%	-1.41%	-1.40%
75		1.40%	1.14%	1.25%	0.81%	0.86%	0.81%	-1.70%	-0.89%	-0.34%	0.43%	-1.38%	-1.62%
76		0.92%	0.56%	0.43%	0.01%	0.37%	0.19%	-2.15%	-1.33%	-0.78%	-0.09%	-1.40%	-1.43%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		1.52%	1.26%	1.15%	0.84%	1.10%	1.19%	-1.59%	-0.93%	-0.33%	0.44%	-1.54%	-1.38%
79		1.46%	1.21%	1.13%	0.84%	1.05%	1.22%	-1.62%	-0.90%	-0.32%	0.43%	-1.44%	-1.44%
80		1.37%	1.11%	1.16%	0.75%	0.79%	1.02%	-1.72%	-0.97%	-0.37%	0.41%	-1.44%	-1.59%
81		1.65%	1.38%	1.46%	1.15%	0.84%	0.54%	-1.55%	-0.70%	-0.16%	0.61%	-1.30%	-1.12%
82		-0.52%	-1.01%	-1.62%	-2.06%	-1.20%	-1.55%	-3.40%	-2.80%	-2.17%	-1.56%	-2.86%	-2.87%
83		-0.47%	-1.07%	-1.48%	-2.01%	-0.91%	-1.20%	-3.35%	-2.79%	-2.14%	-1.54%	-2.83%	-3.10%
84		MACHINE	0.14%	-0.49%	-0.94%	-1.77%	-1.96%	-1.98%	-3.45%	-2.75%	-2.32%	-1.51%	-1.04%
85	-0.64%		-1.28%	-1.70%	-2.62%	-2.62%	-3.09%	-4.18%	-3.71%	-3.13%	-2.56%	-3.48%	-3.44%
86	VEHICLES	1.30%	0.65%	0.25%	-0.44%	0.57%	0.43%	-2.83%	-2.17%	-1.85%	-1.20%	-2.12%	-2.35%
87		2.12%	1.56%	1.38%	0.61%	0.04%	-0.14%	-2.22%	-1.66%	-1.25%	-0.60%	-0.11%	0.44%
88		1.26%	0.57%	0.11%	-0.54%	0.64%	0.66%	-3.00%	-2.19%	-1.81%	-1.23%	-2.10%	-2.34%
89		1.11%	0.54%	0.10%	-0.53%	0.24%	0.35%	-3.02%	-2.26%	-1.97%	-1.26%	-2.39%	-2.61%
90	CLOCKS & MUSICAL INST.	-0.04%	-0.80%	-1.29%	-2.12%	-0.54%	-0.58%	-3.44%	-2.72%	-2.18%	-1.50%	-3.10%	-2.88%
91		-0.06%	-0.76%	-1.29%	-1.97%	-0.35%	-0.36%	-3.59%	-2.59%	-2.09%	-1.50%	-2.89%	-3.01%
92		-3.74%	-4.65%	-5.61%	-6.07%	-3.95%	-4.57%	-5.97%	-5.26%	-5.01%	-5.07%	-4.82%	-5.24%
93	ARMS	-0.04%	-0.71%	-1.17%	-2.11%	-0.55%	-0.79%	-3.31%	-2.69%	-2.11%	-1.42%	-2.52%	-2.43%
94	MISC. ART.	-2.03%	-2.76%	-3.30%	-4.24%	-2.27%	-2.19%	-4.56%	-3.93%	-3.56%	-3.01%	-3.86%	-3.86%
95		-3.61%	-4.20%	-5.33%	-5.97%	-6.12%	-5.47%	-5.77%	-5.52%	-5.02%	-4.93%	-5.30%	-5.60%
96		-3.69%	-4.53%	-5.26%	-5.85%	-3.99%	-3.94%	-5.75%	-5.22%	-5.25%	-5.18%	-4.99%	-4.81%
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

7.2.1.3 Low Growth Case Scenario

In the low growth scenario, annual growth rate for each commodity group at HS 2-digit classification and section between U.S. and her trading partners were predicted using the trade forecasting module and results are presented in Tables 7.16 to 7.21.

Similar observations can be seen as in the median growth scenario except the magnitude of the annual growth rate in commodity trade is relatively lower (approximately 10% lower) than those presented in the Section 7.2.1.1. This could be due to the assumption that the global economy is suffering from slow growth and unfavourable socio-economic variables are inputs to the trade forecasting module to model this scenario.

**Table 7.16 Predicted Annual Growth Rate in Commodity Trade
between US and Australia (Low Growth Scenario)**

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	1.74%	1.60%	1.88%	1.80%	0.69%	0.65%	0.84%	0.99%	1.26%	1.34%	1.13%	1.26%
02		2.86%	2.88%	3.13%	2.84%	1.04%	1.01%	-1.69%	-1.33%	-1.08%	-0.70%	0.46%	0.55%
03		1.38%	1.28%	1.27%	0.93%	0.38%	0.44%	-1.43%	-1.30%	-1.07%	-0.78%	0.02%	-0.23%
04		2.52%	2.26%	2.52%	2.09%	0.69%	0.71%	-0.69%	-0.44%	-0.11%	0.16%	0.37%	0.13%
05		0.41%	-0.02%	-0.38%	-1.19%	-0.95%	-1.28%	0.12%	0.24%	0.53%	0.64%	0.51%	0.65%
06	VEGETABLE PRODUCTS	0.10%	0.01%	0.36%	0.31%	-0.82%	-0.50%	-0.16%	-0.36%	-0.27%	-0.64%	-0.18%	-0.19%
07		0.29%	0.17%	0.30%	0.17%	0.02%	-0.16%	-1.38%	-1.61%	-1.29%	-1.37%	-0.32%	-0.49%
08		0.01%	-0.05%	0.12%	0.10%	0.00%	-0.19%	-1.58%	-1.64%	-1.41%	-1.44%	-0.70%	-0.42%
09		0.48%	0.33%	0.52%	0.33%	-0.31%	-0.44%	-0.59%	-0.71%	-0.57%	-0.75%	-0.43%	-0.43%
10		-2.12%	-2.34%	-1.92%	-2.06%	-1.72%	-1.46%	-1.13%	-1.17%	-1.00%	-1.03%	-1.03%	-1.17%
11		1.34%	1.13%	1.21%	0.73%	0.09%	-0.01%	-1.11%	-1.07%	-0.75%	-0.59%	0.21%	0.05%
12		0.71%	0.66%	1.02%	0.94%	0.30%	0.48%	-0.13%	-0.25%	-0.13%	-0.29%	-0.19%	0.26%
13		1.07%	0.84%	0.71%	0.41%	-0.23%	-0.33%	-1.48%	-1.30%	-1.10%	-0.81%	-0.17%	0.11%
14		0.86%	0.75%	0.86%	0.64%	0.09%	0.24%	-0.78%	-0.51%	-0.06%	0.17%	-0.08%	0.12%
15	FATS & OILS	3.02%	2.62%	2.94%	2.51%	1.25%	1.30%	-1.78%	-1.51%	-1.22%	-1.10%	-0.65%	-0.42%
16	PREPARED FOODSTUFFS	1.39%	1.10%	1.03%	0.67%	-0.26%	-0.04%	-1.56%	-1.29%	-1.05%	-0.82%	0.16%	0.28%
17		2.46%	2.09%	2.50%	2.09%	0.73%	0.97%	-0.64%	-0.31%	0.02%	0.28%	0.72%	0.83%
18		1.04%	0.75%	0.75%	0.39%	-0.42%	-0.72%	-1.45%	-1.30%	-1.02%	-0.85%	-0.11%	-0.30%
19		1.11%	0.83%	0.80%	0.34%	-0.50%	-0.20%	-1.51%	-1.34%	-1.15%	-0.83%	-0.08%	-0.32%
20		1.01%	0.78%	0.74%	0.36%	-0.71%	-1.01%	-1.35%	-1.37%	-1.08%	-0.90%	-0.17%	-0.43%
21		1.36%	1.17%	1.21%	0.85%	-0.09%	0.05%	-1.29%	-1.39%	-0.93%	-0.74%	0.06%	0.27%
22		1.58%	1.37%	1.38%	0.92%	0.91%	0.92%	0.14%	0.17%	0.31%	0.47%	1.00%	1.09%
23		1.05%	0.80%	0.88%	0.54%	-0.54%	-0.76%	-1.45%	-1.39%	-1.08%	-0.94%	-0.12%	-0.45%
24		1.47%	1.25%	1.24%	0.98%	0.38%	0.63%	0.13%	0.15%	0.32%	0.50%	0.79%	0.85%
25	MINERAL PRODUCTS	1.04%	1.06%	1.28%	1.24%	0.41%	0.53%	-1.44%	-1.30%	-1.03%	-0.77%	-1.05%	-0.98%
26		1.02%	1.22%	1.31%	1.18%	0.80%	0.74%	-0.99%	-0.81%	-0.54%	-0.39%	-0.93%	-0.97%
27		4.46%	4.92%	4.61%	4.93%	3.71%	3.67%	5.10%	5.04%	5.89%	7.16%	4.43%	4.29%
28	CHEMICAL PRODUCTS	2.75%	3.02%	3.31%	2.79%	0.73%	0.59%	-1.69%	-1.35%	-0.85%	-0.47%	-0.16%	-0.04%
29		2.53%	2.50%	3.14%	2.98%	0.61%	0.38%	-1.87%	-1.52%	-1.15%	-0.84%	-0.54%	-0.86%
30		2.59%	2.54%	2.75%	2.70%	0.74%	0.72%	-1.83%	-1.72%	-1.15%	-0.89%	-0.31%	-0.58%
31		2.28%	2.42%	2.48%	2.33%	0.38%	0.31%	-1.88%	-1.64%	-1.12%	-0.87%	-0.28%	-0.39%
32		2.41%	2.82%	2.86%	2.71%	0.65%	0.91%	-2.02%	-1.53%	-1.18%	-0.84%	-0.49%	-0.68%
33		2.77%	2.69%	2.74%	2.61%	0.61%	0.64%	-1.88%	-1.53%	-1.19%	-0.78%	-0.81%	-0.71%
34		2.22%	2.06%	2.22%	2.20%	0.02%	0.24%	-1.91%	-1.86%	-1.36%	-0.99%	-0.51%	-0.69%
35		2.20%	2.36%	2.46%	2.03%	0.49%	0.46%	-1.77%	-1.50%	-1.05%	-0.82%	-0.54%	-0.37%
36		-0.87%	-1.03%	-1.09%	-1.48%	-2.88%	-2.76%	-3.52%	-3.45%	-3.12%	-2.65%	-1.73%	-1.50%
37		2.48%	2.86%	3.06%	2.70%	0.84%	0.79%	-1.81%	-1.63%	-1.23%	-0.79%	-0.20%	0.04%
38		2.42%	2.51%	2.84%	2.58%	0.27%	0.28%	-2.01%	-1.72%	-1.29%	-0.96%	-0.89%	-1.01%
39	PLASTICS	2.74%	2.67%	3.16%	2.84%	0.78%	0.84%	-1.87%	-1.62%	-1.18%	-0.79%	-0.73%	-1.11%
40		2.57%	2.86%	2.95%	2.62%	0.78%	0.68%	-1.74%	-1.70%	-1.09%	-0.82%	-0.68%	-0.53%
41	LEATHER GOODS	-3.75%	-3.98%	-3.48%	-3.67%	-6.12%	-6.40%	-11.58%	-10.31%	-9.74%	-9.97%	-9.74%	-8.51%
42		-4.76%	-5.04%	-5.45%	-5.72%	-6.47%	-6.63%	-9.11%	-7.95%	-7.94%	-8.31%	-6.84%	-6.84%
43		0.62%	0.48%	0.45%	0.19%	-0.12%	-0.27%	-0.38%	-0.47%	-0.36%	-0.31%	0.45%	0.58%
44	WOOD PRODUCTS	1.19%	0.85%	0.77%	0.38%	-0.48%	-0.31%	-2.77%	-2.49%	-1.97%	-1.80%	-1.15%	-1.12%
45		1.07%	0.74%	0.65%	0.23%	-0.63%	-1.00%	-2.59%	-2.73%	-2.21%	-1.68%	-1.62%	-1.42%
46		1.14%	0.73%	0.60%	0.07%	-0.92%	-0.67%	-3.07%	-2.67%	-2.44%	-2.19%	-1.75%	-1.56%
47	PAPER	1.82%	1.41%	1.45%	1.14%	-0.11%	-0.12%	-2.34%	-2.17%	-1.75%	-1.55%	-1.08%	-0.96%
48		1.62%	1.45%	1.45%	1.06%	-0.11%	0.14%	-2.30%	-2.22%	-1.75%	-1.43%	-0.80%	-0.60%
49		1.80%	1.48%	1.41%	1.17%	-0.21%	-0.35%	-2.37%	-2.20%	-1.84%	-1.41%	-0.34%	-0.41%

Table 7.16 Predicted Annual Growth Rate in Commodity Trade between US and Australia (Low Growth Scenario) (cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-2.53%	-4.13%	-5.15%	-7.80%	-4.24%	-4.32%	-8.07%	-8.09%	-7.51%	-7.29%	-5.76%	-6.17%
51		-2.80%	-4.43%	-5.64%	-7.73%	-4.19%	-3.86%	-7.90%	-6.93%	-7.17%	-6.31%	-6.64%	-6.47%
52		-1.24%	-1.63%	-1.71%	-2.44%	-2.98%	-2.99%	-9.02%	-9.02%	-8.15%	-8.76%	-7.42%	-6.85%
53		-1.26%	-1.56%	-1.63%	-2.43%	-3.32%	-3.09%	-7.52%	-7.17%	-6.99%	-7.09%	-5.52%	-5.63%
54		-1.28%	-1.51%	-1.85%	-2.30%	-3.02%	-3.12%	-9.18%	-9.61%	-9.05%	-8.37%	-7.06%	-7.44%
55		-1.27%	-1.56%	-1.80%	-2.38%	-3.23%	-3.61%	-9.70%	-9.57%	-8.69%	-9.13%	-7.29%	-7.33%
56		-1.18%	-1.62%	-1.65%	-2.45%	-3.75%	-3.45%	-9.50%	-8.39%	-9.32%	-8.86%	-7.27%	-7.19%
57		-1.32%	-1.69%	-1.75%	-2.33%	-3.56%	-3.63%	-8.57%	-8.69%	-8.86%	-8.63%	-7.70%	-6.68%
58		-1.31%	-1.51%	-1.66%	-2.55%	-3.45%	-3.98%	-9.66%	-9.00%	-8.89%	-9.11%	-6.93%	-7.27%
59		-1.59%	-1.70%	-1.78%	-2.51%	-3.33%	-3.38%	-5.09%	-4.62%	-4.45%	-4.03%	-3.44%	-3.56%
60		-1.24%	-1.60%	-1.66%	-2.44%	-3.63%	-3.52%	-9.57%	-8.38%	-9.41%	-8.11%	-7.16%	-7.92%
61		-1.43%	-1.76%	-2.16%	-2.77%	-3.57%	-4.08%	-9.33%	-9.90%	-9.08%	-9.36%	-7.24%	-8.02%
62		-1.50%	-2.04%	-2.13%	-2.80%	-3.55%	-3.38%	-9.89%	-9.42%	-9.94%	-10.03%	-7.26%	-7.88%
63	-0.69%	-0.97%	-1.14%	-1.88%	-3.06%	-2.83%	-6.28%	-6.91%	-5.86%	-5.32%	-4.80%	-4.43%	
64	FOOTWEAR	-9.03%	-9.15%	-9.36%	-9.28%	-10.41%	-10.32%	-11.95%	-10.97%	-10.12%	-10.28%	-9.51%	-9.47%
65		1.82%	1.81%	1.77%	1.67%	-0.59%	-0.44%	-2.98%	-2.59%	-2.20%	-1.80%	-1.53%	-1.77%
66		-3.89%	-4.37%	-4.53%	-5.85%	-5.87%	-6.09%	-7.62%	-7.60%	-7.62%	-6.91%	-4.53%	-4.82%
67		-3.62%	-4.21%	-4.74%	-5.80%	-5.67%	-5.62%	-7.27%	-6.86%	-7.78%	-7.29%	-5.36%	-5.08%
68	STONE & GLASS	0.99%	0.89%	1.00%	0.58%	-0.73%	-0.95%	-2.98%	-2.63%	-2.13%	-1.87%	-0.84%	-0.66%
69		1.02%	0.89%	0.97%	0.62%	-0.63%	-0.73%	-2.67%	-2.58%	-2.12%	-1.99%	-1.05%	-0.83%
70		1.07%	0.98%	0.95%	0.55%	-0.54%	-0.76%	-3.14%	-2.73%	-2.46%	-1.85%	-1.28%	-1.19%
71	PRECIOUS STONES	-0.84%	-1.10%	-1.08%	-1.45%	-2.79%	-2.46%	-5.49%	-5.46%	-4.78%	-4.96%	-3.57%	-3.74%
72	BASE METALS	1.08%	1.14%	1.22%	1.07%	-0.64%	-0.45%	-1.21%	-0.71%	-0.12%	0.37%	0.22%	0.18%
73		0.78%	0.87%	0.93%	0.72%	-0.92%	-0.91%	-3.86%	-3.60%	-2.76%	-2.58%	-1.90%	-1.92%
74		-0.25%	-0.34%	-0.29%	-0.73%	-1.94%	-2.19%	-1.22%	-0.93%	-0.56%	-0.11%	0.85%	0.90%
75		-0.65%	-0.76%	-0.76%	-1.16%	-2.52%	-2.10%	-2.51%	-1.98%	-1.10%	-0.43%	-0.96%	-0.98%
76		-0.61%	-0.74%	-0.73%	-1.06%	-2.29%	-2.41%	-3.47%	-3.01%	-2.29%	-1.52%	-1.66%	-1.63%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		-0.63%	-0.80%	-0.72%	-1.19%	-2.20%	-1.84%	-2.48%	-1.82%	-1.03%	-0.37%	-0.91%	-0.84%
79		-0.67%	-0.82%	-0.67%	-1.17%	-1.87%	-2.29%	-2.47%	-1.97%	-1.02%	-0.34%	-1.27%	-1.03%
80		-0.60%	-0.78%	-0.66%	-1.08%	-2.17%	-2.57%	-2.63%	-2.06%	-1.26%	-0.53%	-0.86%	-1.09%
81		-0.61%	-0.73%	-0.76%	-1.20%	-2.19%	-2.17%	-2.11%	-1.31%	-0.43%	0.21%	-0.96%	-1.08%
82		0.08%	-0.20%	-0.32%	-0.91%	-1.97%	-2.42%	-4.25%	-3.93%	-3.84%	-2.98%	-2.22%	-2.33%
83		0.07%	-0.20%	-0.32%	-0.81%	-2.54%	-2.37%	-4.12%	-4.29%	-3.69%	-3.16%	-2.29%	-1.90%
84		MACHINE	0.83%	0.46%	0.36%	-0.24%	-0.35%	-0.42%	-3.62%	-3.48%	-3.25%	-2.74%	-2.30%
85	0.14%		-0.16%	-0.32%	-1.02%	-1.06%	-1.27%	-5.49%	-4.91%	-4.25%	-4.22%	-3.03%	-3.02%
86	VEHICLES	2.16%	2.01%	1.92%	1.66%	0.12%	0.16%	-3.56%	-3.35%	-2.75%	-2.50%	-1.58%	-1.93%
87		2.26%	2.02%	1.94%	1.81%	1.83%	1.61%	-1.75%	-1.63%	-1.12%	-0.75%	-0.47%	-0.22%
88		2.03%	1.88%	1.89%	1.59%	0.29%	0.08%	-3.67%	-3.21%	-2.93%	-2.85%	-1.14%	-0.95%
89		1.99%	1.87%	1.93%	1.65%	0.00%	-0.29%	-3.32%	-3.35%	-2.82%	-2.86%	-1.59%	-1.31%
90	CLOCKS & MUSICAL INST.	0.77%	0.46%	0.25%	-0.38%	-1.73%	-1.83%	-3.61%	-3.18%	-2.85%	-2.55%	-1.37%	-1.64%
91		0.74%	0.49%	0.30%	-0.33%	-1.51%	-1.50%	-3.67%	-3.33%	-2.97%	-2.50%	-1.64%	-2.05%
92		-3.59%	-4.14%	-5.01%	-5.58%	-5.70%	-5.57%	-6.98%	-7.61%	-6.94%	-7.14%	-4.76%	-4.85%
93	ARMS	0.71%	0.48%	0.27%	-0.33%	-1.28%	-1.00%	-3.50%	-3.40%	-2.87%	-2.38%	-1.35%	-1.06%
94	MISC. ART.	-2.43%	-3.02%	-3.33%	-3.89%	-4.33%	-4.47%	-5.47%	-5.05%	-4.40%	-4.54%	-2.96%	-3.07%
95		-3.92%	-4.04%	-4.68%	-5.95%	-5.97%	-5.93%	-7.25%	-7.68%	-7.74%	-7.41%	-4.61%	-4.97%
96		-3.53%	-4.42%	-4.62%	-5.62%	-6.19%	-5.73%	-7.00%	-7.66%	-6.90%	-6.77%	-4.85%	-5.42%
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

Table 7.17 Predicted Annual Growth Rate in Commodity Trade between US and China (Low Growth Scenario)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	3.07%	2.73%	3.01%	2.76%	2.47%	2.92%	1.31%	1.52%	1.28%	1.54%	2.27%	2.14%
02		19.14%	18.57%	21.56%	20.61%	20.70%	17.82%	-5.80%	-5.36%	-4.95%	-5.17%	-4.49%	-4.08%
03		7.00%	6.55%	6.88%	6.14%	6.30%	6.77%	-0.60%	-0.40%	-0.23%	0.00%	0.54%	0.55%
04		8.31%	8.37%	8.68%	8.71%	7.26%	7.90%	-3.12%	-2.68%	-2.49%	-2.39%	-1.69%	-2.01%
05		16.06%	17.22%	16.48%	15.38%	13.94%	14.61%	-0.11%	0.06%	0.17%	0.33%	0.54%	0.49%
06	VEGETABLE PRODUCTS	10.45%	9.43%	9.52%	9.75%	9.96%	10.36%	1.92%	2.22%	2.30%	2.18%	2.72%	2.50%
07		6.12%	5.97%	6.67%	6.03%	6.15%	5.85%	-0.97%	-0.93%	-0.75%	-0.65%	-0.01%	-0.24%
08		5.90%	5.61%	5.77%	5.45%	5.77%	6.56%	-1.15%	-1.21%	-1.03%	-1.05%	-0.21%	-0.48%
09		9.53%	9.08%	9.29%	9.58%	9.57%	9.27%	1.40%	1.49%	1.36%	1.33%	1.46%	1.66%
10		4.72%	4.67%	5.44%	5.16%	5.40%	5.53%	0.28%	0.22%	0.21%	0.17%	0.12%	0.07%
11		6.63%	6.03%	6.56%	5.52%	6.54%	6.11%	-0.67%	-0.54%	-0.32%	-0.08%	0.56%	0.61%
12		8.61%	8.96%	8.74%	8.61%	8.83%	8.81%	5.42%	5.34%	6.31%	6.40%	6.61%	6.07%
13		7.01%	6.92%	6.85%	5.82%	6.10%	5.86%	0.58%	0.77%	0.96%	1.17%	0.98%	1.11%
14		5.77%	5.04%	5.42%	5.20%	4.99%	4.67%	1.88%	1.99%	2.31%	2.35%	2.21%	2.35%
15	FATS & OILS	9.96%	8.44%	8.46%	8.46%	8.57%	8.32%	-3.66%	-3.53%	-3.20%	-3.19%	-2.90%	-2.92%
16	PREPARED FOODSTUFFS	7.84%	7.58%	7.64%	6.85%	6.92%	6.66%	-5.42%	-5.02%	-4.20%	-4.40%	-4.21%	-4.15%
17		13.48%	13.22%	12.67%	13.57%	12.28%	12.27%	-4.97%	-4.17%	-4.25%	-3.97%	-3.79%	-3.36%
18		7.03%	7.25%	7.01%	5.78%	5.64%	5.92%	-0.54%	-0.39%	-0.19%	0.01%	0.43%	0.49%
19		7.19%	6.44%	6.06%	6.01%	6.44%	6.57%	-0.71%	-0.63%	-0.36%	-0.14%	0.21%	0.15%
20		6.46%	6.48%	6.08%	5.64%	6.25%	6.34%	-0.75%	-0.61%	-0.39%	-0.13%	0.11%	0.12%
21		7.28%	6.97%	6.15%	6.03%	5.96%	6.10%	-1.15%	-0.91%	-0.67%	-0.45%	0.09%	0.15%
22		5.01%	4.51%	4.75%	4.21%	4.11%	3.95%	1.73%	1.77%	1.81%	1.74%	2.59%	2.75%
23		7.60%	7.79%	7.45%	6.67%	6.66%	7.28%	-2.99%	-3.07%	-2.47%	-2.55%	-2.25%	-2.70%
24		7.80%	7.48%	7.22%	8.17%	6.76%	7.71%	1.86%	1.84%	1.91%	2.15%	2.27%	2.47%
25	MINERAL PRODUCTS	4.59%	4.84%	4.68%	4.72%	3.50%	3.83%	6.87%	6.65%	7.41%	7.08%	6.76%	7.44%
26		2.74%	3.06%	3.25%	3.04%	2.18%	1.80%	6.23%	6.55%	6.76%	7.51%	7.01%	8.10%
27		6.40%	7.02%	6.88%	7.48%	5.27%	5.21%	7.77%	8.11%	9.83%	9.13%	8.18%	7.35%
28	CHEMICAL PRODUCTS	8.65%	8.56%	7.92%	8.31%	7.95%	7.53%	2.63%	2.96%	3.18%	3.35%	3.48%	3.58%
29		8.70%	8.17%	8.98%	8.34%	7.07%	6.93%	2.38%	2.54%	3.24%	3.77%	3.32%	3.63%
30		8.97%	8.14%	7.86%	8.32%	8.21%	7.38%	2.44%	2.52%	3.24%	3.76%	3.35%	3.46%
31		9.05%	9.16%	8.74%	8.52%	6.92%	6.88%	2.48%	2.93%	3.43%	3.66%	3.73%	3.35%
32		8.73%	8.94%	8.06%	8.58%	8.05%	7.99%	2.52%	2.76%	3.07%	3.79%	3.40%	3.23%
33		8.37%	9.20%	8.49%	8.53%	7.47%	8.06%	2.12%	2.67%	2.88%	3.52%	3.31%	3.53%
34		8.14%	8.02%	6.92%	7.51%	7.52%	7.58%	2.28%	2.57%	3.22%	3.22%	3.91%	3.49%
35		8.43%	8.03%	8.36%	8.16%	6.90%	8.13%	1.86%	2.02%	2.60%	3.06%	2.61%	2.45%
36		7.06%	6.86%	6.43%	5.23%	6.52%	6.67%	2.06%	2.40%	2.59%	3.15%	2.80%	2.84%
37		8.57%	8.54%	8.71%	8.36%	8.33%	7.88%	2.26%	2.91%	3.29%	3.29%	3.06%	3.12%
38		8.19%	7.79%	7.86%	8.24%	7.05%	7.99%	2.29%	2.50%	2.88%	3.26%	3.51%	3.44%
39	PLASTICS	8.98%	8.20%	7.83%	8.63%	7.04%	7.58%	2.27%	2.64%	2.81%	3.68%	3.36%	3.66%
40		8.58%	8.08%	8.86%	8.26%	7.40%	6.90%	2.52%	2.82%	3.19%	3.44%	3.00%	2.94%
41	LEATHER GOODS	3.38%	2.85%	2.69%	1.89%	2.65%	2.58%	-1.15%	-0.84%	-0.65%	-0.42%	0.24%	0.25%
42		4.54%	4.37%	4.03%	3.35%	4.05%	4.24%	-3.28%	-2.83%	-2.40%	-1.97%	-1.26%	-1.52%
43		3.30%	3.12%	2.66%	2.61%	2.58%	2.66%	1.47%	1.33%	1.38%	1.44%	2.18%	2.27%
44	WOOD PRODUCTS	5.32%	4.77%	4.55%	4.43%	4.55%	5.01%	0.95%	1.00%	1.17%	1.47%	1.72%	1.82%
45		4.98%	4.78%	4.30%	3.95%	4.41%	4.53%	1.23%	1.28%	1.57%	1.61%	1.73%	1.96%
46		5.14%	4.93%	4.56%	3.98%	4.38%	4.79%	-1.43%	-1.28%	-1.21%	-1.16%	-0.32%	-0.62%
47	PAPER	8.87%	8.64%	7.83%	7.94%	7.36%	7.99%	0.53%	0.78%	1.05%	1.13%	1.36%	1.50%
48		9.03%	7.59%	8.27%	7.45%	7.78%	7.54%	0.60%	0.83%	1.00%	1.15%	1.65%	1.25%
49		8.49%	8.55%	7.76%	7.83%	7.77%	7.28%	0.58%	0.80%	0.96%	1.15%	1.70%	1.76%

**Table 7.17 Predicted Annual Growth Rate in Commodity Trade
between US and China (Low Growth Scenario) (cont'd)**

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	10.33%	10.01%	9.78%	7.92%	9.07%	9.16%	-1.02%	-0.64%	-0.39%	-0.04%	0.40%	0.31%
51		10.38%	10.60%	9.83%	8.99%	9.69%	9.07%	-0.98%	-0.53%	-0.29%	0.03%	0.28%	0.43%
52		7.31%	7.79%	7.12%	6.38%	7.66%	6.88%	3.08%	3.13%	3.51%	3.87%	3.53%	2.97%
53		7.29%	6.99%	7.41%	6.45%	7.53%	7.60%	4.80%	5.47%	5.93%	5.07%	5.71%	5.47%
54		7.80%	6.88%	7.04%	6.65%	7.41%	7.14%	-1.53%	-1.10%	-0.75%	-0.34%	0.25%	0.50%
55		7.41%	7.31%	7.37%	6.55%	7.58%	6.90%	-1.41%	-1.11%	-0.75%	-0.33%	0.22%	0.04%
56		7.68%	7.46%	6.70%	5.94%	7.23%	7.62%	-1.60%	-1.10%	-0.70%	-0.33%	0.24%	0.34%
57		7.54%	7.06%	6.74%	6.26%	6.63%	7.16%	-1.44%	-1.04%	-0.71%	-0.33%	0.03%	-0.04%
58		7.25%	6.67%	6.79%	5.98%	6.85%	6.68%	-1.51%	-1.03%	-0.74%	-0.32%	0.17%	0.00%
59		7.01%	6.30%	6.10%	5.58%	6.62%	6.62%	0.52%	0.90%	1.42%	1.84%	1.46%	1.68%
60		7.34%	6.94%	6.43%	6.30%	7.23%	6.85%	-1.57%	-1.11%	-0.71%	-0.32%	0.11%	0.15%
61		7.07%	7.19%	6.10%	5.81%	6.22%	6.30%	-1.81%	-1.30%	-0.96%	-0.52%	-0.19%	-0.31%
62		7.67%	6.45%	6.80%	5.21%	6.02%	5.81%	-2.57%	-2.10%	-1.80%	-1.25%	-1.20%	-1.20%
63	7.56%	7.33%	7.25%	6.08%	7.46%	7.62%	-1.63%	-1.01%	-0.73%	-0.28%	0.20%	0.09%	
64	FOOTWEAR	3.34%	3.02%	2.76%	1.88%	3.09%	3.15%	-3.25%	-2.62%	-2.49%	-2.13%	-1.66%	-1.54%
65		6.84%	6.73%	6.93%	5.93%	6.52%	6.79%	2.27%	2.66%	2.67%	3.48%	3.34%	3.44%
66		7.48%	6.50%	6.07%	5.15%	6.69%	6.63%	-2.10%	-1.53%	-1.26%	-0.78%	-0.35%	-0.28%
67		7.16%	6.71%	5.88%	5.06%	6.34%	6.30%	-1.99%	-1.65%	-1.30%	-0.82%	0.05%	0.18%
68	STONE & GLASS	6.69%	6.67%	6.42%	5.99%	5.98%	5.52%	0.30%	0.70%	1.04%	1.45%	1.68%	1.39%
69		7.18%	6.89%	6.45%	5.52%	5.90%	6.23%	0.29%	0.72%	0.87%	1.30%	1.62%	1.68%
70		6.69%	6.71%	6.30%	5.29%	6.24%	5.86%	0.24%	0.61%	0.86%	1.38%	1.48%	1.62%
71	PRECIOUS STONES	7.64%	6.28%	6.34%	5.65%	6.17%	6.98%	2.89%	3.45%	3.73%	3.79%	3.29%	3.82%
72	BASE METALS	5.16%	5.40%	4.63%	4.45%	4.93%	5.14%	2.55%	3.44%	3.87%	4.18%	3.83%	4.15%
73		7.13%	7.31%	6.92%	5.33%	6.50%	6.43%	0.29%	0.75%	1.29%	1.67%	1.87%	1.75%
74		9.67%	8.29%	8.44%	8.72%	7.81%	8.03%	0.48%	0.90%	1.16%	1.90%	2.07%	2.13%
75		9.97%	9.73%	9.03%	8.03%	9.43%	9.56%	1.82%	2.17%	2.84%	3.52%	2.97%	2.47%
76		7.83%	7.71%	7.08%	6.66%	7.38%	7.49%	1.52%	2.15%	2.44%	2.92%	3.08%	2.76%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		9.57%	8.78%	8.54%	9.11%	9.23%	8.34%	1.90%	2.46%	2.82%	3.28%	2.80%	3.05%
79		9.91%	9.86%	9.00%	8.89%	9.36%	9.11%	1.86%	2.40%	3.06%	3.12%	3.09%	3.52%
80		8.79%	8.29%	9.36%	8.68%	8.04%	8.60%	1.57%	2.19%	2.85%	3.01%	2.91%	2.40%
81		11.10%	11.36%	11.11%	10.09%	9.89%	10.53%	1.82%	2.46%	2.62%	3.22%	3.25%	3.27%
82		7.65%	6.43%	6.50%	5.80%	7.19%	6.65%	-0.57%	0.01%	0.37%	0.82%	1.17%	1.24%
83		7.10%	6.62%	6.39%	5.72%	6.29%	6.68%	-0.58%	0.01%	0.36%	0.82%	1.09%	1.42%
84	MACHINE	7.33%	7.01%	6.23%	5.86%	5.91%	5.84%	-1.15%	-0.55%	-0.15%	0.30%	0.46%	0.66%
85		6.13%	5.91%	5.37%	4.67%	4.62%	4.31%	0.09%	0.37%	0.70%	0.91%	1.82%	2.12%
86	VEHICLES	10.83%	10.94%	10.90%	10.42%	10.18%	9.63%	-3.17%	-2.44%	-2.23%	-1.57%	-0.65%	-0.43%
87		8.67%	8.49%	7.63%	7.39%	6.87%	7.27%	-1.75%	-1.50%	-1.09%	-0.60%	-0.04%	0.27%
88		10.98%	10.25%	10.20%	9.81%	9.82%	9.79%	-3.00%	-2.56%	-2.35%	-1.57%	-1.08%	-0.84%
89		11.18%	9.82%	10.39%	10.15%	10.49%	10.28%	-3.03%	-2.64%	-2.09%	-1.56%	-1.00%	-0.97%
90	CLOCKS & MUSICAL INST.	9.29%	8.36%	8.20%	6.77%	7.79%	8.59%	-1.69%	-1.10%	-0.64%	-0.01%	0.39%	0.19%
91		8.70%	7.61%	8.28%	7.01%	8.76%	8.36%	-1.61%	-1.07%	-0.60%	-0.03%	0.47%	0.64%
92		6.66%	6.90%	6.46%	5.39%	7.05%	6.67%	-2.08%	-1.60%	-1.32%	-0.78%	-0.09%	-0.22%
93	ARMS	9.60%	7.62%	8.27%	7.48%	7.41%	7.23%	-1.57%	-0.98%	-0.61%	0.00%	0.50%	0.56%
94	MISC. ART.	7.65%	6.85%	6.08%	5.87%	6.88%	7.02%	-1.50%	-0.85%	-0.49%	0.08%	0.69%	0.56%
95		7.41%	6.07%	6.47%	4.96%	5.07%	4.78%	-2.07%	-1.66%	-1.19%	-0.83%	-0.09%	-0.16%
96		7.13%	6.03%	5.66%	5.25%	6.10%	6.34%	-2.01%	-1.63%	-1.38%	-0.91%	-0.50%	-0.73%
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

Table 7.18 Predicted Annual Growth Rate in Commodity Trade between US and Japan (Low Growth Scenario)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.62%	0.38%	0.31%	-0.01%	-0.17%	0.03%	-2.84%	-2.59%	-2.67%	-2.73%	-2.28%	-2.28%
02		2.60%	1.65%	1.68%	1.13%	0.87%	0.67%	-9.21%	-8.61%	-9.14%	-9.14%	-7.14%	-7.52%
03		0.93%	0.56%	0.47%	0.04%	-0.28%	-0.39%	-4.35%	-3.95%	-4.11%	-3.72%	-2.95%	-2.61%
04		0.74%	0.23%	0.08%	-0.45%	-0.27%	-0.10%	-2.88%	-2.46%	-2.17%	-1.85%	-1.44%	-1.60%
05		1.18%	0.78%	0.80%	0.42%	0.08%	0.18%	-3.58%	-3.42%	-3.37%	-3.39%	-2.73%	-2.55%
06	VEGETABLE PRODUCTS	0.06%	-0.61%	-0.60%	-1.10%	-0.81%	-0.74%	-4.05%	-4.05%	-3.58%	-4.26%	-3.58%	-3.26%
07		0.63%	0.19%	0.06%	-0.49%	-0.57%	-0.29%	-4.28%	-4.14%	-4.18%	-4.16%	-3.19%	-2.98%
08		0.61%	0.17%	0.05%	-0.40%	-0.09%	-0.04%	-4.86%	-4.54%	-4.16%	-4.43%	-3.79%	-3.61%
09		0.37%	-0.20%	-0.29%	-0.80%	-0.41%	-0.72%	-4.28%	-4.38%	-4.50%	-4.74%	-3.84%	-3.94%
10		-2.05%	-2.73%	-2.31%	-2.92%	-2.45%	-2.79%	-2.02%	-2.11%	-2.10%	-2.03%	-2.03%	-1.99%
11		0.72%	0.31%	0.14%	-0.37%	-0.17%	0.02%	-3.82%	-3.61%	-3.47%	-3.34%	-2.95%	-3.42%
12		0.30%	-0.22%	-0.22%	-0.74%	-0.35%	-0.59%	-2.44%	-2.32%	-2.63%	-2.74%	-2.60%	-2.52%
13		0.75%	0.20%	0.07%	-0.52%	-0.34%	-0.19%	-3.76%	-3.80%	-3.44%	-3.45%	-3.08%	-3.41%
14		-0.24%	-0.77%	-0.59%	-0.99%	-1.29%	-1.42%	-3.00%	-2.78%	-2.54%	-2.44%	-2.51%	-2.22%
15	FATS & OILS	-0.61%	-1.23%	-1.44%	-2.08%	-2.10%	-1.90%	-6.91%	-7.47%	-6.95%	-7.83%	-5.97%	-6.07%
16	PREPARED FOODSTUFFS	0.71%	0.25%	0.09%	-0.48%	-0.66%	-0.68%	-8.54%	-8.65%	-8.31%	-8.85%	-5.83%	-6.02%
17		1.92%	1.37%	1.25%	0.93%	0.59%	0.45%	-3.09%	-2.36%	-2.27%	-2.12%	-1.89%	-1.84%
18		0.64%	0.20%	0.05%	-0.54%	-0.39%	-0.07%	-4.31%	-4.39%	-4.26%	-4.26%	-3.49%	-3.45%
19		0.75%	0.20%	0.07%	-0.49%	-0.66%	-0.69%	-4.39%	-4.45%	-4.26%	-3.68%	-3.28%	-3.18%
20		0.73%	0.22%	0.08%	-0.50%	-0.46%	-0.44%	-4.21%	-4.28%	-4.01%	-4.22%	-3.45%	-3.27%
21		0.75%	0.20%	0.07%	-0.51%	-0.82%	-0.90%	-4.50%	-4.13%	-3.67%	-3.94%	-3.61%	-3.22%
22		1.42%	1.16%	0.93%	0.64%	0.66%	0.59%	-1.97%	-1.65%	-1.47%	-1.40%	-0.92%	-1.06%
23		0.15%	-0.42%	-0.39%	-0.88%	-0.91%	-0.84%	-6.05%	-5.81%	-5.73%	-5.93%	-5.50%	-5.10%
24		1.33%	0.99%	0.96%	0.55%	0.49%	0.26%	-1.91%	-1.63%	-1.75%	-1.59%	-1.52%	-1.56%
25	MINERAL PRODUCTS	0.00%	-0.52%	-0.69%	-1.30%	-1.72%	-1.47%	-0.79%	-0.76%	-0.61%	-0.54%	-0.60%	-0.64%
26		0.05%	-0.38%	-0.49%	-0.93%	-1.22%	-1.40%	-0.61%	-0.61%	-0.55%	-0.38%	-0.45%	-0.78%
27		4.87%	5.62%	6.20%	7.84%	3.64%	3.55%	1.89%	2.35%	2.39%	3.02%	1.41%	1.09%
28	CHEMICAL PRODUCTS	-0.56%	-1.27%	-1.68%	-2.28%	-2.06%	-2.53%	-2.93%	-2.38%	-2.19%	-1.85%	-1.95%	-1.83%
29		-0.84%	-1.75%	-1.91%	-2.90%	-2.02%	-2.06%	-3.34%	-2.90%	-2.64%	-2.15%	-2.30%	-2.48%
30		-0.87%	-1.75%	-1.98%	-2.70%	-2.05%	-2.46%	-3.20%	-2.88%	-2.49%	-2.17%	-2.28%	-2.12%
31		-0.80%	-1.65%	-1.97%	-2.58%	-2.04%	-1.69%	-3.15%	-2.78%	-2.60%	-2.21%	-2.04%	-2.08%
32		-0.86%	-1.69%	-2.08%	-2.90%	-2.06%	-2.20%	-3.43%	-2.76%	-2.73%	-2.13%	-2.64%	-2.37%
33		-0.80%	-1.59%	-2.03%	-2.72%	-1.85%	-1.61%	-3.64%	-2.68%	-2.47%	-2.09%	-2.65%	-2.35%
34		-1.09%	-1.82%	-2.14%	-2.94%	-2.47%	-2.38%	-3.74%	-3.16%	-2.68%	-2.26%	-2.59%	-2.33%
35		-0.79%	-1.62%	-1.83%	-2.67%	-1.99%	-2.31%	-3.55%	-3.05%	-2.94%	-2.50%	-2.89%	-2.87%
36		-2.45%	-3.52%	-3.87%	-4.90%	-3.67%	-3.75%	-5.62%	-4.67%	-4.81%	-4.14%	-4.24%	-3.84%
37		-0.81%	-1.67%	-2.00%	-2.93%	-2.32%	-2.13%	-3.56%	-2.92%	-2.63%	-2.05%	-2.69%	-2.26%
38		-0.81%	-1.60%	-2.10%	-2.80%	-2.61%	-2.61%	-3.64%	-2.84%	-2.63%	-2.38%	-2.61%	-2.44%
39	PLASTICS	-0.89%	-1.71%	-1.97%	-2.63%	-1.96%	-2.20%	-3.19%	-2.77%	-2.66%	-2.29%	-2.25%	-2.26%
40		-0.88%	-1.58%	-2.15%	-2.75%	-1.93%	-1.90%	-3.55%	-3.00%	-2.67%	-2.20%	-2.46%	-2.27%
41	LEATHER GOODS	-8.87%	-10.08%	-9.69%	-11.60%	-10.84%	-9.97%	-10.99%	-11.23%	-11.36%	-11.32%	-10.26%	-9.64%
42		-5.70%	-7.39%	-7.46%	-9.10%	-7.33%	-6.91%	-9.84%	-9.19%	-10.22%	-9.67%	-7.88%	-8.14%
43		0.59%	0.38%	0.32%	-0.01%	-0.14%	-0.18%	-4.25%	-4.74%	-4.27%	-4.48%	-3.62%	-3.60%
44	WOOD PRODUCTS	-0.15%	-0.86%	-1.25%	-1.96%	-1.87%	-1.86%	-3.38%	-3.20%	-2.71%	-2.52%	-2.38%	-2.72%
45		0.66%	0.07%	-0.26%	-1.00%	-0.53%	-0.43%	-3.19%	-3.09%	-2.57%	-2.37%	-2.23%	-2.24%
46		0.64%	0.06%	-0.27%	-1.01%	-0.78%	-0.99%	-4.27%	-4.05%	-4.36%	-4.08%	-3.74%	-3.69%
47	PAPER	0.73%	0.13%	-0.07%	-0.73%	-1.22%	-1.24%	-3.85%	-3.37%	-3.11%	-3.00%	-2.93%	-2.80%
48		0.75%	0.12%	-0.07%	-0.68%	-0.68%	-0.35%	-3.65%	-3.17%	-3.09%	-2.95%	-2.14%	-2.02%
49		0.73%	0.11%	-0.07%	-0.75%	-0.93%	-1.17%	-3.51%	-3.17%	-2.91%	-2.99%	-2.38%	-2.09%

**Table 7.18 Predicted Annual Growth Rate in Commodity Trade
between US and Japan (Low Growth Scenario) (cont'd)**

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-1.97%	-3.02%	-3.23%	-4.11%	-3.41%	-3.44%	-12.10%	-11.71%	-11.71%	-12.23%	-10.79%	-11.94%
51		-2.19%	-2.97%	-3.63%	-4.50%	-3.38%	-3.34%	-13.73%	-12.26%	-13.08%	-11.88%	-11.10%	-11.20%
52		-2.01%	-2.95%	-3.30%	-4.17%	-3.26%	-3.02%	-10.16%	-9.33%	-9.90%	-8.76%	-8.88%	-10.36%
53		-2.01%	-3.17%	-3.65%	-4.27%	-3.48%	-3.30%	-3.77%	-3.74%	-3.68%	-3.55%	-3.65%	-3.40%
54		-2.19%	-3.07%	-3.61%	-4.26%	-3.26%	-2.89%	-12.46%	-13.30%	-12.49%	-13.12%	-10.93%	-11.14%
55		-2.10%	-3.09%	-3.45%	-4.35%	-3.14%	-3.40%	-12.06%	-11.65%	-12.86%	-12.30%	-11.08%	-11.80%
56		-2.18%	-2.89%	-3.72%	-4.49%	-3.39%	-3.84%	-12.46%	-12.30%	-13.17%	-11.85%	-10.58%	-11.17%
57		-2.13%	-3.18%	-3.48%	-4.34%	-3.25%	-3.03%	-12.94%	-12.69%	-13.12%	-13.14%	-11.31%	-10.79%
58		-2.04%	-3.25%	-3.24%	-4.24%	-3.49%	-3.38%	-12.57%	-12.24%	-12.36%	-12.13%	-11.95%	-12.23%
59		-2.88%	-3.93%	-4.43%	-4.90%	-3.84%	-3.79%	-6.16%	-6.10%	-5.91%	-5.43%	-5.52%	-4.99%
60		-2.19%	-3.26%	-3.57%	-4.34%	-3.23%	-3.15%	-12.38%	-12.39%	-11.93%	-12.97%	-10.34%	-10.73%
61		-2.18%	-2.97%	-3.60%	-4.25%	-3.77%	-4.08%	-12.42%	-10.41%	-10.97%	-11.39%	-9.28%	-9.93%
62		-1.94%	-2.99%	-3.66%	-4.30%	-3.91%	-3.73%	-11.30%	-11.46%	-11.01%	-9.99%	-9.28%	-9.13%
63	-1.44%	-2.26%	-2.81%	-3.50%	-2.81%	-2.83%	-10.80%	-10.87%	-10.69%	-9.83%	-9.02%	-8.74%	
64	FOOTWEAR	-9.61%	-9.64%	-9.96%	-11.39%	-10.98%	-10.93%	-12.29%	-10.80%	-10.71%	-11.83%	-10.74%	-10.77%
65		-0.98%	-1.86%	-2.00%	-2.86%	-2.53%	-2.91%	-5.27%	-4.85%	-4.38%	-3.91%	-4.23%	-4.69%
66		-5.87%	-6.99%	-7.90%	-8.54%	-6.86%	-7.53%	-8.98%	-8.26%	-8.56%	-8.81%	-6.51%	-6.70%
67		-5.22%	-7.05%	-7.75%	-8.37%	-7.33%	-6.90%	-9.38%	-8.50%	-8.71%	-8.34%	-6.54%	-6.98%
68	STONE & GLASS	-0.28%	-0.96%	-1.33%	-1.80%	-1.54%	-1.27%	-4.58%	-4.22%	-4.10%	-3.57%	-3.35%	-3.65%
69		-0.30%	-0.98%	-1.35%	-1.82%	-2.15%	-1.98%	-4.54%	-4.04%	-3.76%	-3.58%	-3.12%	-3.02%
70		-0.31%	-1.00%	-1.28%	-2.03%	-2.18%	-2.33%	-5.00%	-4.49%	-4.05%	-3.54%	-3.85%	-4.07%
71	PRECIOUS STONES	-3.78%	-4.27%	-5.29%	-5.60%	-4.86%	-5.17%	-5.32%	-4.19%	-4.10%	-3.55%	-4.08%	-4.02%
72	BASE METALS	-1.53%	-2.02%	-2.47%	-2.72%	-2.07%	-1.96%	-2.01%	-1.28%	-0.78%	-0.22%	-1.43%	-1.22%
73		-1.19%	-2.13%	-2.40%	-3.19%	-2.86%	-2.77%	-6.49%	-5.81%	-5.69%	-4.51%	-4.98%	-5.26%
74		1.47%	0.91%	0.78%	0.40%	-0.03%	-0.11%	-3.21%	-2.80%	-2.34%	-1.79%	-1.82%	-1.81%
75		-0.09%	-0.57%	-0.74%	-1.01%	-1.23%	-1.10%	-3.39%	-2.79%	-2.13%	-1.80%	-2.16%	-1.99%
76		-0.94%	-1.56%	-1.81%	-2.43%	-2.57%	-2.13%	-3.68%	-3.36%	-2.72%	-2.23%	-2.91%	-3.04%
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78		-0.04%	-0.49%	-0.59%	-0.99%	-1.40%	-1.60%	-3.28%	-2.76%	-2.34%	-1.62%	-2.41%	-2.65%
79		-0.03%	-0.50%	-0.64%	-0.96%	-1.79%	-1.52%	-3.51%	-2.99%	-2.32%	-1.68%	-2.42%	-2.26%
80		-0.18%	-0.70%	-0.83%	-1.19%	-1.42%	-1.12%	-3.28%	-2.86%	-2.42%	-1.86%	-2.12%	-2.50%
81		0.53%	0.24%	0.24%	0.01%	-0.60%	-0.72%	-3.20%	-2.81%	-2.27%	-1.71%	-2.16%	-2.08%
82		-1.73%	-2.73%	-3.03%	-3.78%	-3.37%	-3.46%	-5.92%	-5.33%	-5.44%	-4.56%	-4.78%	-4.76%
83		-1.66%	-2.55%	-2.85%	-3.76%	-2.97%	-2.77%	-6.53%	-5.91%	-5.46%	-5.00%	-4.74%	-4.38%
84		MACHINE	-0.10%	-1.08%	-1.24%	-1.91%	-2.29%	-2.09%	-7.07%	-6.49%	-6.20%	-5.97%	-5.47%
85	-1.96%		-2.71%	-3.03%	-4.26%	-4.02%	-3.93%	-7.49%	-6.13%	-5.83%	-5.92%	-4.63%	-5.04%
86	VEHICLES	0.64%	0.07%	-0.11%	-0.67%	-0.67%	-0.64%	-5.02%	-4.93%	-5.28%	-5.08%	-3.29%	-3.42%
87		1.45%	0.97%	0.78%	0.36%	0.37%	0.53%	-4.44%	-3.95%	-3.93%	-3.69%	-3.64%	-3.00%
88		0.24%	-0.51%	-0.72%	-1.18%	-1.67%	-1.70%	-5.14%	-5.17%	-5.25%	-4.63%	-3.24%	-3.05%
89		0.24%	-0.46%	-0.72%	-1.33%	-1.32%	-1.29%	-5.61%	-4.80%	-4.91%	-4.94%	-3.45%	-3.25%
90	CLOCKS & MUSICAL INST.	-0.44%	-1.48%	-1.85%	-2.56%	-2.74%	-2.47%	-7.16%	-6.73%	-6.88%	-5.76%	-5.32%	-5.39%
91		-0.45%	-1.52%	-1.82%	-2.51%	-2.42%	-2.94%	-7.17%	-6.49%	-6.67%	-6.07%	-5.27%	-4.73%
92		-5.37%	-6.68%	-7.30%	-9.04%	-7.24%	-6.97%	-8.37%	-9.03%	-8.98%	-8.40%	-6.36%	-6.80%
93	ARMS	-0.43%	-1.40%	-1.79%	-2.54%	-2.31%	-2.17%	-6.92%	-6.72%	-6.57%	-6.56%	-5.42%	-5.36%
94	MISC. ART.	-2.64%	-3.47%	-4.10%	-4.91%	-4.23%	-4.48%	-8.40%	-7.34%	-7.98%	-7.14%	-6.01%	-6.42%
95		-5.94%	-6.79%	-7.69%	-9.22%	-8.97%	-7.96%	-8.72%	-8.83%	-8.13%	-8.43%	-6.65%	-7.20%
96		-5.29%	-6.77%	-7.62%	-8.49%	-6.90%	-6.30%	-8.38%	-8.47%	-8.61%	-8.02%	-6.73%	-6.54%
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

Table 7.19 Predicted Annual Growth Rate in Commodity Trade between US and South Korea (Low Growth Scenario)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	2.03%	1.59%	1.48%	1.16%	1.11%	1.18%	-0.66%	-0.78%	-0.91%	-0.81%	-0.36%	-0.16%
02		7.84%	6.56%	6.32%	5.34%	4.71%	5.78%	-4.25%	-4.41%	-4.19%	-4.04%	-3.09%	-2.85%
03		2.56%	2.19%	2.41%	1.73%	1.34%	1.44%	-2.87%	-3.00%	-3.05%	-2.97%	-2.44%	-2.62%
04		4.24%	3.77%	3.57%	2.99%	2.47%	3.13%	-2.04%	-1.84%	-1.53%	-1.26%	-0.80%	-0.58%
05		2.59%	2.28%	2.39%	1.93%	1.28%	1.37%	-2.46%	-2.63%	-2.70%	-2.45%	-1.84%	-1.53%
06	VEGETABLE PRODUCTS	12.58%	13.16%	12.11%	12.61%	10.35%	11.27%	-5.09%	-4.86%	-5.09%	-4.69%	-4.14%	-4.39%
07		4.64%	3.92%	3.73%	3.82%	3.07%	2.97%	-5.83%	-6.04%	-5.76%	-5.54%	-4.70%	-4.77%
08		5.43%	5.39%	4.94%	4.77%	4.20%	4.23%	-6.43%	-6.76%	-6.83%	-5.91%	-5.45%	-5.51%
09		9.30%	8.78%	9.48%	9.61%	7.27%	6.87%	-6.72%	-6.92%	-7.75%	-7.55%	-6.45%	-6.21%
10		8.98%	8.73%	8.68%	8.54%	6.22%	5.94%	-2.99%	-2.93%	-3.09%	-3.13%	-3.56%	-3.36%
11		2.40%	2.27%	2.06%	1.64%	1.63%	1.44%	-2.97%	-3.01%	-2.89%	-2.88%	-2.27%	-2.45%
12		11.34%	10.43%	10.88%	10.06%	8.57%	9.23%	-4.47%	-5.33%	-5.37%	-5.34%	-6.05%	-5.72%
13		2.74%	2.47%	2.14%	1.62%	1.17%	1.28%	-1.56%	-1.37%	-1.18%	-0.91%	-0.58%	-0.71%
14		1.96%	2.20%	2.35%	2.30%	0.94%	0.80%	0.68%	0.89%	1.08%	1.38%	0.98%	0.66%
15	FATS & OILS	-1.02%	-1.95%	-2.51%	-3.43%	-1.87%	-2.05%	-3.02%	-2.72%	-2.88%	-2.67%	-1.90%	-2.13%
16	PREPARED FOODSTUFFS	2.85%	2.49%	2.13%	1.67%	1.32%	1.29%	-5.23%	-5.37%	-5.23%	-5.28%	-4.07%	-4.03%
17		5.10%	4.67%	4.46%	3.78%	3.01%	3.11%	-1.43%	-1.20%	-1.05%	-0.73%	-0.55%	-0.36%
18		3.17%	2.76%	2.52%	2.26%	1.75%	1.88%	-3.68%	-3.58%	-3.57%	-3.73%	-2.59%	-2.55%
19		2.60%	2.29%	2.01%	1.72%	1.26%	1.24%	-3.25%	-3.33%	-3.06%	-2.89%	-2.45%	-2.17%
20		2.53%	2.40%	2.17%	1.61%	1.66%	1.72%	-3.38%	-3.07%	-3.05%	-2.98%	-2.73%	-2.75%
21		2.49%	2.42%	2.39%	1.79%	1.75%	1.86%	-2.97%	-3.21%	-2.85%	-2.99%	-1.82%	-2.29%
22		2.29%	2.14%	2.02%	1.57%	1.62%	1.63%	-0.24%	-0.28%	-0.31%	-0.16%	0.33%	0.21%
23		2.76%	2.54%	2.27%	1.84%	1.66%	1.42%	-2.48%	-2.60%	-2.31%	-2.48%	-2.16%	-2.03%
24		2.75%	2.41%	2.38%	2.34%	1.44%	1.37%	-1.94%	-2.31%	-2.01%	-1.99%	-1.20%	-1.62%
25	MINERAL PRODUCTS	1.90%	1.63%	1.60%	1.08%	0.26%	0.03%	2.14%	2.53%	2.67%	2.63%	2.05%	2.07%
26		-1.74%	-2.54%	-3.45%	-4.15%	-2.49%	-2.59%	2.17%	2.42%	2.48%	2.71%	2.07%	2.28%
27		3.09%	3.19%	3.73%	3.30%	2.24%	2.08%	3.26%	3.20%	3.78%	4.53%	3.00%	2.63%
28	CHEMICAL PRODUCTS	-0.23%	-0.80%	-1.10%	-1.80%	-1.26%	-1.33%	0.28%	0.73%	1.09%	1.44%	0.54%	0.76%
29		-2.40%	-3.53%	-4.03%	-5.66%	-2.68%	-2.42%	0.13%	0.55%	0.97%	1.27%	0.67%	0.89%
30		-2.42%	-3.27%	-4.01%	-5.34%	-2.90%	-3.01%	0.11%	0.55%	0.86%	1.32%	0.47%	0.63%
31		-2.56%	-3.40%	-4.50%	-5.53%	-3.08%	-3.18%	0.25%	0.60%	0.95%	1.44%	0.69%	0.98%
32		-2.49%	-3.23%	-4.49%	-5.15%	-3.03%	-3.01%	0.13%	0.51%	0.96%	1.32%	0.55%	0.50%
33		-2.43%	-3.21%	-4.27%	-5.31%	-3.02%	-2.82%	0.13%	0.58%	0.83%	1.47%	0.74%	0.95%
34		-2.33%	-3.35%	-3.96%	-5.24%	-3.03%	-2.65%	0.08%	0.52%	0.88%	1.23%	0.84%	1.06%
35		-1.84%	-2.77%	-3.37%	-4.62%	-2.79%	-2.74%	-0.33%	0.10%	0.43%	0.85%	0.03%	0.19%
36		-2.22%	-3.15%	-4.06%	-4.76%	-3.44%	-3.41%	-0.69%	-0.21%	0.16%	0.60%	-0.16%	-0.30%
37		-2.53%	-3.37%	-4.11%	-5.44%	-3.02%	-3.37%	0.14%	0.50%	0.93%	1.45%	0.58%	0.72%
38		-1.61%	-2.62%	-3.31%	-4.41%	-2.54%	-2.61%	-0.04%	0.38%	0.81%	1.26%	0.24%	0.53%
39	PLASTICS	-2.32%	-3.46%	-4.21%	-5.67%	-2.79%	-2.61%	0.13%	0.51%	0.85%	1.27%	0.40%	0.49%
40		-2.45%	-3.26%	-4.45%	-5.20%	-2.44%	-2.21%	0.17%	0.62%	0.95%	1.42%	0.61%	0.47%
41	LEATHER GOODS	-6.66%	-6.57%	-7.30%	-7.88%	-7.60%	-7.52%	-6.77%	-6.13%	-6.18%	-6.23%	-5.51%	-4.99%
42		-2.24%	-2.49%	-2.86%	-3.56%	-3.61%	-3.55%	-7.75%	-8.50%	-7.61%	-7.91%	-6.27%	-5.70%
43		1.97%	1.66%	1.45%	1.25%	1.15%	1.16%	-0.84%	-1.00%	-1.10%	-1.14%	-0.56%	-0.60%
44	WOOD PRODUCTS	-0.70%	-1.37%	-2.06%	-2.74%	-1.55%	-1.47%	0.07%	0.25%	0.57%	0.86%	0.15%	0.14%
45		1.31%	0.95%	0.68%	0.19%	0.31%	0.39%	0.40%	0.61%	0.86%	1.17%	0.72%	1.02%
46		1.24%	0.64%	0.29%	-0.41%	0.28%	0.34%	-3.33%	-3.21%	-3.19%	-2.85%	-2.60%	-2.52%
47	PAPER	2.51%	2.10%	1.97%	1.43%	1.26%	1.09%	-1.40%	-1.32%	-1.05%	-0.80%	-0.38%	-0.01%
48		2.38%	2.05%	1.92%	1.49%	1.01%	1.18%	-1.38%	-1.21%	-1.13%	-0.77%	-0.29%	-0.27%
49		2.61%	2.33%	1.95%	1.57%	1.00%	1.06%	-1.41%	-1.22%	-1.07%	-0.83%	-0.42%	-0.53%

Table 7.19 Predicted Annual Growth Rate in Commodity Trade between US and South Korea (Low Growth Scenario) (cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-0.60%	-1.19%	-1.78%	-2.54%	-1.87%	-1.70%	-9.37%	-9.15%	-8.93%	-9.35%	-7.68%	-8.24%
51		-0.61%	-1.31%	-1.80%	-2.76%	-2.50%	-2.71%	-9.82%	-9.70%	-9.72%	-9.65%	-8.45%	-8.09%
52		-0.57%	-1.32%	-1.68%	-2.81%	-2.25%	-2.15%	-5.70%	-5.51%	-5.54%	-5.27%	-5.19%	-5.01%
53		-0.59%	-1.37%	-1.70%	-2.83%	-2.42%	-2.12%	-1.36%	-1.39%	-1.36%	-1.55%	-1.61%	-1.35%
54		-0.62%	-1.20%	-1.89%	-2.78%	-1.87%	-2.01%	-9.26%	-9.81%	-9.85%	-9.26%	-7.74%	-7.48%
55		-0.61%	-1.37%	-1.70%	-2.67%	-2.04%	-2.10%	-9.68%	-8.81%	-9.29%	-8.57%	-8.19%	-7.72%
56		-0.63%	-1.36%	-1.89%	-2.70%	-2.21%	-1.87%	-9.29%	-9.86%	-9.25%	-9.03%	-8.20%	-8.24%
57		-0.61%	-1.29%	-1.78%	-2.83%	-2.06%	-2.15%	-9.25%	-8.81%	-9.41%	-8.80%	-7.41%	-7.58%
58		-0.57%	-1.32%	-1.89%	-2.79%	-1.92%	-2.02%	-9.79%	-9.84%	-9.79%	-9.38%	-8.28%	-8.28%
59		-1.05%	-1.73%	-2.37%	-3.33%	-2.60%	-2.79%	-2.12%	-1.79%	-1.22%	-0.79%	-1.44%	-1.38%
60		-0.57%	-1.24%	-1.81%	-2.84%	-2.12%	-2.14%	-9.42%	-9.44%	-9.83%	-9.10%	-8.40%	-8.39%
61		0.37%	-0.15%	-0.51%	-1.32%	-1.40%	-1.41%	-9.69%	-9.14%	-9.22%	-8.55%	-7.73%	-7.36%
62		0.60%	0.10%	-0.23%	-1.08%	-1.13%	-1.27%	-9.22%	-9.69%	-9.46%	-8.51%	-7.70%	-7.80%
63	-0.20%	-0.83%	-1.35%	-2.22%	-2.12%	-2.38%	-7.03%	-6.04%	-5.83%	-6.08%	-5.34%	-5.19%	
64	FOOTWEAR	-6.51%	-6.54%	-7.70%	-8.42%	-8.61%	-8.33%	-9.45%	-8.87%	-9.74%	-9.42%	-7.53%	-7.23%
65		-0.16%	-0.90%	-1.29%	-2.19%	-1.51%	-1.19%	-1.24%	-0.65%	-0.18%	0.34%	-0.94%	-0.98%
66		-1.62%	-2.40%	-2.95%	-3.91%	-3.68%	-3.92%	-5.55%	-6.23%	-6.39%	-6.15%	-3.80%	-4.24%
67		-1.77%	-2.37%	-3.11%	-3.94%	-3.65%	-3.94%	-5.86%	-5.53%	-5.99%	-5.53%	-3.54%	-3.96%
68	STONE & GLASS	2.35%	1.96%	2.13%	1.56%	0.60%	0.44%	-2.92%	-2.46%	-2.24%	-2.04%	-1.61%	-1.37%
69		2.29%	1.99%	2.21%	1.79%	1.07%	0.77%	-2.64%	-2.54%	-2.14%	-1.84%	-1.57%	-1.71%
70		2.34%	2.17%	2.03%	1.61%	0.82%	0.86%	-2.94%	-2.55%	-2.47%	-2.01%	-1.45%	-1.46%
71	PRECIOUS STONES	-0.24%	-0.72%	-0.93%	-1.59%	-1.64%	-1.30%	-1.05%	-0.64%	-0.25%	0.17%	-0.46%	-0.39%
72	BASE METALS	1.81%	1.70%	1.75%	1.45%	0.46%	0.68%	0.17%	0.57%	0.90%	1.40%	0.58%	0.46%
73		2.17%	2.11%	1.76%	1.45%	0.71%	0.65%	-3.77%	-3.22%	-2.60%	-2.15%	-2.19%	-1.87%
74		3.47%	3.53%	3.42%	2.84%	2.04%	2.58%	-0.98%	-0.61%	-0.31%	0.11%	-0.06%	-0.35%
75		2.16%	2.26%	2.13%	1.80%	0.88%	0.95%	-0.80%	-0.22%	0.20%	0.61%	-0.25%	-0.21%
76		2.18%	2.17%	1.85%	1.55%	0.65%	0.59%	-1.49%	-0.87%	-0.39%	0.12%	-0.56%	-0.77%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		1.99%	2.20%	2.16%	1.91%	0.78%	0.68%	-0.75%	-0.20%	0.20%	0.61%	0.06%	0.07%
79		2.32%	2.11%	2.00%	1.79%	0.81%	0.60%	-0.76%	-0.18%	0.22%	0.63%	0.19%	0.03%
80		2.18%	1.95%	1.89%	1.94%	1.15%	1.11%	-0.78%	-0.26%	0.18%	0.61%	0.14%	0.13%
81		2.05%	2.07%	2.38%	2.17%	1.17%	1.03%	-0.55%	0.00%	0.34%	0.81%	0.33%	0.24%
82		2.23%	1.97%	1.94%	1.35%	0.42%	0.24%	-4.83%	-4.45%	-4.13%	-3.76%	-3.38%	-3.99%
83		2.28%	1.88%	1.77%	1.35%	0.31%	0.53%	-4.76%	-4.57%	-4.01%	-3.79%	-3.58%	-3.48%
84		MACHINE	2.95%	2.67%	2.51%	1.96%	1.83%	1.91%	-3.62%	-3.04%	-2.95%	-2.54%	-2.34%
85	1.58%		1.17%	1.18%	0.66%	0.74%	0.67%	-3.56%	-3.30%	-3.00%	-2.68%	-2.60%	-2.23%
86	VEHICLES	4.05%	4.38%	3.94%	4.01%	2.77%	2.73%	-3.09%	-3.34%	-3.46%	-3.02%	-1.03%	-0.82%
87		3.98%	3.80%	3.35%	3.21%	2.88%	2.98%	-2.53%	-2.51%	-2.37%	-2.08%	-1.85%	-1.70%
88		4.57%	4.58%	4.33%	4.38%	2.20%	2.67%	-3.24%	-3.16%	-3.11%	-3.23%	-1.24%	-1.46%
89		5.06%	4.44%	4.93%	4.62%	2.29%	2.40%	-3.03%	-3.22%	-3.48%	-3.12%	-1.10%	-0.83%
90	CLOCKS & MUSICAL INST.	3.36%	3.11%	2.88%	2.38%	1.00%	0.76%	-3.47%	-2.89%	-2.88%	-2.44%	-1.85%	-2.11%
91		2.99%	2.79%	2.89%	2.26%	1.22%	1.09%	-3.57%	-2.92%	-2.68%	-2.30%	-1.94%	-1.70%
92		-1.84%	-2.46%	-2.87%	-4.07%	-3.66%	-3.55%	-5.69%	-5.88%	-6.28%	-5.94%	-3.52%	-4.05%
93	ARMS	3.01%	2.95%	2.55%	2.33%	0.94%	0.85%	-3.67%	-3.08%	-3.00%	-2.59%	-1.79%	-1.43%
94	MISC. ART.	1.03%	0.64%	0.41%	-0.15%	-1.02%	-0.88%	-4.24%	-3.82%	-3.39%	-3.32%	-2.57%	-2.48%
95		-1.74%	-2.46%	-2.91%	-4.11%	-3.79%	-4.19%	-6.06%	-5.62%	-6.16%	-6.25%	-3.71%	-3.51%
96		-1.75%	-2.35%	-3.10%	-3.84%	-3.99%	-4.31%	-5.91%	-6.15%	-6.18%	-6.02%	-3.40%	-3.39%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

**Table 7.20 Predicted Annual Growth Rate in Commodity Trade
between US and ASEAN (Low Growth Scenario)**

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	2.42%	2.48%	2.22%	1.89%	1.35%	1.27%	-0.35%	-0.34%	-0.70%	-0.62%	0.09%	0.35%
02		5.64%	5.74%	4.95%	5.26%	4.91%	4.82%	-5.85%	-6.03%	-6.64%	-6.55%	-4.27%	-4.41%
03		3.07%	3.13%	2.50%	2.07%	2.29%	2.19%	-1.25%	-1.02%	-1.23%	-0.94%	-0.30%	-0.11%
04		3.25%	3.24%	2.39%	2.06%	2.23%	2.02%	-0.69%	-0.31%	-0.32%	-0.07%	0.33%	0.63%
05		3.15%	3.17%	2.79%	2.30%	2.29%	2.13%	-1.13%	-0.92%	-1.06%	-0.94%	-0.39%	-0.58%
06	VEGETABLE PRODUCTS	4.60%	5.16%	4.37%	4.44%	4.52%	4.23%	-2.52%	-2.93%	-2.84%	-3.28%	-2.65%	-2.45%
07		3.13%	3.44%	2.91%	2.42%	2.58%	2.39%	-3.10%	-3.11%	-2.97%	-2.86%	-2.57%	-2.47%
08		3.60%	3.72%	3.17%	3.10%	2.83%	3.04%	-3.60%	-3.63%	-3.93%	-3.72%	-3.32%	-3.33%
09		4.70%	5.20%	4.15%	4.76%	4.49%	4.99%	-2.49%	-2.46%	-2.77%	-2.61%	-2.27%	-2.62%
10		1.56%	1.63%	1.10%	0.93%	1.97%	1.79%	-2.80%	-3.19%	-4.57%	-5.14%	-5.55%	-6.11%
11		3.12%	3.13%	2.45%	2.26%	2.14%	2.15%	-1.33%	-1.08%	-1.28%	-1.02%	-0.86%	-0.97%
12		5.32%	5.49%	4.50%	4.62%	4.38%	5.10%	-0.27%	-0.37%	-0.44%	-0.51%	-0.55%	-0.68%
13		3.39%	3.57%	3.13%	3.05%	2.38%	2.26%	-1.54%	-1.26%	-1.32%	-1.20%	-1.13%	-1.17%
14		4.16%	4.71%	4.14%	4.27%	3.40%	3.80%	-1.76%	-1.56%	-1.50%	-1.50%	-1.57%	-1.26%
15	FATS & OILS	4.84%	4.74%	4.37%	4.09%	3.80%	3.56%	-1.83%	-1.79%	-1.86%	-1.89%	-1.80%	-1.92%
16	PREPARED FOODSTUFFS	3.41%	3.11%	2.44%	2.16%	2.13%	2.03%	-3.77%	-4.06%	-3.85%	-3.76%	-3.00%	-3.08%
17		6.07%	5.78%	5.17%	4.95%	4.89%	4.90%	-0.72%	-0.28%	-0.31%	-0.05%	0.42%	0.20%
18		3.45%	3.18%	2.63%	2.43%	2.46%	2.44%	-1.51%	-1.23%	-1.33%	-1.11%	-0.37%	-0.18%
19		2.97%	3.22%	2.42%	2.00%	2.37%	2.21%	-1.42%	-1.17%	-1.24%	-1.13%	-0.82%	-0.48%
20		3.05%	2.97%	2.31%	1.95%	2.51%	2.32%	-1.36%	-1.09%	-1.24%	-1.01%	-0.63%	-0.43%
21		3.36%	3.00%	2.29%	2.23%	2.35%	2.27%	-1.07%	-0.89%	-0.92%	-0.73%	0.00%	-0.23%
22		2.55%	2.16%	2.04%	1.76%	1.65%	1.45%	0.48%	0.72%	0.40%	0.59%	1.04%	1.24%
23		4.39%	4.47%	3.83%	4.12%	3.24%	3.06%	-1.74%	-1.85%	-1.69%	-1.80%	-1.64%	-1.80%
24		4.52%	4.53%	3.98%	3.89%	3.51%	3.13%	0.19%	0.31%	0.08%	0.15%	0.29%	0.37%
25	MINERAL PRODUCTS	2.78%	3.07%	2.34%	1.81%	2.37%	1.99%	2.99%	3.01%	2.71%	2.84%	3.14%	3.00%
26		3.86%	3.76%	3.12%	3.12%	2.87%	2.40%	3.52%	3.45%	3.22%	3.50%	3.53%	3.64%
27		9.19%	9.34%	9.03%	9.60%	6.90%	6.55%	5.17%	6.01%	5.60%	6.39%	4.17%	4.09%
28	CHEMICAL PRODUCTS	4.27%	4.27%	3.79%	3.06%	3.04%	2.90%	0.41%	0.85%	0.80%	1.34%	0.71%	0.52%
29		4.19%	4.30%	3.39%	3.19%	3.14%	2.92%	-0.10%	0.41%	0.31%	0.70%	0.66%	0.42%
30		3.64%	3.62%	3.17%	3.13%	2.89%	2.81%	-0.14%	0.38%	0.30%	0.64%	0.30%	0.41%
31		3.83%	4.23%	3.46%	3.08%	3.27%	3.12%	-0.05%	0.45%	0.34%	0.72%	0.80%	1.01%
32		3.97%	4.00%	3.37%	3.34%	3.19%	3.31%	-0.10%	0.40%	0.31%	0.66%	0.31%	0.55%
33		4.35%	3.88%	3.79%	3.46%	2.99%	3.32%	-0.10%	0.39%	0.30%	0.69%	0.43%	0.50%
34		3.38%	3.45%	2.82%	2.59%	2.39%	2.22%	-0.20%	0.31%	0.23%	0.59%	0.67%	0.80%
35		3.75%	3.44%	3.15%	2.75%	2.57%	2.55%	-0.39%	0.12%	0.04%	0.33%	0.39%	0.24%
36		0.80%	0.59%	-0.31%	-0.98%	-0.26%	-0.27%	-0.97%	-0.45%	-0.65%	-0.22%	0.21%	-0.02%
37		3.87%	3.97%	3.61%	3.05%	2.77%	3.04%	-0.11%	0.44%	0.29%	0.60%	0.80%	0.76%
38		3.82%	4.38%	3.26%	3.17%	2.68%	3.07%	-0.35%	0.22%	0.11%	0.45%	0.47%	0.50%
39	PLASTICS	4.03%	3.86%	3.51%	3.31%	3.38%	3.29%	-0.10%	0.41%	0.33%	0.67%	0.80%	0.97%
40		3.84%	4.59%	3.71%	3.55%	2.94%	2.69%	-0.14%	0.37%	0.26%	0.63%	0.82%	1.02%
41	LEATHER GOODS	-4.33%	-4.96%	-5.81%	-5.98%	-5.70%	-6.16%	-4.08%	-4.18%	-4.65%	-4.32%	-3.03%	-3.03%
42		-1.36%	-1.78%	-2.70%	-3.52%	-2.51%	-2.49%	-4.83%	-4.76%	-4.88%	-5.20%	-3.82%	-3.84%
43		2.28%	2.52%	1.92%	1.69%	1.82%	1.79%	-0.37%	-0.33%	-0.67%	-0.65%	0.29%	0.38%
44	WOOD PRODUCTS	3.63%	3.52%	3.38%	2.96%	2.27%	2.74%	-1.76%	-1.48%	-1.51%	-1.42%	-1.24%	-1.51%
45		3.95%	4.27%	3.88%	3.67%	2.79%	2.99%	-1.85%	-1.81%	-2.03%	-1.98%	-1.71%	-1.90%
46		2.42%	2.12%	1.38%	0.90%	1.47%	1.31%	-2.45%	-2.21%	-2.83%	-2.76%	-1.44%	-1.17%
47	PAPER	4.07%	3.71%	2.84%	2.76%	2.79%	2.57%	-0.38%	0.09%	-0.10%	0.21%	0.35%	0.39%
48		4.03%	3.71%	3.02%	2.57%	2.82%	2.79%	-0.39%	0.08%	-0.11%	0.21%	0.72%	0.98%
49		4.01%	3.50%	3.12%	2.53%	2.63%	2.80%	-0.38%	0.08%	-0.10%	0.21%	0.30%	0.41%

Table 7.20 Predicted Annual Growth Rate in Commodity Trade between US and ASEAN (Low Growth Scenario) (cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	1.15%	0.86%	-0.05%	-0.73%	0.39%	0.60%	-7.32%	-6.72%	-7.49%	-7.04%	-5.70%	-5.52%
51		1.09%	0.85%	-0.05%	-0.74%	0.11%	0.27%	-6.40%	-6.95%	-6.65%	-6.47%	-6.28%	-5.74%
52		1.11%	0.90%	-0.05%	-0.79%	0.54%	0.82%	-0.69%	-0.24%	-0.71%	-0.54%	-0.86%	-0.74%
53		1.23%	0.90%	-0.05%	-0.73%	0.21%	0.33%	1.99%	2.01%	1.54%	1.60%	1.38%	1.18%
54		1.22%	0.84%	-0.05%	-0.82%	0.20%	0.02%	-7.05%	-7.02%	-6.98%	-6.95%	-5.71%	-6.06%
55		1.12%	0.89%	-0.05%	-0.80%	0.48%	0.50%	-7.05%	-6.54%	-7.50%	-6.47%	-5.77%	-5.71%
56		1.22%	0.81%	-0.05%	-0.81%	0.46%	0.44%	-7.04%	-6.44%	-6.60%	-6.74%	-6.05%	-5.50%
57		1.13%	0.90%	-0.05%	-0.78%	0.59%	0.72%	-6.95%	-6.28%	-6.98%	-7.24%	-5.53%	-5.84%
58		1.25%	0.81%	-0.05%	-0.75%	0.14%	0.13%	-6.65%	-6.58%	-7.27%	-6.90%	-5.48%	-5.35%
59		0.82%	0.48%	-0.47%	-1.12%	-0.17%	0.07%	-2.53%	-1.88%	-1.96%	-1.69%	-1.05%	-1.24%
60		1.25%	0.91%	-0.05%	-0.80%	0.40%	0.32%	-6.50%	-6.59%	-7.34%	-7.30%	-5.55%	-6.16%
61		1.06%	0.78%	-0.06%	-0.81%	0.39%	0.53%	-6.62%	-6.89%	-7.24%	-7.14%	-6.10%	-5.72%
62		1.14%	0.76%	-0.06%	-0.76%	0.07%	0.07%	-6.59%	-6.91%	-7.29%	-6.48%	-5.30%	-5.00%
63	1.25%	0.92%	0.04%	-0.70%	0.29%	0.31%	-5.16%	-5.19%	-5.24%	-4.94%	-4.11%	-4.29%	
64	FOOTWEAR	-4.57%	-5.15%	-5.97%	-6.24%	-5.50%	-5.82%	-7.13%	-6.07%	-6.91%	-6.90%	-5.48%	-5.21%
65		1.28%	0.82%	0.08%	-0.63%	0.24%	0.13%	-0.54%	0.08%	-0.02%	0.33%	0.28%	0.22%
66		-0.79%	-1.32%	-2.75%	-3.82%	-1.51%	-1.90%	-3.67%	-3.53%	-3.67%	-3.46%	-1.69%	-1.64%
67		-0.75%	-1.35%	-2.72%	-3.64%	-1.86%	-2.32%	-3.90%	-3.43%	-3.55%	-3.28%	-2.03%	-1.90%
68	STONE & GLASS	3.00%	2.90%	1.97%	1.78%	2.03%	1.86%	-1.57%	-0.85%	-0.93%	-0.53%	-0.07%	0.16%
69		3.07%	2.88%	2.15%	1.58%	2.10%	1.95%	-1.40%	-0.86%	-0.92%	-0.52%	-0.66%	-0.49%
70		2.93%	2.38%	1.94%	1.32%	1.65%	1.76%	-1.59%	-1.04%	-1.11%	-0.64%	-0.46%	-0.46%
71	PRECIOUS STONES	-0.13%	-0.60%	-1.69%	-2.66%	-1.19%	-1.55%	-1.39%	-0.81%	-1.05%	-0.59%	-0.22%	-0.01%
72	BASE METALS	2.92%	2.67%	2.60%	2.16%	2.01%	2.35%	1.22%	1.69%	1.48%	2.24%	1.96%	1.91%
73		2.65%	2.64%	1.77%	1.36%	1.67%	1.67%	-2.50%	-1.67%	-2.03%	-1.42%	-0.69%	-0.58%
74		4.48%	4.32%	4.16%	3.58%	3.36%	3.44%	-0.27%	0.31%	0.08%	0.46%	1.31%	1.02%
75		4.10%	4.29%	3.70%	3.52%	2.79%	2.69%	-0.16%	0.58%	0.45%	0.86%	0.73%	0.56%
76		3.13%	3.31%	2.59%	2.32%	2.05%	2.15%	-1.14%	-0.35%	-0.45%	0.12%	0.37%	0.23%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		4.06%	4.33%	3.32%	3.27%	3.12%	3.20%	-0.10%	0.60%	0.48%	0.94%	0.84%	0.61%
79		4.07%	3.95%	3.86%	3.40%	2.88%	3.23%	-0.10%	0.61%	0.44%	0.88%	0.94%	1.16%
80		3.80%	4.33%	3.65%	3.37%	3.10%	3.20%	-0.21%	0.53%	0.33%	0.79%	0.77%	1.05%
81		4.81%	5.08%	4.32%	4.04%	3.63%	3.55%	0.27%	0.90%	0.82%	1.29%	1.53%	1.76%
82		2.46%	2.02%	1.26%	0.73%	1.33%	1.10%	-3.12%	-2.37%	-2.44%	-1.77%	-1.57%	-1.86%
83		2.36%	2.06%	1.14%	0.74%	1.49%	1.37%	-3.16%	-2.49%	-2.26%	-1.77%	-1.29%	-1.25%
84		MACHINE	2.52%	2.14%	1.38%	0.95%	0.98%	0.89%	-3.14%	-2.73%	-2.87%	-2.48%	-2.49%
85	1.37%		1.14%	0.42%	-0.07%	-0.47%	-0.64%	-2.83%	-2.36%	-2.90%	-2.42%	-0.88%	-0.96%
86	VEHICLES	6.11%	6.22%	4.78%	4.58%	5.14%	4.88%	-2.73%	-2.64%	-3.03%	-2.88%	-0.41%	-0.28%
87		4.72%	4.72%	3.68%	3.60%	2.88%	2.75%	-2.19%	-1.81%	-2.09%	-2.02%	-2.25%	-1.74%
88		5.44%	5.50%	4.71%	4.59%	4.65%	4.58%	-3.06%	-2.56%	-2.92%	-2.71%	-0.47%	-0.39%
89		5.43%	5.83%	5.09%	4.70%	4.98%	4.93%	-2.81%	-2.65%	-3.19%	-2.63%	-0.49%	-0.43%
90	CLOCKS & MUSICAL INST.	3.57%	3.48%	2.72%	2.17%	2.56%	2.54%	-3.53%	-2.83%	-3.13%	-2.95%	-1.22%	-1.38%
91		3.75%	3.67%	2.81%	2.12%	2.82%	2.44%	-3.62%	-3.05%	-3.02%	-2.58%	-1.07%	-1.07%
92		-0.73%	-1.39%	-2.58%	-3.50%	-1.69%	-1.44%	-3.51%	-3.27%	-3.74%	-3.73%	-2.38%	-2.39%
93	ARMS	4.16%	3.80%	2.84%	2.29%	2.48%	2.75%	-3.68%	-2.74%	-3.14%	-2.76%	-1.34%	-1.37%
94	MISC. ART.	-0.02%	-0.52%	-1.64%	-2.56%	-1.05%	-0.79%	-3.62%	-2.97%	-3.19%	-3.03%	-1.22%	-1.19%
95		-0.79%	-1.41%	-2.70%	-3.64%	-3.81%	-4.19%	-3.77%	-3.35%	-3.82%	-3.50%	-1.78%	-1.55%
96		-0.76%	-1.39%	-2.56%	-3.71%	-1.85%	-2.20%	-3.83%	-3.15%	-3.91%	-3.38%	-2.30%	-2.47%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

Table 7.21 Predicted Annual Growth Rate in Commodity Trade between US and EU-27 (Low Growth Scenario)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.74%	0.58%	0.56%	0.22%	0.00%	-0.24%	-1.46%	-1.24%	-1.18%	-0.83%	-1.38%	-1.41%
02		2.50%	1.78%	1.12%	0.33%	1.47%	1.65%	-2.93%	-1.88%	-1.38%	-0.65%	-2.31%	-2.18%
03		0.85%	0.44%	0.31%	-0.18%	0.12%	0.33%	-1.50%	-1.01%	-0.71%	-0.37%	-1.49%	-1.65%
04		2.31%	1.58%	1.47%	0.97%	1.29%	1.05%	-2.17%	-1.62%	-1.18%	-0.68%	-2.31%	-2.11%
05		0.94%	0.64%	0.50%	0.12%	0.03%	0.05%	-1.14%	-0.86%	-0.60%	-0.33%	-1.51%	-1.63%
06	VEGETABLE PRODUCTS	-0.64%	-0.94%	-0.86%	-1.16%	-0.93%	-0.71%	-0.50%	-0.37%	-0.19%	-0.21%	-1.31%	-1.18%
07		0.56%	0.25%	0.14%	-0.21%	0.18%	0.02%	-2.61%	-2.60%	-2.25%	-2.29%	-2.04%	-2.12%
08		0.28%	0.16%	0.15%	0.00%	-0.09%	-0.34%	-2.38%	-2.38%	-2.65%	-2.65%	-2.53%	-2.40%
09		-0.38%	-0.74%	-0.67%	-1.18%	-0.54%	-0.25%	-0.34%	-0.18%	-0.05%	-0.09%	-1.11%	-0.88%
10		-1.49%	-1.65%	-1.35%	-1.55%	-1.22%	-1.53%	-1.26%	-1.11%	-1.02%	-1.09%	-0.92%	-0.88%
11		1.15%	0.89%	0.64%	0.24%	0.24%	0.16%	-1.76%	-1.19%	-0.99%	-0.54%	-1.68%	-2.03%
12		-0.45%	-0.78%	-0.79%	-1.20%	-0.84%	-0.66%	-0.23%	-0.02%	0.15%	0.18%	0.29%	0.35%
13		0.83%	0.40%	0.21%	-0.30%	-0.17%	-0.06%	-1.96%	-1.73%	-1.36%	-0.80%	-2.24%	-2.20%
14		0.51%	0.35%	0.47%	0.15%	-0.11%	-0.27%	-2.52%	-1.89%	-1.63%	-1.16%	-2.25%	-1.99%
15	FATS & OILS	-0.08%	-0.64%	-0.59%	-1.31%	-0.91%	-1.07%	-1.60%	-1.08%	-0.61%	-0.16%	-1.72%	-1.96%
16	PREPARED FOODSTUFFS	1.14%	0.81%	0.48%	-0.20%	0.32%	0.14%	-2.19%	-1.57%	-1.25%	-0.73%	-1.95%	-1.84%
17		2.36%	1.91%	1.66%	1.05%	1.24%	1.40%	-1.63%	-1.05%	-0.63%	-0.15%	-1.98%	-2.13%
18		0.63%	0.25%	0.07%	-0.49%	0.16%	0.19%	-1.57%	-1.18%	-0.97%	-0.58%	-2.14%	-1.91%
19		0.78%	0.32%	0.15%	-0.46%	-0.23%	-0.21%	-1.83%	-1.51%	-1.10%	-0.62%	-1.84%	-1.88%
20		0.78%	0.33%	0.14%	-0.46%	0.02%	0.12%	-1.83%	-1.48%	-1.13%	-0.61%	-1.89%	-1.69%
21		1.01%	0.65%	0.39%	-0.10%	0.41%	0.30%	-1.80%	-1.35%	-1.08%	-0.70%	-1.67%	-1.80%
22		1.47%	1.22%	1.04%	0.64%	0.40%	0.30%	-1.21%	-0.88%	-0.67%	-0.31%	-1.13%	-0.94%
23		-0.05%	-0.58%	-0.55%	-1.22%	-0.78%	-0.58%	-1.64%	-1.18%	-0.83%	-0.41%	-2.19%	-2.02%
24		1.38%	1.10%	1.04%	0.65%	0.69%	0.57%	-1.01%	-0.78%	-0.55%	-0.32%	-1.09%	-1.27%
25	MINERAL PRODUCTS	0.86%	0.78%	0.73%	0.58%	0.54%	0.47%	0.08%	0.33%	0.52%	0.87%	-0.32%	-0.34%
26		1.10%	1.15%	1.19%	1.26%	0.46%	0.37%	0.15%	0.37%	0.64%	0.86%	0.15%	0.24%
27		3.11%	3.27%	3.46%	3.08%	1.81%	2.04%	1.47%	2.07%	2.74%	3.05%	0.57%	0.81%
28	CHEMICAL PRODUCTS	0.95%	0.69%	0.43%	-0.01%	0.43%	0.44%	-1.70%	-0.99%	-0.36%	0.29%	-1.81%	-1.52%
29		0.63%	0.28%	0.02%	-0.64%	0.24%	0.13%	-1.88%	-1.14%	-0.59%	0.05%	-1.79%	-1.74%
30		0.65%	0.24%	0.00%	-0.72%	-0.07%	-0.08%	-1.92%	-1.14%	-0.66%	0.04%	-1.56%	-1.69%
31		0.74%	0.30%	0.04%	-0.63%	-0.30%	-0.29%	-1.90%	-1.19%	-0.62%	0.08%	-1.77%	-1.61%
32		0.67%	0.26%	0.02%	-0.65%	-0.12%	-0.43%	-1.86%	-1.26%	-0.66%	0.06%	-1.70%	-2.08%
33		0.65%	0.28%	0.02%	-0.66%	0.02%	-0.04%	-1.92%	-1.17%	-0.66%	0.05%	-1.97%	-2.26%
34		0.51%	0.14%	-0.16%	-0.84%	0.03%	-0.26%	-1.91%	-1.35%	-0.74%	-0.03%	-1.60%	-1.44%
35		0.81%	0.40%	0.14%	-0.48%	0.03%	-0.26%	-1.86%	-1.29%	-0.69%	0.02%	-1.40%	-1.66%
36		-0.77%	-1.50%	-1.88%	-2.42%	-1.88%	-2.11%	-2.80%	-2.34%	-1.75%	-1.02%	-2.54%	-2.36%
37		0.68%	0.28%	0.02%	-0.69%	0.18%	0.00%	-1.83%	-1.22%	-0.60%	0.05%	-1.86%	-1.99%
38		0.66%	0.20%	-0.07%	-0.79%	-0.25%	-0.52%	-1.99%	-1.33%	-0.66%	0.00%	-1.46%	-1.84%
39	PLASTICS	0.70%	0.26%	0.02%	-0.66%	-0.14%	0.05%	-1.97%	-1.19%	-0.62%	0.05%	-2.14%	-1.67%
40		0.67%	0.29%	0.02%	-0.64%	0.17%	-0.08%	-1.86%	-1.24%	-0.69%	0.03%	-1.45%	-1.76%
41	LEATHER GOODS	-8.84%	-10.48%	-10.51%	-11.03%	-9.42%	-10.00%	-5.14%	-4.60%	-4.46%	-4.28%	-4.61%	-3.99%
42		-7.60%	-8.33%	-8.24%	-9.56%	-7.62%	-7.51%	-6.66%	-6.73%	-5.97%	-5.61%	-5.91%	-6.32%
43		0.70%	0.49%	0.34%	0.05%	-0.26%	-0.53%	-1.76%	-1.50%	-1.49%	-1.19%	-1.74%	-1.63%
44	WOOD PRODUCTS	0.85%	0.27%	-0.02%	-0.77%	0.04%	0.14%	-3.05%	-2.45%	-2.06%	-1.45%	-2.91%	-2.85%
45		0.87%	0.36%	0.03%	-0.67%	0.10%	-0.01%	-3.23%	-2.70%	-1.98%	-1.59%	-3.09%	-3.26%
46		0.83%	0.24%	-0.09%	-0.92%	0.11%	-0.08%	-3.48%	-3.04%	-2.31%	-1.82%	-3.31%	-3.52%
47	PAPER	0.97%	0.59%	0.23%	-0.46%	0.30%	0.35%	-2.55%	-1.78%	-1.10%	-0.48%	0.03%	0.24%
48		1.10%	0.58%	0.22%	-0.45%	0.24%	0.23%	-2.33%	-1.78%	-1.16%	-0.49%	-2.14%	-2.48%
49		1.08%	0.50%	0.23%	-0.48%	0.35%	0.23%	-2.32%	-1.65%	-1.14%	-0.47%	-2.37%	-2.35%

Table 7.21 Predicted Annual Growth Rate in Commodity Trade between US and EU-27 (Low Growth Scenario)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-3.15%	-3.68%	-4.13%	-5.66%	-3.34%	-3.65%	-5.49%	-4.72%	-4.45%	-3.98%	-4.73%	-4.76%
51		-3.00%	-3.67%	-4.49%	-5.42%	-3.17%	-2.98%	-5.56%	-5.07%	-4.64%	-3.92%	-5.07%	-4.89%
52		-2.81%	-3.63%	-4.21%	-5.08%	-4.02%	-3.87%	-5.65%	-4.56%	-4.77%	-4.10%	-4.69%	-4.79%
53		-2.62%	-3.38%	-4.29%	-5.16%	-3.06%	-2.90%	-3.29%	-2.71%	-2.44%	-2.36%	-3.37%	-3.19%
54		-2.94%	-3.59%	-4.41%	-5.57%	-3.78%	-3.94%	-5.79%	-4.75%	-4.80%	-4.00%	-4.64%	-4.17%
55		-2.95%	-3.90%	-4.22%	-5.29%	-3.14%	-3.00%	-5.46%	-4.82%	-4.68%	-4.42%	-4.32%	-4.55%
56		-3.09%	-3.81%	-4.06%	-5.45%	-3.22%	-2.77%	-5.51%	-5.10%	-4.73%	-4.07%	-4.99%	-4.33%
57		-2.92%	-3.69%	-4.66%	-5.60%	-3.29%	-3.66%	-5.28%	-4.52%	-4.34%	-4.16%	-5.26%	-5.68%
58		-3.09%	-3.63%	-4.13%	-5.19%	-3.04%	-3.42%	-5.18%	-4.87%	-4.75%	-4.26%	-4.34%	-4.49%
59		-1.84%	-2.50%	-2.99%	-3.90%	-2.16%	-1.68%	-3.46%	-2.96%	-2.39%	-1.95%	-3.44%	-3.23%
60		-3.01%	-3.91%	-4.57%	-5.44%	-3.91%	-3.99%	-5.21%	-4.77%	-4.82%	-4.21%	-4.45%	-4.14%
61		-3.02%	-4.41%	-4.64%	-6.07%	-4.11%	-4.03%	-6.02%	-6.05%	-5.50%	-5.27%	-5.25%	-6.10%
62		-3.31%	-4.46%	-4.70%	-5.76%	-3.78%	-3.91%	-6.56%	-5.63%	-6.05%	-5.24%	-6.16%	-5.83%
63	-2.34%	-3.24%	-3.81%	-4.60%	-2.93%	-3.17%	-4.61%	-4.03%	-3.87%	-3.28%	-4.27%	-4.44%	
64	FOOTWEAR	-9.36%	-9.75%	-11.09%	-12.29%	-9.98%	-10.49%	-7.51%	-6.81%	-7.15%	-6.47%	-6.32%	-6.98%
65		-1.11%	-1.61%	-2.04%	-2.67%	-1.69%	-2.11%	-2.39%	-1.82%	-1.20%	-0.59%	-2.23%	-2.08%
66		-4.51%	-5.62%	-6.11%	-7.84%	-5.13%	-5.26%	-6.98%	-6.32%	-6.16%	-5.42%	-6.29%	-6.22%
67		-4.46%	-5.26%	-6.33%	-7.70%	-4.97%	-5.46%	-7.03%	-6.04%	-5.79%	-5.58%	-5.98%	-5.82%
68	STONE & GLASS	0.16%	-0.40%	-0.77%	-1.51%	-0.44%	-0.41%	-2.27%	-1.48%	-0.94%	-0.22%	-2.54%	-2.28%
69		0.17%	-0.37%	-0.79%	-1.53%	-0.76%	-0.48%	-2.20%	-1.53%	-1.01%	-0.22%	-2.39%	-2.30%
70		0.13%	-0.39%	-0.84%	-1.58%	-0.44%	-0.18%	-2.20%	-1.63%	-0.98%	-0.25%	-1.86%	-1.77%
71	PRECIOUS STONES	-1.22%	-1.68%	-1.76%	-2.55%	-2.01%	-1.89%	-3.27%	-2.81%	-2.27%	-1.54%	-2.62%	-2.70%
72	BASE METALS	0.26%	0.02%	-0.12%	-0.56%	-0.40%	-0.11%	-1.76%	-1.01%	-0.33%	0.33%	-1.73%	-1.83%
73		-0.16%	-0.78%	-1.08%	-1.90%	-0.70%	-0.94%	-3.74%	-2.66%	-1.94%	-1.31%	-3.46%	-3.16%
74		1.82%	1.44%	1.30%	0.77%	1.17%	1.22%	-1.87%	-1.11%	-0.57%	0.10%	-1.59%	-1.68%
75		1.15%	1.03%	1.00%	0.72%	0.69%	0.69%	-1.96%	-1.00%	-0.39%	0.36%	-1.77%	-1.83%
76		0.80%	0.52%	0.34%	0.01%	0.31%	0.16%	-2.25%	-1.56%	-0.91%	-0.10%	-1.73%	-1.75%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		1.24%	1.00%	0.95%	0.73%	0.95%	0.98%	-1.87%	-1.02%	-0.35%	0.34%	-1.62%	-1.65%
79		1.12%	1.06%	1.03%	0.74%	0.87%	0.96%	-1.94%	-1.06%	-0.38%	0.39%	-1.70%	-1.64%
80		1.14%	0.95%	0.87%	0.66%	0.65%	0.87%	-1.89%	-1.02%	-0.39%	0.35%	-1.67%	-1.94%
81		1.43%	1.21%	1.25%	0.95%	0.75%	0.41%	-1.66%	-0.91%	-0.18%	0.54%	-1.49%	-1.28%
82		-0.61%	-1.32%	-1.71%	-2.61%	-1.57%	-1.76%	-3.81%	-3.18%	-2.58%	-1.94%	-3.59%	-3.10%
83		-0.63%	-1.35%	-1.77%	-2.75%	-1.18%	-1.34%	-3.84%	-3.32%	-2.59%	-1.81%	-3.00%	-3.62%
84	MACHINE	0.13%	-0.65%	-1.15%	-2.30%	-2.48%	-2.53%	-4.30%	-3.25%	-2.51%	-1.88%	-1.18%	-0.68%
85		-0.87%	-1.60%	-2.28%	-3.34%	-3.71%	-3.93%	-4.73%	-3.91%	-3.76%	-2.73%	-4.00%	-3.66%
86	VEHICLES	1.08%	0.59%	0.22%	-0.48%	0.46%	0.34%	-3.17%	-2.76%	-2.26%	-1.52%	-2.31%	-2.63%
87		1.69%	1.44%	1.06%	0.51%	0.04%	-0.16%	-2.43%	-1.83%	-1.46%	-0.71%	-0.13%	0.37%
88		1.02%	0.48%	0.08%	-0.63%	0.51%	0.54%	-3.56%	-2.51%	-2.09%	-1.47%	-2.47%	-2.67%
89		1.06%	0.47%	0.09%	-0.62%	0.18%	0.27%	-3.32%	-2.82%	-2.22%	-1.42%	-2.75%	-2.94%
90	CLOCKS & MUSICAL INST.	-0.06%	-0.93%	-1.45%	-2.46%	-0.66%	-0.73%	-3.77%	-3.09%	-2.47%	-1.78%	-3.41%	-3.30%
91		-0.07%	-0.98%	-1.59%	-2.40%	-0.45%	-0.50%	-4.20%	-3.17%	-2.41%	-1.66%	-3.09%	-3.58%
92		-4.90%	-6.00%	-6.29%	-7.19%	-5.40%	-5.45%	-6.28%	-6.12%	-6.10%	-5.69%	-5.52%	-5.54%
93	ARMS	-0.05%	-0.95%	-1.62%	-2.46%	-0.63%	-0.87%	-4.09%	-3.02%	-2.65%	-1.62%	-2.88%	-2.87%
94	MISC. ART.	-2.56%	-3.25%	-3.71%	-5.13%	-2.72%	-2.49%	-5.01%	-4.19%	-4.15%	-3.35%	-4.55%	-4.33%
95		-4.53%	-5.32%	-6.22%	-7.76%	-7.36%	-6.86%	-6.47%	-6.42%	-6.09%	-5.75%	-6.01%	-5.75%
96		-4.49%	-5.85%	-6.39%	-7.64%	-5.35%	-5.02%	-6.68%	-6.06%	-6.33%	-5.92%	-5.45%	-5.42%
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

7.2.2 Predicted Commodity Trade between EU-27 and her Trading Partners (Median Growth Scenarios)

Annual growth rates in import and export trade between EU-27 and her trading partners are predicted using the trade forecasting module under all three case scenarios (as shown in Table 7.3). Discussion on median growth scenarios are presented in this Section. Predicted annual growth rates in EU-27 import and export trade are listed in Tables 7.22 to 7.27.

Similar findings to the U.S. trade can be observed from the tables. Within the same broad section, different growth rates can be observed from different commodity group. Besides, it could also be observed that when the import growth rate is negative (meaning contraction in its imports), the export growth rate tends to be also negative (albeit at a higher rate). Furthermore, when comparing the same commodity group across different trading partners, it can be observed that different growth rates in commodity trade could be found.

However, it can be observed that most of predicted commodity trade growth between EU-27 and her trading partners except China are negative. One possible explanation to this phenomenon is that unfavourable socio-economic factors as predicted by the United Nations (United Nations, 2015) and the International Monetary Fund Organisation (IMF, 2015). These unfavourable parameters, including negative GDP growth, minimal population growth, and drop in labor force growth, are input into the trade forecasting module, thus impeding the growth in commodity trade with EU-27.

Table 7.22 Predicted Annual Growth Rate in Commodity Trade between EU-27 and Australia (Median Growth Scenario)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	-0.37%	-0.13%	0.20%	0.53%	3.47%	4.53%	1.00%	1.00%	1.22%	1.37%	2.25%	4.02%
02		0.53%	1.05%	1.64%	2.18%	2.91%	2.92%	0.67%	0.23%	0.00%	-0.31%	-0.17%	-4.37%
03		-0.31%	-0.04%	0.22%	0.51%	2.23%	4.95%	-0.60%	-0.84%	-0.76%	-0.82%	-4.80%	-1.55%
04		-0.41%	0.01%	0.43%	0.83%	2.82%	4.78%	0.67%	0.43%	0.43%	0.35%	3.74%	3.54%
05		-3.20%	-3.08%	-2.79%	-2.66%	-2.35%	-4.91%	0.11%	-0.03%	0.11%	0.15%	2.53%	4.09%
06	VEGETABLE PRODUCTS	-0.80%	-0.60%	-0.16%	0.13%	4.55%	4.33%	-1.20%	-1.50%	-1.40%	-1.57%	-3.88%	-3.71%
07		-2.20%	-2.18%	-2.03%	-1.87%	-4.39%	-1.36%	-0.65%	-0.89%	-0.80%	-0.85%	-4.67%	-4.51%
08		-2.37%	-2.39%	-2.25%	-2.11%	-0.98%	-2.63%	-0.74%	-0.95%	-0.85%	-0.87%	-3.66%	-2.53%
09		-0.73%	-0.52%	-0.08%	0.23%	4.99%	1.06%	-0.98%	-1.26%	-1.18%	-1.30%	-3.76%	-0.94%
10		-0.79%	-0.47%	0.17%	0.65%	4.39%	0.47%	-2.50%	-2.88%	-2.38%	-2.43%	-3.02%	-4.80%
11		-0.61%	-0.38%	-0.19%	0.05%	-0.50%	3.25%	-0.35%	-0.56%	-0.48%	-0.51%	-3.53%	-1.24%
12		-0.57%	-0.36%	0.07%	0.38%	0.68%	3.73%	-1.07%	-1.38%	-1.26%	-1.40%	-2.78%	-1.72%
13		-0.78%	-0.51%	-0.26%	0.00%	-1.91%	0.48%	-0.58%	-0.82%	-0.74%	-0.80%	-4.75%	-2.15%
14		-1.23%	-1.08%	-0.89%	-0.72%	-1.56%	-3.68%	-0.40%	-0.66%	-0.42%	-0.50%	-3.14%	-0.35%
15	FATS & OILS	0.48%	0.98%	1.56%	2.08%	2.23%	3.35%	-0.93%	-1.31%	-1.15%	-1.33%	-0.32%	-1.29%
16	PREPARED FOODSTUFFS	-0.59%	-0.20%	0.20%	0.57%	1.76%	1.62%	-0.10%	-0.42%	-0.47%	-0.63%	-5.00%	-1.48%
17		-0.14%	0.28%	0.67%	1.07%	1.77%	2.15%	0.80%	0.57%	0.56%	0.48%	3.70%	3.67%
18		-0.68%	-0.40%	-0.10%	0.19%	3.35%	2.20%	-0.63%	-0.88%	-0.80%	-0.86%	-1.41%	-4.94%
19		-0.67%	-0.37%	-0.10%	0.19%	-5.03%	2.21%	-0.61%	-0.86%	-0.78%	-0.84%	-1.25%	-3.86%
20		-0.67%	-0.37%	-0.10%	0.19%	3.95%	1.24%	-0.61%	-0.86%	-0.78%	-0.84%	-3.90%	-1.92%
21		-0.58%	-0.24%	0.08%	0.41%	3.81%	2.52%	-0.49%	-0.73%	-0.66%	-0.72%	-2.51%	-2.40%
22		-0.60%	-0.38%	-0.20%	0.04%	-0.52%	1.71%	0.46%	0.35%	0.45%	0.50%	2.85%	4.27%
23		-0.43%	-0.09%	0.30%	0.64%	3.94%	3.72%	-0.90%	-1.25%	-1.07%	-1.22%	-0.25%	-2.79%
24		-0.60%	-0.38%	-0.20%	0.04%	-1.50%	-3.99%	0.45%	0.33%	0.43%	0.48%	3.43%	3.88%
25	MINERAL PRODUCTS	-0.15%	0.01%	0.19%	0.39%	4.04%	3.43%	-1.30%	-1.52%	-1.50%	-1.60%	-3.26%	-2.02%
26		-0.15%	0.01%	0.19%	0.39%	2.47%	1.92%	-0.59%	-0.73%	-0.67%	-0.76%	-3.41%	-0.22%
27		1.25%	1.32%	1.50%	1.63%	1.20%	4.29%	0.20%	0.11%	0.35%	0.45%	2.14%	0.53%
28	CHEMICAL PRODUCTS	1.31%	1.90%	2.44%	2.95%	0.29%	4.71%	-0.84%	-1.21%	-1.27%	-1.48%	-0.86%	-3.48%
29		1.33%	1.94%	2.50%	3.03%	2.85%	0.80%	-0.85%	-1.21%	-1.27%	-1.49%	-1.20%	-4.74%
30		1.28%	1.88%	2.44%	2.96%	3.72%	0.55%	-0.89%	-1.26%	-1.32%	-1.54%	-4.65%	-0.99%
31		0.33%	0.65%	0.96%	1.29%	2.39%	3.92%	-0.85%	-1.21%	-1.27%	-1.49%	-2.20%	-4.72%
32		1.33%	1.94%	2.50%	3.03%	2.10%	0.48%	-0.85%	-1.21%	-1.27%	-1.50%	-0.78%	-2.13%
33		1.33%	1.94%	2.50%	3.03%	2.20%	3.12%	-0.85%	-1.21%	-1.27%	-1.50%	-0.48%	-1.90%
34		1.20%	1.80%	2.36%	2.88%	1.92%	3.12%	-0.96%	-1.33%	-1.39%	-1.61%	-4.06%	-3.81%
35		0.77%	1.31%	1.83%	2.32%	4.83%	2.47%	-0.70%	-1.04%	-1.07%	-1.26%	-4.19%	-4.74%
36		-0.08%	0.45%	0.93%	1.40%	3.85%	2.16%	-2.03%	-2.43%	-2.52%	-2.76%	-3.44%	-0.56%
37		1.33%	1.94%	2.50%	3.03%	4.86%	2.64%	-0.85%	-1.21%	-1.27%	-1.50%	-3.61%	-3.35%
38		1.18%	1.78%	2.33%	2.85%	2.54%	3.79%	-0.93%	-1.30%	-1.37%	-1.59%	-1.54%	-2.35%
39	PLASTICS	1.33%	1.94%	2.50%	3.03%	2.33%	1.99%	-0.85%	-1.21%	-1.27%	-1.50%	-3.49%	-4.95%
40		1.27%	1.87%	2.43%	2.95%	0.54%	0.95%	-0.84%	-1.21%	-1.27%	-1.49%	-1.92%	-0.66%
41	LEATHER GOODS	-4.19%	-4.12%	-4.02%	-4.03%	-4.67%	-3.10%	-9.05%	-9.53%	-9.72%	-10.04%	-1.88%	-3.20%
42		-4.94%	-4.91%	-4.88%	-4.99%	-3.82%	-3.09%	-7.61%	-8.13%	-8.37%	-8.75%	-4.98%	-0.80%
43		-1.14%	-1.00%	-0.82%	-0.62%	-1.57%	-1.82%	-0.24%	-0.33%	-0.21%	-0.16%	-4.95%	-1.28%
44	WOOD PRODUCTS	-1.14%	-0.79%	-0.47%	-0.16%	-3.34%	-2.00%	-1.51%	-1.80%	-1.74%	-1.85%	-1.74%	-4.79%
45		-1.35%	-1.07%	-0.80%	-0.54%	-5.00%	-4.51%	-1.51%	-1.79%	-1.71%	-1.80%	-1.78%	-3.00%
46		-1.39%	-1.04%	-0.72%	-0.43%	-1.22%	-0.92%	-1.63%	-1.92%	-1.84%	-1.95%	-2.77%	-3.80%
47	PAPER	-0.17%	0.29%	0.66%	1.04%	2.33%	1.07%	-0.94%	-1.31%	-1.37%	-1.55%	-0.73%	-1.24%
48		-0.17%	0.29%	0.66%	1.04%	1.93%	4.17%	-0.94%	-1.31%	-1.37%	-1.55%	-1.75%	-1.99%
49		-0.17%	0.29%	0.66%	1.04%	4.74%	4.84%	-0.94%	-1.31%	-1.37%	-1.55%	-0.25%	-4.70%

Table 7.22 Predicted Annual Growth Rate in Commodity Trade between EU-27 and Australia (Median Growth Scenario) (cont'd)

HS-2	SECTION	IMPORT						EXPORT						
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020	
50	TEXTILES AND TEXTILE ARTICLES	-4.42%	-4.41%	-4.22%	-4.26%	-0.30%	-4.32%	-6.22%	-6.69%	-6.89%	-7.20%	-3.39%	-4.27%	
51		-4.45%	-4.44%	-4.24%	-4.29%	-3.58%	-1.37%	-6.06%	-6.50%	-6.69%	-6.97%	-4.92%	-1.49%	
52		-1.74%	-1.45%	-1.21%	-1.06%	-2.07%	-1.06%	-6.78%	-7.31%	-7.58%	-7.97%	-3.48%	-0.96%	
53		-1.34%	-1.08%	-0.78%	-0.58%	-2.39%	-4.25%	-6.72%	-7.24%	-7.49%	-7.87%	-4.57%	-4.67%	
54		-1.76%	-1.47%	-1.23%	-1.09%	-1.93%	-1.62%	-6.78%	-7.31%	-7.58%	-7.97%	-1.99%	-3.12%	
55		-1.76%	-1.47%	-1.23%	-1.09%	-1.04%	-4.90%	-6.78%	-7.31%	-7.58%	-7.97%	-1.62%	-2.93%	
56		-1.76%	-1.47%	-1.23%	-1.09%	-2.03%	-3.23%	-6.78%	-7.31%	-7.58%	-7.97%	-4.72%	-3.59%	
57		-1.76%	-1.47%	-1.23%	-1.09%	-3.04%	-0.24%	-6.78%	-7.31%	-7.58%	-7.97%	-0.94%	-1.58%	
58		-1.76%	-1.47%	-1.23%	-1.09%	-1.14%	-1.13%	-6.78%	-7.31%	-7.58%	-7.97%	-2.04%	-4.41%	
59		-1.10%	-0.69%	-0.33%	-0.02%	-1.24%	-1.03%	-3.31%	-3.71%	-3.82%	-4.05%	-1.47%	-3.97%	
60		-1.76%	-1.47%	-1.23%	-1.09%	-1.34%	-4.22%	-6.78%	-7.31%	-7.58%	-7.97%	-0.19%	0.00%	
61		-2.51%	-2.29%	-2.13%	-2.05%	-3.38%	-3.49%	-7.62%	-8.10%	-8.32%	-8.66%	-1.91%	-1.38%	
62		-2.86%	-2.67%	-2.55%	-2.51%	-1.60%	-2.55%	-7.79%	-8.26%	-8.48%	-8.80%	-1.46%	-0.69%	
63		-1.69%	-1.37%	-1.12%	-0.95%	-3.02%	-1.36%	-5.38%	-5.86%	-6.04%	-6.35%	-0.47%	-2.54%	
64	FOOTWEAR	-5.07%	-5.05%	-5.02%	-5.15%	-1.68%	-4.80%	-9.13%	-9.63%	-9.83%	-10.17%	-0.38%	-0.44%	
65		-0.04%	0.47%	0.94%	1.38%	0.68%	3.39%	-2.97%	-3.26%	-3.26%	-3.40%	-3.08%	-3.65%	
66		-3.86%	-3.76%	-3.76%	-3.81%	-3.39%	-3.42%	-5.31%	-5.98%	-6.36%	-6.86%	-3.73%	-3.48%	
67		-3.86%	-3.76%	-3.76%	-3.81%	-0.17%	-4.02%	-5.31%	-5.98%	-6.36%	-6.86%	-3.52%	-0.72%	
68	STONE & GLASS	-0.29%	0.16%	0.55%	0.94%	1.70%	3.67%	-1.96%	-2.32%	-2.37%	-2.55%	-1.21%	-4.90%	
69		-0.29%	0.16%	0.55%	0.94%	4.12%	3.51%	-1.96%	-2.32%	-2.37%	-2.55%	-3.12%	-3.33%	
70		-0.43%	0.01%	0.39%	0.75%	2.61%	3.36%	-2.02%	-2.38%	-2.43%	-2.61%	-4.62%	-2.76%	
71	PRECIOUS STONES	-1.58%	-1.48%	-1.34%	-1.27%	-3.88%	-3.15%	-3.42%	-3.85%	-3.93%	-4.16%	-2.90%	-1.97%	
72	BASE METALS	-0.29%	0.12%	0.51%	0.88%	3.90%	0.69%	-0.71%	-0.86%	-0.79%	-0.79%	-3.22%	-3.10%	
73		-0.76%	-0.35%	0.01%	0.35%	0.25%	4.45%	-1.87%	-2.23%	-2.29%	-2.46%	-0.36%	-1.01%	
74		-2.41%	-2.36%	-2.24%	-2.29%	-0.64%	-1.78%	-0.20%	-0.41%	-0.37%	-0.43%	-4.87%	-3.00%	
75		-2.56%	-2.55%	-2.45%	-2.54%	-4.75%	-3.16%	-1.07%	-1.31%	-1.14%	-1.22%	-1.44%	-0.57%	
76		-2.54%	-2.52%	-2.42%	-2.50%	-2.49%	-3.50%	-1.69%	-2.00%	-1.94%	-2.07%	-2.63%	-1.34%	
77		---	---	---	---	---	---	---	---	---	---	---	---	
78		-2.56%	-2.55%	-2.46%	-2.54%	-3.67%	-0.54%	-1.03%	-1.27%	-1.09%	-1.16%	-3.31%	-0.54%	
79		-2.56%	-2.55%	-2.46%	-2.54%	-2.89%	-0.09%	-1.03%	-1.27%	-1.09%	-1.16%	-1.43%	-3.80%	
80		-2.56%	-2.55%	-2.45%	-2.54%	-1.89%	-4.53%	-1.12%	-1.37%	-1.20%	-1.28%	-3.29%	-4.53%	
81		-2.57%	-2.56%	-2.46%	-2.55%	-2.38%	-1.00%	-0.67%	-0.87%	-0.62%	-0.68%	-3.28%	-3.32%	
82		-1.33%	-0.94%	-0.63%	-0.34%	-3.99%	-4.94%	-2.44%	-2.83%	-2.94%	-3.14%	-3.89%	-0.20%	
83		-1.33%	-0.94%	-0.63%	-0.34%	-2.09%	-3.35%	-2.44%	-2.83%	-2.94%	-3.14%	-3.22%	-1.58%	
84		MACHINE	-1.29%	-0.87%	-0.54%	-0.22%	-2.26%	-4.67%	-1.87%	-2.36%	-2.49%	-2.78%	-2.00%	-0.10%
85			-1.97%	-1.57%	-1.24%	-0.97%	-2.91%	-2.46%	-2.78%	-3.28%	-3.41%	-3.71%	-0.99%	-4.96%
86	VEHICLES	-0.24%	0.08%	0.31%	0.55%	1.53%	0.63%	-1.35%	-1.92%	-2.08%	-2.42%	-2.87%	-4.05%	
87		-0.27%	0.14%	0.46%	0.80%	4.05%	1.86%	-0.28%	-0.53%	-0.51%	-0.59%	-3.73%	-2.83%	
88		-0.25%	0.06%	0.29%	0.53%	3.42%	4.34%	-1.61%	-2.26%	-2.47%	-2.88%	-0.53%	-4.64%	
89		-0.25%	0.07%	0.30%	0.54%	3.85%	2.91%	-1.60%	-2.25%	-2.46%	-2.87%	-3.89%	-0.67%	
90	CLOCKS & MUSICAL INST.	-1.21%	-0.77%	-0.44%	-0.12%	-1.64%	-2.35%	-1.85%	-2.37%	-2.53%	-2.83%	-3.54%	-4.19%	
91		-1.26%	-0.83%	-0.50%	-0.18%	-2.47%	-3.60%	-1.86%	-2.37%	-2.53%	-2.84%	-4.01%	-0.53%	
92		-3.86%	-3.76%	-3.76%	-3.81%	-1.82%	-3.76%	-5.31%	-5.98%	-6.36%	-6.86%	-1.57%	-1.25%	
93	ARMS	-1.20%	-0.77%	-0.44%	-0.12%	-2.90%	-2.70%	-1.85%	-2.37%	-2.53%	-2.83%	-0.47%	-1.98%	
94	MISC. ART.	-2.36%	-2.05%	-1.83%	-1.64%	-0.85%	-1.38%	-3.40%	-3.94%	-4.15%	-4.50%	-0.17%	-1.03%	
95		-3.86%	-3.76%	-3.76%	-3.81%	-4.19%	-2.62%	-5.31%	-5.98%	-6.36%	-6.86%	-2.42%	-3.64%	
96		-3.92%	-3.82%	-3.82%	-3.87%	-1.93%	-0.61%	-5.34%	-6.00%	-6.38%	-6.88%	-3.01%	-0.70%	
97		ARTS	---	---	---	---	---	---	---	---	---	---	---	---

Table 7.23 Predicted Annual Growth Rate in Commodity Trade between EU-27 and China (Median Growth Scenario)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	1.69%	1.81%	1.91%	2.09%	0.69%	3.52%	2.00%	1.87%	1.81%	1.80%	0.61%	0.57%
02		18.45%	18.99%	19.43%	20.03%	4.27%	3.13%	2.40%	2.11%	1.88%	1.68%	1.77%	1.46%
03		5.25%	5.45%	5.60%	5.84%	1.00%	3.96%	0.11%	-0.02%	0.01%	0.00%	4.01%	2.33%
04		9.52%	10.07%	10.55%	11.19%	1.23%	4.89%	-2.56%	-2.81%	-2.95%	-3.09%	-3.87%	-0.73%
05		5.12%	5.31%	5.44%	5.66%	2.67%	0.92%	-0.38%	-0.52%	-0.71%	-0.65%	-2.21%	-2.23%
06	VEGETABLE PRODUCTS	10.68%	11.08%	11.52%	12.03%	0.11%	1.17%	2.27%	2.01%	2.05%	1.88%	2.01%	0.84%
07		4.61%	4.70%	4.82%	5.03%	4.61%	1.15%	-0.02%	-0.18%	-0.17%	-0.20%	-1.06%	-3.55%
08		4.29%	4.34%	4.43%	4.62%	0.99%	0.92%	-0.12%	-0.28%	-0.24%	-0.27%	-2.88%	-3.05%
09		10.16%	10.56%	10.99%	11.49%	1.84%	2.39%	0.91%	0.62%	0.66%	0.49%	3.20%	2.15%
10		8.16%	8.44%	9.24%	9.68%	1.22%	2.41%	1.49%	1.39%	1.35%	1.36%	1.98%	2.69%
11		5.26%	5.46%	5.61%	5.85%	3.43%	2.57%	0.93%	0.81%	0.81%	0.80%	0.27%	1.24%
12		9.66%	10.06%	10.48%	10.97%	1.87%	2.66%	1.24%	0.97%	1.04%	0.91%	3.12%	1.86%
13		5.22%	5.43%	5.58%	5.83%	4.15%	3.43%	1.53%	1.39%	1.41%	1.36%	0.01%	4.94%
14		5.08%	5.34%	5.60%	5.97%	2.52%	1.13%	3.51%	3.32%	3.32%	3.18%	3.52%	4.72%
15	FATS & OILS	9.80%	10.16%	10.50%	10.93%	4.39%	1.58%	0.42%	0.18%	0.26%	0.14%	1.59%	2.78%
16	PREPARED FOODSTUFFS	6.49%	6.86%	7.20%	7.66%	2.29%	4.30%	-0.40%	-0.56%	-0.57%	-0.61%	-0.96%	-2.64%
17		11.61%	12.11%	12.52%	13.10%	1.77%	0.80%	-2.95%	-3.24%	-3.41%	-3.58%	-4.59%	-0.42%
18		5.95%	6.21%	6.42%	6.74%	4.50%	3.79%	0.10%	-0.07%	-0.07%	-0.11%	-2.01%	-0.16%
19		5.28%	5.49%	5.63%	5.88%	1.17%	0.22%	0.01%	-0.14%	-0.14%	-0.17%	-4.14%	-1.93%
20		5.28%	5.49%	5.63%	5.88%	2.94%	0.76%	0.01%	-0.14%	-0.14%	-0.17%	-2.24%	-2.20%
21		5.40%	5.62%	5.78%	6.04%	1.67%	4.04%	-0.55%	-0.71%	-0.73%	-0.77%	-1.60%	-2.10%
22		2.74%	2.97%	3.14%	3.40%	0.56%	3.33%	2.44%	2.34%	2.30%	2.30%	4.61%	2.63%
23		7.78%	8.20%	8.61%	9.12%	2.27%	3.63%	-0.48%	-0.71%	-0.58%	-0.67%	-1.39%	-1.52%
24		8.74%	9.23%	9.75%	10.34%	1.86%	3.45%	2.43%	2.32%	2.28%	2.28%	4.00%	0.87%
25	MINERAL PRODUCTS	3.26%	3.56%	3.82%	4.16%	1.14%	0.25%	7.42%	7.52%	7.64%	7.84%	1.69%	3.44%
26		1.43%	1.66%	1.88%	2.16%	1.28%	0.68%	7.60%	7.69%	7.81%	8.01%	1.87%	0.77%
27		6.88%	7.45%	7.94%	8.46%	4.68%	2.59%	6.68%	6.95%	7.30%	7.64%	2.38%	2.16%
28	CHEMICAL PRODUCTS	8.13%	8.45%	8.72%	9.08%	3.49%	0.48%	3.60%	3.45%	3.41%	3.31%	0.50%	3.63%
29		8.15%	8.47%	8.74%	9.09%	2.32%	4.53%	3.58%	3.42%	3.38%	3.27%	3.80%	1.14%
30		8.12%	8.41%	8.65%	8.97%	3.87%	3.32%	3.53%	3.37%	3.33%	3.22%	0.93%	3.30%
31		7.99%	8.32%	8.59%	8.95%	2.53%	4.35%	3.88%	3.76%	3.74%	3.68%	3.79%	2.20%
32		8.16%	8.48%	8.74%	9.09%	3.20%	1.95%	3.58%	3.42%	3.38%	3.27%	4.33%	3.73%
33		8.16%	8.48%	8.74%	9.09%	4.68%	4.07%	3.58%	3.42%	3.38%	3.27%	4.02%	2.03%
34		7.94%	8.17%	8.34%	8.60%	2.56%	1.19%	3.48%	3.33%	3.29%	3.18%	4.18%	2.39%
35		7.84%	8.16%	8.42%	8.78%	2.75%	3.50%	2.94%	2.80%	2.79%	2.71%	3.47%	0.04%
36		7.56%	7.65%	7.65%	7.75%	0.23%	2.28%	2.57%	2.41%	2.37%	2.26%	2.07%	0.71%
37		8.16%	8.48%	8.74%	9.09%	4.43%	4.93%	3.58%	3.42%	3.38%	3.27%	1.08%	0.21%
38		7.90%	8.20%	8.44%	8.78%	0.97%	3.20%	3.12%	2.96%	2.92%	2.82%	3.50%	4.36%
39	PLASTICS	8.16%	8.48%	8.74%	9.09%	3.64%	4.02%	3.58%	3.42%	3.38%	3.27%	4.39%	4.84%
40		8.12%	8.43%	8.70%	9.06%	2.02%	2.22%	3.58%	3.42%	3.38%	3.27%	3.21%	2.42%
41	LEATHER GOODS	7.27%	7.15%	6.98%	6.85%	3.76%	3.02%	-0.02%	-0.24%	-0.35%	-0.48%	-1.35%	-3.86%
42		7.23%	7.15%	7.03%	6.95%	0.13%	2.37%	-1.15%	-1.47%	-1.67%	-1.93%	-0.12%	-2.81%
43		1.69%	1.81%	1.91%	2.09%	2.10%	2.58%	2.02%	1.90%	1.84%	1.83%	3.58%	2.02%
44	WOOD PRODUCTS	3.44%	3.57%	3.64%	3.83%	4.63%	2.00%	1.43%	1.24%	1.21%	1.09%	4.67%	0.31%
45		3.36%	3.48%	3.55%	3.73%	4.40%	3.40%	1.88%	1.70%	1.68%	1.56%	1.10%	4.41%
46		3.30%	3.41%	3.47%	3.64%	3.48%	3.10%	-0.52%	-0.80%	-0.93%	-1.13%	-4.09%	-1.91%
47	PAPER	7.34%	7.66%	7.90%	8.27%	1.04%	4.95%	1.78%	1.53%	1.39%	1.22%	4.41%	0.98%
48		7.34%	7.66%	7.90%	8.27%	0.12%	1.53%	1.78%	1.53%	1.39%	1.22%	3.92%	4.18%
49		7.34%	7.66%	7.90%	8.27%	2.69%	2.16%	1.78%	1.53%	1.39%	1.22%	0.77%	1.02%

Table 7.23 Predicted Annual Growth Rate in Commodity Trade between EU-27 and China (Median Growth Scenario) (cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	7.85%	7.93%	7.94%	8.00%	0.82%	4.83%	-0.08%	-0.29%	-0.53%	-0.66%	-2.31%	-3.13%
51		7.85%	7.93%	7.93%	8.00%	2.72%	4.64%	-0.14%	-0.35%	-0.60%	-0.71%	-3.81%	-1.25%
52		7.86%	7.94%	7.95%	8.01%	4.79%	0.92%	0.34%	0.10%	-0.07%	-0.27%	-1.74%	-1.15%
53		7.86%	7.94%	7.95%	8.01%	3.89%	0.17%	2.69%	2.71%	2.81%	2.96%	3.71%	2.40%
54		7.86%	7.94%	7.95%	8.01%	2.76%	0.44%	0.24%	-0.01%	-0.19%	-0.42%	-3.69%	-3.87%
55		7.86%	7.94%	7.95%	8.01%	0.18%	3.24%	0.24%	-0.01%	-0.19%	-0.42%	-3.30%	-0.21%
56		7.86%	7.94%	7.95%	8.01%	4.10%	1.84%	0.24%	-0.01%	-0.19%	-0.42%	-2.81%	-2.20%
57		7.86%	7.94%	7.95%	8.01%	4.02%	2.80%	0.24%	-0.01%	-0.19%	-0.42%	-1.08%	-3.76%
58		7.86%	7.94%	7.95%	8.01%	3.75%	0.93%	0.24%	-0.01%	-0.19%	-0.42%	-4.66%	-4.75%
59		7.67%	7.75%	7.75%	7.82%	2.76%	3.99%	1.38%	1.19%	1.10%	0.95%	2.03%	2.05%
60		7.86%	7.94%	7.95%	8.01%	4.10%	0.83%	0.24%	-0.01%	-0.19%	-0.42%	-0.71%	-4.87%
61		6.79%	6.83%	6.79%	6.83%	0.89%	0.55%	-0.57%	-0.79%	-0.93%	-1.09%	-0.98%	-3.65%
62		6.75%	6.78%	6.74%	6.78%	4.83%	4.50%	-0.92%	-1.13%	-1.25%	-1.38%	-1.60%	-2.03%
63		7.86%	7.94%	7.95%	8.02%	1.58%	0.42%	0.17%	-0.08%	-0.26%	-0.48%	-4.81%	-0.44%
64	FOOTWEAR	7.28%	7.16%	6.99%	6.86%	0.53%	1.93%	-1.85%	-2.24%	-2.49%	-2.82%	-3.70%	-4.76%
65		6.78%	6.83%	6.80%	6.84%	2.90%	2.81%	2.18%	2.05%	2.03%	1.96%	2.83%	4.14%
66		7.46%	7.52%	7.49%	7.54%	2.46%	1.28%	-0.40%	-0.68%	-0.86%	-1.10%	-3.58%	-1.11%
67		7.46%	7.52%	7.49%	7.54%	1.60%	2.20%	-0.40%	-0.68%	-0.86%	-1.10%	-0.40%	-3.18%
68	STONE & GLASS	6.31%	6.59%	6.79%	7.11%	0.28%	4.03%	0.97%	0.82%	0.71%	0.61%	2.26%	1.96%
69		6.31%	6.59%	6.79%	7.11%	0.34%	0.05%	0.97%	0.82%	0.71%	0.61%	0.03%	0.79%
70		6.37%	6.64%	6.84%	7.14%	1.63%	3.03%	0.95%	0.79%	0.68%	0.59%	1.00%	4.83%
71	PRECIOUS STONES	7.65%	7.73%	7.72%	7.80%	0.19%	1.28%	3.04%	2.96%	2.98%	2.99%	1.56%	0.24%
72	BASE METALS	4.56%	4.58%	4.55%	4.61%	3.66%	1.50%	3.51%	3.57%	3.66%	3.79%	4.90%	0.14%
73		6.38%	6.46%	6.46%	6.58%	4.01%	3.59%	1.81%	1.75%	1.74%	1.75%	3.86%	4.97%
74		8.33%	8.54%	8.69%	8.93%	4.17%	1.67%	1.08%	0.95%	0.87%	0.84%	2.43%	0.32%
75		8.80%	8.92%	8.99%	9.15%	1.92%	3.88%	2.98%	2.85%	2.82%	2.77%	4.57%	2.27%
76		7.83%	7.94%	7.97%	8.12%	0.00%	-1.61%	2.50%	2.38%	2.33%	2.28%	2.11%	0.88%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		8.87%	8.99%	9.07%	9.23%	4.68%	4.97%	3.00%	2.87%	2.84%	2.79%	3.50%	4.33%
79		8.87%	8.99%	9.07%	9.23%	1.31%	4.88%	3.00%	2.87%	2.84%	2.79%	2.06%	4.06%
80		8.71%	8.83%	8.90%	9.06%	2.77%	4.89%	2.95%	2.82%	2.79%	2.74%	2.96%	2.98%
81		9.63%	9.75%	9.84%	10.00%	0.42%	2.12%	3.17%	3.04%	3.00%	2.96%	4.68%	1.28%
82		7.01%	7.08%	7.06%	7.18%	4.66%	0.40%	0.98%	0.83%	0.73%	0.64%	3.28%	3.51%
83		7.01%	7.08%	7.06%	7.18%	4.86%	0.86%	0.98%	0.83%	0.73%	0.64%	4.27%	4.21%
84		MACHINE	6.80%	6.97%	7.04%	7.26%	1.79%	4.79%	0.07%	-0.19%	-0.38%	-0.57%	-4.93%
85	5.25%		5.37%	5.41%	5.58%	3.51%	3.86%	0.54%	0.24%	0.06%	-0.18%	-3.50%	-0.18%
86	VEHICLES	9.94%	9.98%	9.96%	10.08%	4.20%	0.22%	-0.98%	-1.36%	-1.60%	-1.83%	-2.77%	-2.91%
87		7.90%	8.10%	8.21%	8.46%	2.99%	3.46%	0.10%	-0.08%	-0.22%	-0.31%	-1.05%	-2.66%
88		9.97%	10.00%	9.98%	10.10%	4.56%	1.30%	-1.07%	-1.47%	-1.72%	-1.96%	-1.77%	-0.65%
89		10.01%	10.04%	10.02%	10.13%	4.71%	4.12%	-1.08%	-1.47%	-1.72%	-1.96%	-1.79%	-0.92%
90	CLOCKS & MUSICAL INST.	7.77%	7.94%	8.01%	8.22%	1.56%	3.93%	0.00%	-0.25%	-0.44%	-0.62%	-4.32%	-3.77%
91		7.75%	7.91%	7.97%	8.17%	1.69%	3.81%	0.00%	-0.25%	-0.44%	-0.63%	-3.39%	-2.36%
92		7.46%	7.52%	7.49%	7.54%	1.98%	0.06%	-0.40%	-0.68%	-0.86%	-1.10%	-0.78%	-4.41%
93	ARMS	7.73%	7.90%	7.96%	8.17%	1.89%	0.21%	0.02%	-0.23%	-0.42%	-0.60%	-0.17%	-4.10%
94	MISC. ART.	7.49%	7.56%	7.54%	7.62%	4.61%	4.78%	-0.01%	-0.26%	-0.44%	-0.62%	-0.35%	-2.79%
95		7.46%	7.52%	7.49%	7.54%	1.70%	4.41%	-0.40%	-0.68%	-0.86%	-1.10%	-1.19%	-0.25%
96		7.46%	7.51%	7.48%	7.53%	1.83%	1.68%	-0.40%	-0.68%	-0.87%	-1.10%	-4.32%	-3.70%
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

Table 7.24 Predicted Annual Growth Rate in Commodity Trade between EU-27 and Japan (Median Growth Scenario)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	-1.17%	-1.15%	-1.03%	-0.88%	-0.64%	-0.87%	-3.73%	-3.66%	-3.73%	-3.76%	-3.68%	-3.84%
02		-1.63%	-1.77%	-1.43%	-1.16%	-3.35%	-3.85%	-7.44%	-8.22%	-9.06%	-10.00%	-3.98%	-3.09%
03		-0.63%	-0.60%	-0.49%	-0.33%	-2.91%	-4.84%	-3.39%	-3.37%	-3.45%	-3.57%	-4.66%	-4.03%
04		-1.03%	-1.04%	-0.88%	-0.70%	-1.19%	-2.93%	-1.15%	-1.09%	-1.24%	-1.35%	-3.60%	-4.16%
05		-0.44%	-0.41%	-0.31%	-0.17%	-0.10%	-2.12%	-3.33%	-3.29%	-3.37%	-3.47%	-3.22%	-2.00%
06	VEGETABLE PRODUCTS	-0.70%	-0.99%	-0.93%	-1.01%	-0.08%	-4.39%	-4.52%	-4.75%	-4.86%	-5.13%	-2.90%	-3.68%
07		-1.07%	-1.06%	-0.92%	-0.75%	-4.48%	-0.68%	-3.59%	-3.57%	-3.60%	-3.66%	-2.93%	-4.17%
08		-1.17%	-1.18%	-1.05%	-0.90%	-4.81%	-0.59%	-3.77%	-3.73%	-3.71%	-3.70%	-2.01%	-4.42%
09		-0.74%	-0.98%	-0.92%	-0.96%	-4.98%	-2.60%	-4.37%	-4.55%	-4.66%	-4.90%	-3.37%	-1.54%
10		-2.17%	-2.44%	-2.18%	-2.18%	-4.88%	-0.33%	-1.82%	-1.79%	-1.82%	-1.78%	-2.16%	-4.95%
11		-1.01%	-0.99%	-0.84%	-0.67%	-0.75%	-4.41%	-2.44%	-2.37%	-2.44%	-2.50%	-3.13%	-4.21%
12		-0.47%	-0.67%	-0.57%	-0.58%	-1.63%	-3.34%	-4.50%	-4.71%	-4.82%	-5.08%	-2.67%	-2.82%
13		-1.02%	-1.02%	-0.89%	-0.72%	-2.22%	-0.51%	-3.34%	-3.32%	-3.41%	-3.53%	-4.73%	-0.35%
14		-0.95%	-1.09%	-1.01%	-0.92%	-4.32%	-4.60%	-2.82%	-2.92%	-2.89%	-3.06%	-3.25%	-4.61%
15	FATS & OILS	-1.95%	-2.13%	-2.06%	-2.01%	-3.53%	-0.20%	-5.88%	-6.36%	-6.73%	-7.28%	-3.75%	-4.63%
16	PREPARED FOODSTUFFS	-1.11%	-1.12%	-0.95%	-0.76%	-3.23%	-4.66%	-6.47%	-7.01%	-7.60%	-8.24%	-3.20%	-0.28%
17		-0.82%	-0.86%	-0.77%	-0.59%	-4.02%	-0.55%	-1.17%	-1.11%	-1.24%	-1.35%	-1.86%	-3.99%
18		-0.99%	-1.01%	-0.87%	-0.73%	-0.30%	-4.82%	-3.51%	-3.52%	-3.61%	-3.74%	-4.85%	-2.37%
19		-1.03%	-1.01%	-0.87%	-0.69%	-4.64%	-4.58%	-3.42%	-3.41%	-3.50%	-3.62%	-0.77%	-2.89%
20		-1.03%	-1.01%	-0.87%	-0.69%	-3.23%	-1.08%	-3.42%	-3.41%	-3.50%	-3.62%	-2.58%	-0.22%
21		-1.03%	-1.01%	-0.87%	-0.69%	-4.04%	-4.64%	-2.88%	-2.84%	-2.94%	-3.05%	-3.39%	-3.23%
22		-0.77%	-0.67%	-0.53%	-0.33%	-0.98%	-3.26%	-1.36%	-1.24%	-1.32%	-1.33%	-0.49%	-3.66%
23		-0.91%	-0.89%	-0.68%	-0.49%	-3.34%	-1.93%	-5.38%	-5.75%	-6.01%	-6.44%	-4.36%	-4.93%
24		-0.74%	-0.73%	-0.62%	-0.49%	-4.22%	-4.68%	-1.41%	-1.30%	-1.37%	-1.39%	-4.07%	-2.82%
25	MINERAL PRODUCTS	-1.19%	-1.20%	-1.03%	-0.84%	-0.87%	-1.67%	-1.39%	-1.42%	-1.39%	-1.36%	-1.59%	-4.34%
26		-0.96%	-0.98%	-0.85%	-0.70%	-1.54%	-2.63%	-0.84%	-0.89%	-0.85%	-0.81%	-0.22%	-2.83%
27		2.12%	2.57%	2.98%	3.47%	2.20%	2.03%	0.52%	0.72%	0.93%	1.07%	4.10%	0.95%
28	CHEMICAL PRODUCTS	-2.16%	-2.38%	-2.36%	-2.35%	-3.52%	-1.88%	-2.15%	-2.26%	-2.39%	-2.60%	-0.85%	-4.38%
29		-2.29%	-2.54%	-2.54%	-2.56%	-4.67%	-3.86%	-2.24%	-2.36%	-2.50%	-2.73%	-0.33%	-3.69%
30		-2.30%	-2.54%	-2.55%	-2.56%	-1.55%	-4.58%	-2.30%	-2.42%	-2.56%	-2.78%	-3.18%	-0.80%
31		-2.29%	-2.53%	-2.54%	-2.55%	-2.29%	-0.61%	-2.22%	-2.34%	-2.49%	-2.71%	-3.70%	-2.43%
32		-2.29%	-2.54%	-2.54%	-2.56%	-1.90%	-2.24%	-2.24%	-2.36%	-2.50%	-2.73%	-3.11%	-1.04%
33		-2.29%	-2.54%	-2.54%	-2.56%	-1.97%	-4.46%	-2.24%	-2.36%	-2.50%	-2.73%	-4.77%	-1.40%
34		-2.43%	-2.68%	-2.68%	-2.70%	-3.71%	-4.54%	-2.38%	-2.50%	-2.64%	-2.87%	-1.83%	-1.63%
35		-2.27%	-2.51%	-2.52%	-2.53%	-1.92%	-2.13%	-2.17%	-2.25%	-2.39%	-2.58%	-1.66%	-4.61%
36		-3.50%	-3.81%	-3.86%	-3.93%	-0.18%	-3.55%	-3.63%	-3.74%	-3.92%	-4.16%	-1.64%	-4.74%
37		-2.29%	-2.54%	-2.54%	-2.56%	-3.27%	-2.93%	-2.24%	-2.36%	-2.50%	-2.73%	-4.55%	-3.53%
38		-2.29%	-2.52%	-2.50%	-2.49%	-1.22%	-2.94%	-2.40%	-2.52%	-2.67%	-2.89%	-3.32%	-3.17%
39	PLASTICS	-2.29%	-2.54%	-2.54%	-2.56%	-2.46%	-0.06%	-2.24%	-2.36%	-2.50%	-2.73%	-3.37%	-1.88%
40		-2.29%	-2.54%	-2.54%	-2.56%	-2.54%	-2.59%	-2.23%	-2.36%	-2.50%	-2.72%	-4.31%	-1.43%
41	LEATHER GOODS	-5.47%	-5.98%	-6.11%	-6.35%	-0.88%	-0.47%	-9.84%	-10.09%	-10.46%	-10.86%	-2.31%	-3.03%
42		-5.50%	-6.01%	-6.20%	-6.46%	-4.84%	-3.26%	-9.50%	-9.73%	-10.10%	-10.50%	-0.81%	-3.30%
43		-1.17%	-1.15%	-1.03%	-0.88%	-1.21%	-0.96%	-3.97%	-3.91%	-3.98%	-4.02%	-1.10%	-2.61%
44	WOOD PRODUCTS	-2.13%	-2.32%	-2.30%	-2.29%	-1.49%	-2.10%	-3.39%	-3.44%	-3.52%	-3.71%	-1.02%	-4.95%
45		-1.59%	-1.67%	-1.62%	-1.53%	-4.50%	-2.40%	-3.41%	-3.45%	-3.53%	-3.71%	-1.79%	-2.87%
46		-1.89%	-1.93%	-1.88%	-1.78%	-1.01%	-4.59%	-3.49%	-3.53%	-3.62%	-3.80%	-2.59%	-2.88%
47	PAPER	-1.28%	-1.30%	-1.08%	-0.85%	-3.79%	-2.98%	-2.28%	-2.33%	-2.57%	-2.81%	-0.17%	-0.72%
48		-1.28%	-1.30%	-1.08%	-0.85%	-2.80%	-0.06%	-2.28%	-2.33%	-2.57%	-2.81%	-0.73%	-3.20%
49		-1.28%	-1.30%	-1.08%	-0.85%	-3.95%	-4.52%	-2.28%	-2.33%	-2.57%	-2.81%	-1.80%	-0.30%

Table 7.24 Predicted Annual Growth Rate in Commodity Trade between EU-27 and Japan (Median Growth Scenario) (cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-2.54%	-2.82%	-2.86%	-2.94%	-4.48%	-0.39%	-10.20%	-10.49%	-10.82%	-11.20%	-4.73%	-4.32%
51		-2.54%	-2.82%	-2.86%	-2.94%	-2.43%	-0.75%	-10.19%	-10.48%	-10.81%	-11.18%	-2.72%	-3.66%
52		-2.54%	-2.83%	-2.86%	-2.94%	-0.23%	-1.24%	-10.20%	-10.50%	-10.82%	-11.20%	-0.48%	-1.76%
53		-2.54%	-2.82%	-2.85%	-2.94%	-2.18%	-4.64%	-9.43%	-9.63%	-9.84%	-10.06%	-1.48%	-4.97%
54		-2.54%	-2.83%	-2.86%	-2.94%	-0.42%	-3.30%	-10.22%	-10.52%	-10.85%	-11.23%	-2.62%	-1.65%
55		-2.54%	-2.83%	-2.86%	-2.94%	-2.37%	-4.87%	-10.22%	-10.52%	-10.85%	-11.23%	-2.61%	-0.48%
56		-2.54%	-2.83%	-2.86%	-2.94%	-2.85%	-1.10%	-10.22%	-10.52%	-10.85%	-11.23%	-1.63%	-3.74%
57		-2.54%	-2.83%	-2.86%	-2.94%	-1.59%	-1.97%	-10.22%	-10.52%	-10.85%	-11.23%	-1.05%	-1.57%
58		-2.54%	-2.83%	-2.86%	-2.94%	-1.40%	-0.53%	-10.22%	-10.52%	-10.85%	-11.23%	-1.66%	-0.01%
59		-3.50%	-3.82%	-3.87%	-3.96%	-4.47%	-4.92%	-5.51%	-5.59%	-5.76%	-5.96%	-1.98%	-2.07%
60		-2.54%	-2.83%	-2.86%	-2.94%	-1.21%	-1.04%	-10.22%	-10.52%	-10.85%	-11.23%	-4.93%	-3.73%
61		-2.91%	-3.22%	-3.27%	-3.37%	-3.00%	-4.98%	-9.09%	-9.22%	-9.53%	-9.86%	-3.04%	-4.20%
62		-3.30%	-3.63%	-3.70%	-3.82%	-1.98%	-0.97%	-9.04%	-9.16%	-9.48%	-9.80%	-1.04%	-1.33%
63	-2.51%	-2.74%	-2.71%	-2.71%	-2.23%	-3.59%	-9.17%	-9.40%	-9.68%	-10.00%	-2.05%	-4.96%	
64	FOOTWEAR	-5.64%	-6.18%	-6.33%	-6.59%	-4.02%	-3.12%	-9.91%	-10.17%	-10.55%	-10.97%	-1.92%	-2.36%
65		-2.41%	-2.66%	-2.67%	-2.70%	-2.01%	-1.93%	-6.97%	-6.98%	-7.13%	-7.30%	-4.53%	-0.67%
66		-5.57%	-6.07%	-6.28%	-6.55%	-2.73%	-3.43%	-6.73%	-6.94%	-7.39%	-7.84%	-1.31%	-0.88%
67		-5.57%	-6.07%	-6.28%	-6.55%	-1.75%	-1.63%	-6.73%	-6.94%	-7.39%	-7.84%	-0.68%	-0.28%
68	STONE & GLASS	-1.70%	-1.76%	-1.59%	-1.42%	-4.18%	-2.08%	-3.77%	-3.80%	-3.98%	-4.17%	-3.28%	-4.74%
69		-1.70%	-1.76%	-1.59%	-1.42%	-3.98%	-4.50%	-3.77%	-3.80%	-3.98%	-4.17%	-3.95%	-1.77%
70		-1.72%	-1.77%	-1.61%	-1.44%	-2.61%	-2.23%	-3.86%	-3.89%	-4.07%	-4.25%	-3.87%	-2.20%
71	PRECIOUS STONES	-4.05%	-4.39%	-4.46%	-4.54%	-0.24%	-4.12%	-4.02%	-4.21%	-4.36%	-4.61%	-1.65%	-4.77%
72	BASE METALS	-2.78%	-2.99%	-3.01%	-3.00%	-1.61%	-4.08%	-1.55%	-1.51%	-1.49%	-1.46%	-3.70%	-3.18%
73		-2.69%	-2.88%	-2.76%	-2.65%	-0.35%	-0.57%	-4.10%	-4.14%	-4.32%	-4.49%	-0.54%	-0.97%
74		-1.23%	-1.20%	-0.98%	-0.72%	-4.47%	-0.06%	-1.93%	-1.93%	-2.05%	-2.19%	-4.47%	-4.12%
75		-1.64%	-1.81%	-1.76%	-1.69%	-2.65%	-4.83%	-2.06%	-2.33%	-2.38%	-2.61%	-1.78%	-4.65%
76		-2.13%	-2.31%	-2.23%	-2.14%	-4.17%	-3.34%	-2.60%	-2.81%	-2.88%	-3.10%	-0.48%	-4.54%
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78		-1.62%	-1.78%	-1.73%	-1.67%	-0.26%	-3.71%	-2.03%	-2.31%	-2.35%	-2.59%	-0.86%	-4.84%
79		-1.62%	-1.78%	-1.73%	-1.67%	-3.72%	-2.63%	-2.03%	-2.31%	-2.35%	-2.59%	-4.37%	-3.91%
80		-1.68%	-1.84%	-1.80%	-1.73%	-4.86%	-2.91%	-2.09%	-2.36%	-2.41%	-2.64%	-3.27%	-2.66%
81		-1.37%	-1.53%	-1.50%	-1.45%	-4.83%	-4.13%	-1.84%	-2.15%	-2.18%	-2.42%	-4.85%	-2.76%
82		-2.86%	-3.06%	-2.94%	-2.83%	-1.22%	-4.37%	-4.25%	-4.28%	-4.47%	-4.68%	-1.74%	-3.33%
83		-2.86%	-3.06%	-2.94%	-2.83%	-1.24%	-4.08%	-4.25%	-4.28%	-4.47%	-4.68%	-2.55%	-2.46%
84	MACHINE	-2.53%	-2.67%	-2.49%	-2.31%	-1.53%	-4.37%	-4.93%	-5.08%	-5.36%	-5.65%	-0.04%	-4.03%
85		-3.70%	-3.94%	-3.81%	-3.72%	-1.57%	-1.06%	-5.17%	-5.34%	-5.62%	-5.95%	-3.58%	-2.17%
86	VEHICLES	-2.03%	-2.25%	-2.14%	-2.05%	-2.64%	-0.42%	-2.89%	-3.25%	-3.72%	-4.18%	-3.28%	-4.82%
87		-1.30%	-1.28%	-1.07%	-0.82%	-3.87%	-1.21%	-2.03%	-2.00%	-2.16%	-2.31%	-0.29%	-3.07%
88		-2.20%	-2.48%	-2.40%	-2.35%	-2.11%	-3.99%	-3.19%	-3.68%	-4.24%	-4.82%	-4.16%	-2.71%
89		-2.20%	-2.48%	-2.40%	-2.35%	-1.57%	-0.47%	-3.17%	-3.66%	-4.23%	-4.80%	-2.95%	-0.53%
90	CLOCKS & MUSICAL INST.	-2.43%	-2.58%	-2.40%	-2.22%	-0.14%	-0.39%	-5.37%	-5.56%	-5.87%	-6.20%	-0.84%	-0.78%
91		-2.43%	-2.58%	-2.39%	-2.22%	-2.38%	-4.02%	-5.43%	-5.62%	-5.93%	-6.26%	-2.02%	-3.74%
92		-5.57%	-6.07%	-6.28%	-6.55%	-0.70%	-4.99%	-6.73%	-6.94%	-7.39%	-7.84%	-0.88%	-4.05%
93	ARMS	-2.43%	-2.58%	-2.40%	-2.23%	-1.93%	-4.88%	-5.34%	-5.52%	-5.83%	-6.16%	-2.32%	-2.69%
94	MISC. ART.	-3.76%	-4.03%	-3.98%	-3.95%	-2.91%	-0.38%	-6.03%	-6.22%	-6.58%	-6.96%	-1.01%	-3.14%
95		-5.57%	-6.07%	-6.28%	-6.55%	-4.50%	-4.17%	-6.73%	-6.94%	-7.39%	-7.84%	-4.45%	-3.14%
96		-5.57%	-6.07%	-6.28%	-6.55%	-1.23%	-1.55%	-6.83%	-7.04%	-7.49%	-7.93%	-2.45%	-0.24%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

Table 7.25 Predicted Annual Growth Rate in Commodity Trade between EU-27 and South Korea (Median Growth Scenario)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.36%	0.43%	0.50%	0.63%	0.67%	1.93%	-0.47%	-0.65%	-0.75%	-0.79%	-2.07%	-3.36%
02		4.94%	5.02%	5.05%	5.12%	0.19%	0.28%	-3.77%	-4.47%	-5.04%	-5.61%	-0.15%	-3.23%
03		1.09%	1.30%	1.45%	1.67%	3.66%	3.60%	-2.28%	-2.59%	-2.73%	-2.84%	-2.19%	-3.87%
04		1.21%	1.43%	1.58%	1.80%	1.12%	2.24%	-0.32%	-0.64%	-0.82%	-0.96%	-3.94%	-3.04%
05		1.04%	1.25%	1.40%	1.62%	4.66%	3.99%	-2.24%	-2.55%	-2.68%	-2.78%	-2.18%	-2.28%
06	VEGETABLE PRODUCTS	14.78%	14.43%	14.17%	13.91%	2.51%	2.04%	-4.55%	-4.72%	-4.61%	-4.54%	-1.28%	-4.03%
07		1.19%	1.39%	1.53%	1.74%	1.53%	3.43%	-2.38%	-2.69%	-2.81%	-2.92%	-1.34%	-1.09%
08		1.35%	1.53%	1.65%	1.83%	2.73%	3.57%	-2.60%	-2.88%	-2.97%	-3.06%	-3.10%	-2.04%
09		11.87%	11.91%	11.95%	11.97%	1.06%	1.11%	-5.93%	-6.32%	-6.46%	-6.64%	-0.16%	-0.11%
10		6.81%	6.31%	6.25%	5.94%	4.92%	3.65%	-2.46%	-2.31%	-2.15%	-1.95%	-1.01%	-4.47%
11		1.09%	1.31%	1.46%	1.68%	4.27%	3.94%	-1.28%	-1.53%	-1.63%	-1.68%	-1.86%	-2.55%
12		13.32%	13.18%	13.08%	12.97%	0.53%	3.76%	-5.79%	-6.22%	-6.34%	-6.57%	-4.00%	-1.52%
13		1.13%	1.35%	1.51%	1.74%	3.66%	2.60%	-1.29%	-1.53%	-1.59%	-1.63%	-3.74%	-4.89%
14		1.44%	1.86%	2.28%	2.71%	4.67%	0.06%	1.60%	1.40%	1.45%	1.42%	1.80%	2.13%
15	FATS & OILS	-1.96%	-2.09%	-2.23%	-2.31%	-2.07%	-1.46%	-2.16%	-2.72%	-2.92%	-3.30%	-2.26%	-3.57%
16	PREPARED FOODSTUFFS	1.24%	1.45%	1.60%	1.82%	1.58%	3.89%	-3.63%	-4.27%	-4.76%	-5.26%	-1.44%	-2.51%
17		2.57%	2.81%	2.95%	3.19%	3.74%	0.56%	-0.22%	-0.53%	-0.72%	-0.86%	-3.77%	-4.45%
18		2.16%	2.46%	2.70%	3.00%	3.22%	1.39%	-2.53%	-2.85%	-2.98%	-3.09%	-1.78%	-0.85%
19		1.12%	1.34%	1.49%	1.71%	0.13%	0.68%	-2.30%	-2.61%	-2.75%	-2.87%	-0.01%	-4.28%
20		1.12%	1.34%	1.49%	1.71%	2.29%	0.39%	-2.30%	-2.61%	-2.75%	-2.87%	-1.31%	-1.33%
21		1.13%	1.34%	1.49%	1.71%	0.14%	1.76%	-1.84%	-2.15%	-2.29%	-2.40%	-3.45%	-0.70%
22		0.21%	0.43%	0.59%	0.83%	4.22%	2.27%	0.19%	0.00%	-0.10%	-0.10%	-0.98%	-0.51%
23		1.46%	1.72%	1.91%	2.17%	4.37%	4.98%	-2.05%	-2.58%	-2.75%	-3.10%	-2.17%	-4.98%
24		4.69%	5.15%	5.58%	6.04%	1.41%	1.73%	0.10%	-0.08%	-0.17%	-0.17%	-3.74%	-2.37%
25	MINERAL PRODUCTS	0.69%	0.99%	1.26%	1.59%	0.03%	4.93%	0.48%	0.45%	0.47%	0.57%	3.89%	4.04%
26		-1.06%	-1.02%	-0.97%	-0.84%	-4.33%	-3.11%	2.26%	2.32%	2.43%	2.58%	0.46%	0.57%
27		1.68%	2.10%	2.45%	2.88%	0.33%	3.83%	3.07%	3.17%	3.35%	3.53%	1.12%	3.47%
28	CHEMICAL PRODUCTS	-3.33%	-3.67%	-4.02%	-4.32%	-2.76%	-1.73%	1.10%	0.96%	0.93%	0.88%	0.09%	1.30%
29		-3.67%	-4.08%	-4.52%	-4.91%	-0.51%	-0.98%	1.01%	0.86%	0.83%	0.75%	0.02%	4.33%
30		-3.55%	-3.94%	-4.35%	-4.72%	-3.93%	-3.19%	0.94%	0.80%	0.76%	0.69%	5.00%	3.28%
31		-3.67%	-4.08%	-4.51%	-4.90%	-1.19%	-3.29%	1.02%	0.87%	0.84%	0.77%	2.74%	4.63%
32		-3.68%	-4.09%	-4.52%	-4.91%	-4.20%	-0.60%	1.01%	0.86%	0.83%	0.76%	3.98%	4.90%
33		-3.68%	-4.09%	-4.52%	-4.91%	-2.71%	-0.95%	1.01%	0.86%	0.83%	0.76%	4.78%	4.41%
34		-3.64%	-4.04%	-4.46%	-4.84%	-1.98%	-2.25%	0.91%	0.76%	0.72%	0.64%	2.17%	1.91%
35		-3.37%	-3.73%	-4.10%	-4.42%	-1.00%	-4.00%	0.62%	0.45%	0.40%	0.32%	3.47%	1.40%
36		-3.28%	-3.58%	-3.92%	-4.22%	-2.88%	-0.16%	-0.09%	-0.32%	-0.42%	-0.53%	-4.37%	-4.98%
37		-3.68%	-4.09%	-4.52%	-4.91%	-4.81%	-1.52%	1.01%	0.86%	0.83%	0.76%	3.89%	4.98%
38		-2.93%	-3.18%	-3.43%	-3.62%	-1.75%	-1.19%	0.72%	0.55%	0.50%	0.42%	4.38%	2.61%
39	PLASTICS	-3.68%	-4.09%	-4.52%	-4.91%	-1.67%	-0.90%	1.01%	0.86%	0.83%	0.76%	0.90%	4.57%
40		-3.67%	-4.08%	-4.51%	-4.90%	-1.86%	-3.91%	1.04%	0.89%	0.85%	0.78%	2.76%	4.41%
41	LEATHER GOODS	-3.19%	-3.29%	-3.41%	-3.58%	-4.07%	-0.85%	-6.76%	-7.31%	-7.69%	-8.04%	-4.62%	-2.66%
42		-2.34%	-2.37%	-2.46%	-2.56%	-3.47%	-4.00%	-6.80%	-7.40%	-7.84%	-8.27%	-0.06%	-0.72%
43		0.36%	0.43%	0.50%	0.63%	3.52%	3.46%	-0.49%	-0.68%	-0.78%	-0.82%	-1.69%	-3.55%
44	WOOD PRODUCTS	-1.69%	-1.70%	-1.74%	-1.70%	-4.09%	-3.87%	-0.35%	-0.58%	-0.57%	-0.63%	-1.83%	-4.02%
45		-0.06%	0.19%	0.38%	0.65%	1.33%	1.10%	0.15%	-0.05%	-0.02%	-0.04%	-4.37%	-3.34%
46		-0.36%	-0.15%	-0.02%	0.20%	2.68%	2.93%	-2.15%	-2.53%	-2.61%	-2.79%	-1.98%	-4.81%
47	PAPER	1.01%	1.30%	1.51%	1.79%	4.92%	0.41%	-0.19%	-0.56%	-0.71%	-0.90%	-3.73%	-2.90%
48		1.01%	1.30%	1.51%	1.79%	1.44%	2.20%	-0.19%	-0.56%	-0.71%	-0.90%	-4.04%	-3.45%
49		1.01%	1.30%	1.51%	1.79%	4.04%	1.92%	-0.19%	-0.56%	-0.71%	-0.90%	-1.07%	-3.17%

Table 7.25 Predicted Annual Growth Rate in Commodity Trade between EU-27 and South Korea (Median Growth Scenario) (cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-1.19%	-1.21%	-1.29%	-1.38%	-1.45%	-2.24%	-7.06%	-7.56%	-7.92%	-8.30%	-0.75%	-4.26%
51		-1.19%	-1.21%	-1.29%	-1.38%	-2.32%	-2.63%	-7.06%	-7.56%	-7.92%	-8.30%	-0.22%	-2.04%
52		-1.18%	-1.20%	-1.29%	-1.38%	-3.79%	-1.59%	-6.96%	-7.44%	-7.80%	-8.16%	-0.42%	-4.87%
53		-1.12%	-1.13%	-1.20%	-1.28%	-3.25%	-4.92%	-4.58%	-4.78%	-4.88%	-4.91%	-3.04%	-0.20%
54		-1.19%	-1.21%	-1.29%	-1.38%	-1.99%	-0.64%	-7.06%	-7.56%	-7.93%	-8.31%	-4.25%	-0.57%
55		-1.19%	-1.21%	-1.29%	-1.38%	-4.19%	-4.06%	-7.06%	-7.56%	-7.93%	-8.31%	-4.15%	-4.32%
56		-1.19%	-1.21%	-1.29%	-1.38%	-1.37%	-4.28%	-7.06%	-7.56%	-7.93%	-8.31%	-1.82%	-4.52%
57		-1.19%	-1.21%	-1.29%	-1.38%	-2.86%	-0.35%	-7.06%	-7.56%	-7.93%	-8.31%	-4.64%	-2.88%
58		-1.19%	-1.21%	-1.29%	-1.38%	-3.72%	-4.56%	-7.06%	-7.56%	-7.93%	-8.31%	-2.25%	-0.99%
59		-1.76%	-1.84%	-1.98%	-2.11%	-2.13%	-4.24%	-2.39%	-2.64%	-2.75%	-2.85%	-1.88%	-2.50%
60		-1.19%	-1.21%	-1.29%	-1.38%	-0.07%	-3.06%	-7.06%	-7.56%	-7.93%	-8.31%	-2.63%	-0.88%
61		-0.95%	-0.93%	-0.98%	-1.03%	-2.10%	-3.29%	-7.01%	-7.50%	-7.85%	-8.17%	-4.33%	-2.26%
62		-0.82%	-0.77%	-0.80%	-0.83%	-2.90%	-2.36%	-7.01%	-7.50%	-7.85%	-8.16%	-2.23%	-2.73%
63	-0.88%	-0.84%	-0.85%	-0.87%	-0.38%	-4.98%	-5.42%	-5.83%	-6.12%	-6.41%	-4.90%	-1.37%	
64	FOOTWEAR	-3.21%	-3.31%	-3.43%	-3.60%	-4.04%	-0.08%	-7.27%	-7.89%	-8.34%	-8.77%	-2.65%	-4.42%
65		-2.16%	-2.31%	-2.49%	-2.65%	-1.63%	-1.65%	-3.79%	-3.98%	-4.01%	-4.02%	-5.00%	-3.99%
66		-2.12%	-2.13%	-2.24%	-2.33%	-2.63%	-2.62%	-3.86%	-4.57%	-5.16%	-5.71%	-0.36%	-4.14%
67		-2.12%	-2.13%	-2.24%	-2.33%	-2.06%	-0.48%	-3.86%	-4.57%	-5.16%	-5.71%	-0.06%	-1.28%
68	STONE & GLASS	1.40%	1.81%	2.14%	2.53%	4.51%	3.35%	-1.88%	-2.19%	-2.42%	-2.61%	-1.85%	-0.01%
69		1.40%	1.81%	2.14%	2.53%	3.15%	2.13%	-1.88%	-2.19%	-2.42%	-2.61%	-0.60%	-3.33%
70		1.22%	1.60%	1.91%	2.27%	1.62%	1.61%	-1.94%	-2.24%	-2.47%	-2.66%	-1.73%	-2.56%
71	PRECIOUS STONES	-1.29%	-1.25%	-1.28%	-1.27%	-4.97%	-4.80%	-0.99%	-1.34%	-1.56%	-1.79%	-2.09%	-2.19%
72	BASE METALS	0.63%	0.88%	1.09%	1.36%	2.06%	1.55%	0.04%	0.04%	0.07%	0.16%	4.44%	1.35%
73		0.91%	1.23%	1.49%	1.82%	3.74%	3.26%	-1.21%	-1.39%	-1.49%	-1.54%	-0.08%	-4.35%
74		1.05%	1.40%	1.66%	2.02%	2.57%	0.41%	-0.08%	-0.33%	-0.50%	-0.63%	-1.91%	-1.71%
75		0.69%	0.93%	1.11%	1.34%	1.41%	2.87%	0.20%	-0.05%	-0.20%	-0.38%	-4.72%	-4.97%
76		0.93%	1.24%	1.49%	1.79%	2.85%	3.00%	-0.62%	-0.89%	-1.03%	-1.20%	-3.79%	-4.72%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		0.67%	0.90%	1.07%	1.30%	1.61%	4.05%	0.24%	-0.02%	-0.16%	-0.34%	-0.03%	-1.88%
79		0.67%	0.90%	1.07%	1.30%	0.08%	0.79%	0.24%	-0.02%	-0.16%	-0.34%	-0.88%	-0.15%
80		0.72%	0.96%	1.15%	1.39%	3.42%	1.10%	0.15%	-0.10%	-0.25%	-0.43%	-3.28%	-4.19%
81		0.43%	0.58%	0.68%	0.84%	4.95%	4.62%	0.53%	0.28%	0.14%	-0.06%	4.03%	1.18%
82		1.10%	1.46%	1.75%	2.10%	3.57%	3.32%	-2.95%	-3.32%	-3.56%	-3.77%	-0.10%	-4.90%
83		1.10%	1.46%	1.75%	2.10%	3.48%	3.89%	-2.95%	-3.32%	-3.56%	-3.77%	-3.32%	-2.15%
84		MACHINE	1.04%	1.44%	1.77%	2.17%	3.88%	4.26%	-1.63%	-2.07%	-2.39%	-2.72%	-1.09%
85	-0.23%		0.09%	0.38%	0.70%	3.56%	1.63%	-1.81%	-2.27%	-2.56%	-2.91%	-2.47%	-1.20%
86	VEHICLES	2.49%	2.80%	3.08%	3.40%	1.60%	3.93%	-1.07%	-1.80%	-2.34%	-2.82%	-2.49%	-0.71%
87		1.30%	1.65%	1.92%	2.28%	4.71%	0.03%	-0.30%	-0.60%	-0.81%	-0.95%	-4.42%	-2.74%
88		2.61%	2.92%	3.20%	3.51%	4.32%	1.07%	-1.27%	-2.10%	-2.71%	-3.27%	-2.98%	-1.16%
89		2.62%	2.92%	3.20%	3.52%	3.17%	4.33%	-1.25%	-2.08%	-2.70%	-3.26%	-3.57%	-4.22%
90	CLOCKS & MUSICAL INST.	1.48%	1.93%	2.29%	2.72%	1.92%	1.49%	-1.69%	-2.14%	-2.46%	-2.80%	-2.61%	-3.54%
91		1.48%	1.93%	2.29%	2.72%	3.03%	4.27%	-1.72%	-2.16%	-2.48%	-2.82%	-2.57%	-2.26%
92		-2.12%	-2.13%	-2.24%	-2.33%	-1.05%	-2.86%	-3.86%	-4.57%	-5.16%	-5.71%	-3.04%	-4.39%
93	ARMS	1.48%	1.92%	2.28%	2.71%	1.37%	3.60%	-1.71%	-2.15%	-2.47%	-2.81%	-2.04%	-2.42%
94	MISC. ART.	0.41%	0.74%	1.01%	1.33%	3.13%	2.06%	-2.40%	-2.90%	-3.28%	-3.65%	-0.24%	-2.54%
95		-2.12%	-2.13%	-2.24%	-2.33%	-2.77%	-1.61%	-3.86%	-4.57%	-5.16%	-5.71%	-4.41%	-3.16%
96		-2.13%	-2.14%	-2.25%	-2.34%	-4.45%	-1.26%	-3.94%	-4.64%	-5.23%	-5.78%	-2.35%	-4.34%
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

Table 7.26 Predicted Annual Growth Rate in Commodity Trade between EU-27 and U.S. (Median Growth Scenario)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	-1.37%	-1.16%	-1.01%	-0.80%	-0.84%	-4.52%	0.88%	0.67%	0.58%	0.25%	0.31%	3.82%
02		-2.53%	-1.78%	-1.25%	-0.60%	-4.84%	-1.17%	2.64%	1.86%	1.31%	0.34%	2.89%	4.15%
03		-1.29%	-0.93%	-0.68%	-0.34%	-1.79%	-3.35%	0.95%	0.54%	0.37%	-0.15%	-0.35%	-3.65%
04		-2.06%	-1.49%	-1.12%	-0.63%	-0.44%	-1.82%	2.39%	1.89%	1.61%	1.03%	0.19%	3.35%
05		-1.06%	-0.76%	-0.55%	-0.28%	-1.71%	-3.29%	1.10%	0.75%	0.62%	0.16%	0.92%	0.94%
06	VEGETABLE PRODUCTS	-0.48%	-0.31%	-0.18%	-0.20%	-3.72%	-0.28%	-0.55%	-0.83%	-0.75%	-1.02%	-0.52%	-2.75%
07		-2.24%	-2.21%	-2.17%	-2.14%	-4.80%	-3.78%	0.55%	0.24%	0.14%	-0.22%	-1.46%	-3.37%
08		-2.30%	-2.31%	-2.30%	-2.31%	-0.15%	-4.47%	0.29%	0.12%	0.12%	-0.05%	0.11%	-3.95%
09		-0.31%	-0.16%	-0.04%	-0.08%	-1.54%	-1.82%	-0.33%	-0.66%	-0.65%	-0.99%	-3.15%	-0.59%
10		-1.18%	-1.07%	-0.99%	-0.95%	-4.87%	-0.01%	-1.26%	-1.46%	-1.24%	-1.36%	-3.50%	-2.05%
11		-1.55%	-1.16%	-0.89%	-0.51%	-1.58%	-2.10%	1.27%	0.93%	0.75%	0.29%	0.06%	3.29%
12		-0.20%	-0.01%	0.16%	0.21%	1.35%	0.75%	-0.44%	-0.76%	-0.70%	-1.02%	-3.81%	-2.40%
13		-1.91%	-1.48%	-1.17%	-0.77%	-0.26%	-3.64%	0.85%	0.43%	0.24%	-0.29%	2.58%	3.27%
14		-2.23%	-1.79%	-1.47%	-1.08%	-0.50%	-2.66%	0.60%	0.39%	0.47%	0.17%	4.64%	3.18%
15	FATS & OILS	-1.45%	-0.94%	-0.54%	-0.14%	-0.16%	-4.81%	-0.07%	-0.57%	-0.57%	-1.12%	-2.52%	-1.02%
16	PREPARED FOODSTUFFS	-1.91%	-1.44%	-1.11%	-0.67%	-3.21%	-1.32%	1.37%	0.83%	0.51%	-0.17%	0.05%	0.80%
17		-1.52%	-0.98%	-0.62%	-0.14%	-5.00%	-4.01%	2.48%	1.98%	1.71%	1.13%	3.57%	0.73%
18		-1.48%	-1.10%	-0.83%	-0.50%	-1.83%	-3.01%	0.71%	0.27%	0.09%	-0.45%	-3.98%	-1.63%
19		-1.73%	-1.31%	-1.00%	-0.60%	-1.44%	-4.47%	0.82%	0.37%	0.16%	-0.40%	5.07%	0.95%
20		-1.73%	-1.31%	-1.00%	-0.60%	-2.83%	-0.78%	0.82%	0.37%	0.16%	-0.40%	3.61%	-0.16%
21		-1.74%	-1.31%	-1.01%	-0.60%	-2.61%	-0.02%	1.14%	0.69%	0.47%	-0.09%	3.87%	-0.24%
22		-1.08%	-0.80%	-0.60%	-0.30%	-3.48%	-3.25%	1.54%	1.26%	1.10%	0.68%	2.28%	2.99%
23		-1.45%	-1.04%	-0.71%	-0.39%	-0.10%	-3.01%	-0.04%	-0.52%	-0.50%	-1.03%	-1.13%	-4.59%
24		-1.00%	-0.73%	-0.54%	-0.27%	-2.84%	-1.39%	1.52%	1.24%	1.08%	0.67%	0.97%	4.16%
25	MINERAL PRODUCTS	0.08%	0.37%	0.61%	0.90%	4.61%	2.79%	1.00%	0.91%	0.90%	0.69%	2.18%	3.65%
26		0.16%	0.43%	0.67%	0.95%	0.13%	1.74%	1.29%	1.32%	1.41%	1.32%	4.10%	4.01%
27		1.24%	1.92%	2.53%	3.18%	0.54%	4.59%	3.58%	3.67%	3.77%	3.51%	4.08%	1.52%
28	CHEMICAL PRODUCTS	-1.57%	-0.88%	-0.36%	0.28%	-2.70%	0.65%	1.12%	0.75%	0.54%	0.02%	0.06%	4.73%
29		-1.76%	-1.09%	-0.58%	0.05%	5.01%	1.58%	0.77%	0.32%	0.04%	-0.57%	1.88%	-4.92%
30		-1.78%	-1.10%	-0.59%	0.04%	-0.72%	0.39%	0.74%	0.29%	0.01%	-0.60%	-2.37%	-3.26%
31		-1.71%	-1.04%	-0.54%	0.08%	-2.63%	-2.25%	0.77%	0.33%	0.05%	-0.56%	4.50%	0.62%
32		-1.76%	-1.09%	-0.58%	0.05%	2.61%	3.20%	0.77%	0.32%	0.04%	-0.57%	1.87%	5.81%
33		-1.76%	-1.09%	-0.58%	0.05%	-2.25%	-4.94%	0.77%	0.32%	0.04%	-0.57%	3.51%	-0.42%
34		-1.85%	-1.17%	-0.67%	-0.03%	-4.18%	-3.07%	0.61%	0.16%	-0.12%	-0.74%	-4.86%	-4.08%
35		-1.77%	-1.10%	-0.60%	0.02%	5.26%	1.87%	0.90%	0.45%	0.17%	-0.43%	-3.97%	-2.43%
36		-2.70%	-2.04%	-1.56%	-0.95%	-0.10%	-1.43%	-0.74%	-1.27%	-1.62%	-2.28%	-0.13%	-1.23%
37		-1.76%	-1.09%	-0.58%	0.05%	3.83%	0.48%	0.77%	0.32%	0.04%	-0.57%	0.99%	4.88%
38		-1.84%	-1.16%	-0.65%	-0.01%	-2.03%	-2.86%	0.71%	0.25%	-0.05%	-0.67%	-2.05%	-1.80%
39	PLASTICS	-1.76%	-1.09%	-0.58%	0.05%	-4.36%	2.72%	0.77%	0.32%	0.04%	-0.57%	-4.94%	-3.84%
40		-1.77%	-1.10%	-0.59%	0.04%	-0.19%	3.57%	0.77%	0.32%	0.04%	-0.57%	5.82%	-2.07%
41	LEATHER GOODS	-4.59%	-4.26%	-4.05%	-3.79%	-0.17%	-1.40%	-8.24%	-8.90%	-9.34%	-10.11%	-1.75%	-4.64%
42		-6.32%	-5.92%	-5.75%	-5.47%	-1.62%	-0.96%	-6.59%	-7.30%	-7.81%	-8.67%	-4.37%	-4.05%
43		-1.60%	-1.42%	-1.29%	-1.09%	-4.77%	-0.85%	0.72%	0.49%	0.40%	0.05%	4.87%	2.45%
44	WOOD PRODUCTS	-2.88%	-2.26%	-1.81%	-1.23%	-0.18%	-3.49%	0.89%	0.32%	-0.03%	-0.71%	-2.79%	-2.18%
45		-2.93%	-2.35%	-1.94%	-1.40%	-3.33%	-4.18%	0.92%	0.37%	0.02%	-0.64%	2.80%	3.47%
46		-3.28%	-2.63%	-2.16%	-1.55%	-0.89%	-4.32%	0.89%	0.28%	-0.10%	-0.81%	-1.98%	-0.49%
47	PAPER	-2.19%	-1.52%	-1.05%	-0.42%	-0.35%	-0.75%	1.14%	0.61%	0.26%	-0.42%	-0.26%	-3.05%
48		-2.19%	-1.52%	-1.05%	-0.42%	-0.55%	-0.11%	1.14%	0.61%	0.26%	-0.42%	4.09%	-5.27%
49		-2.19%	-1.52%	-1.05%	-0.42%	-4.63%	-0.18%	1.14%	0.61%	0.26%	-0.42%	-5.03%	-0.33%

**Table 7.26 Predicted Annual Growth Rate in Commodity Trade
between EU-27 and U.S. (Median Growth Scenario) (cont'd)**

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-4.92%	-4.43%	-4.17%	-3.82%	-1.13%	-1.58%	-2.66%	-3.41%	-3.94%	-4.84%	-2.95%	-2.57%
51		-4.91%	-4.44%	-4.18%	-3.83%	-0.17%	-0.46%	-2.66%	-3.41%	-3.95%	-4.84%	-4.70%	-4.61%
52		-4.81%	-4.32%	-4.04%	-3.67%	-1.30%	-1.04%	-2.65%	-3.40%	-3.93%	-4.82%	-1.85%	-0.10%
53		-2.87%	-2.52%	-2.30%	-2.08%	-1.56%	-2.14%	-2.52%	-3.24%	-3.73%	-4.58%	-4.40%	-3.49%
54		-4.92%	-4.42%	-4.15%	-3.77%	-1.17%	-1.41%	-2.65%	-3.40%	-3.93%	-4.83%	-2.22%	-0.61%
55		-4.92%	-4.42%	-4.15%	-3.77%	-3.34%	-1.83%	-2.65%	-3.40%	-3.93%	-4.83%	-1.51%	-2.43%
56		-4.92%	-4.42%	-4.15%	-3.77%	-0.32%	-1.90%	-2.65%	-3.40%	-3.93%	-4.83%	-2.35%	-4.18%
57		-4.92%	-4.42%	-4.15%	-3.77%	-2.86%	-1.63%	-2.65%	-3.40%	-3.93%	-4.83%	-2.58%	-4.05%
58		-4.92%	-4.42%	-4.15%	-3.77%	-0.37%	-4.42%	-2.65%	-3.40%	-3.93%	-4.83%	-2.44%	-4.37%
59		-3.34%	-2.71%	-2.27%	-1.70%	-1.75%	-4.36%	-1.56%	-2.17%	-2.58%	-3.32%	-3.92%	-2.02%
60		-4.92%	-4.42%	-4.15%	-3.77%	-0.19%	-0.75%	-2.65%	-3.40%	-3.93%	-4.83%	-0.75%	-3.12%
61		-5.64%	-5.18%	-4.95%	-4.60%	-3.37%	-0.95%	-2.93%	-3.74%	-4.26%	-5.20%	-1.78%	-0.80%
62		-5.86%	-5.41%	-5.20%	-4.87%	-3.56%	-2.82%	-2.96%	-3.77%	-4.29%	-5.24%	-4.52%	-3.49%
63	-4.48%	-3.87%	-3.49%	-2.97%	-3.38%	-3.00%	-2.00%	-2.75%	-3.27%	-4.15%	-3.47%	-0.37%	
64	FOOTWEAR	-6.93%	-6.60%	-6.47%	-6.27%	-1.84%	-1.04%	-8.42%	-9.11%	-9.58%	-10.38%	-0.72%	-1.49%
65		-2.32%	-1.65%	-1.16%	-0.54%	-0.27%	-0.96%	-0.93%	-1.51%	-1.85%	-2.56%	-2.51%	-1.01%
66		-6.13%	-5.71%	-5.53%	-5.22%	-3.88%	-1.32%	-4.15%	-5.06%	-5.79%	-6.87%	-3.82%	-2.91%
67		-6.13%	-5.71%	-5.53%	-5.22%	-2.84%	-4.40%	-4.15%	-5.06%	-5.79%	-6.87%	-2.11%	-1.32%
68	STONE & GLASS	-2.07%	-1.36%	-0.86%	-0.20%	-2.95%	-4.54%	0.21%	-0.31%	-0.66%	-1.32%	-2.48%	-2.13%
69		-2.07%	-1.36%	-0.86%	-0.20%	-2.25%	-2.98%	0.21%	-0.31%	-0.66%	-1.32%	-0.22%	-2.98%
70		-2.10%	-1.39%	-0.89%	-0.23%	-0.44%	-2.38%	0.18%	-0.33%	-0.69%	-1.35%	-0.43%	-2.68%
71	PRECIOUS STONES	-3.06%	-2.40%	-1.94%	-1.33%	-4.94%	-0.25%	-1.08%	-1.47%	-1.70%	-2.17%	-0.61%	-1.29%
72	BASE METALS	-1.60%	-0.89%	-0.33%	0.38%	-3.86%	-1.01%	0.29%	0.04%	-0.09%	-0.46%	-3.60%	-4.38%
73		-3.19%	-2.43%	-1.89%	-1.18%	-3.59%	-2.41%	-0.15%	-0.68%	-1.03%	-1.67%	-1.96%	-0.36%
74		-1.71%	-1.03%	-0.54%	0.12%	-3.18%	-1.83%	2.06%	1.64%	1.37%	0.82%	4.14%	3.55%
75		-1.76%	-0.96%	-0.36%	0.39%	0.94%	0.67%	1.28%	1.12%	1.07%	0.78%	3.09%	1.85%
76		-2.21%	-1.42%	-0.84%	-0.09%	-1.55%	-3.05%	0.82%	0.54%	0.41%	0.02%	3.78%	0.16%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		-1.74%	-0.94%	-0.34%	0.42%	5.18%	1.25%	1.30%	1.15%	1.10%	0.81%	4.87%	3.40%
79		-1.74%	-0.94%	-0.34%	0.42%	0.51%	3.36%	1.30%	1.15%	1.10%	0.81%	0.54%	4.22%
80		-1.78%	-0.99%	-0.39%	0.37%	-1.73%	1.49%	1.26%	1.08%	1.03%	0.73%	0.73%	4.66%
81		-1.58%	-0.78%	-0.17%	0.58%	3.83%	2.43%	1.47%	1.35%	1.33%	1.08%	2.28%	4.33%
82		-3.58%	-2.84%	-2.35%	-1.66%	-2.46%	-0.53%	-0.56%	-1.20%	-1.65%	-2.41%	-3.83%	-1.27%
83		-3.58%	-2.84%	-2.35%	-1.66%	-2.33%	-1.87%	-0.56%	-1.20%	-1.65%	-2.41%	-4.18%	-3.32%
84		MACHINE	-3.66%	-2.89%	-2.36%	-1.64%	-0.74%	-4.27%	0.14%	-0.59%	-1.10%	-1.94%	-2.46%
85	-4.47%		-3.78%	-3.30%	-2.66%	-4.49%	-3.93%	-0.74%	-1.50%	-2.01%	-2.88%	-3.92%	-1.92%
86	VEHICLES	-3.05%	-2.40%	-1.96%	-1.33%	-0.42%	-3.61%	1.19%	0.62%	0.22%	-0.46%	-2.82%	-1.88%
87		-2.37%	-1.71%	-1.27%	-0.64%	-1.40%	-3.24%	1.99%	1.52%	1.19%	0.58%	4.75%	1.93%
88		-3.08%	-2.42%	-1.98%	-1.36%	-3.79%	-1.21%	1.08%	0.51%	0.09%	-0.60%	0.00%	-3.10%
89		-3.08%	-2.42%	-1.98%	-1.36%	-2.69%	-0.48%	1.09%	0.51%	0.10%	-0.60%	-1.29%	-4.33%
90	CLOCKS & MUSICAL INST.	-3.63%	-2.82%	-2.26%	-1.51%	-0.77%	-3.92%	-0.05%	-0.84%	-1.41%	-2.30%	-4.29%	-1.07%
91		-3.62%	-2.81%	-2.26%	-1.51%	-2.45%	-0.52%	-0.07%	-0.85%	-1.42%	-2.31%	-0.27%	-2.35%
92		-6.13%	-5.71%	-5.53%	-5.22%	-1.41%	-3.34%	-4.15%	-5.06%	-5.79%	-6.87%	-2.92%	-2.61%
93	ARMS	-3.62%	-2.81%	-2.26%	-1.51%	-4.85%	-3.42%	-0.05%	-0.83%	-1.40%	-2.29%	-2.74%	-0.12%
94	MISC. ART.	-4.69%	-4.04%	-3.63%	-3.05%	-4.76%	-4.63%	-2.22%	-3.01%	-3.60%	-4.52%	-1.02%	-0.20%
95		-6.13%	-5.71%	-5.53%	-5.22%	-1.55%	-4.41%	-4.15%	-5.06%	-5.79%	-6.87%	-4.02%	-1.96%
96		-6.13%	-5.71%	-5.53%	-5.23%	-3.36%	-4.80%	-4.19%	-5.09%	-5.82%	-6.89%	-3.61%	-2.34%
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

**Table 7.27 Predicted Annual Growth Rate in Commodity Trade
between EU-27 and ASEAN (Median Growth Scenario)**

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.84%	1.12%	0.92%	1.17%	4.73%	1.95%	-0.04%	-0.07%	-0.41%	-0.39%	-2.02%	-2.67%
02		6.78%	7.72%	6.73%	7.35%	3.14%	4.47%	-3.94%	-4.67%	-5.09%	-5.69%	-0.12%	-3.86%
03		1.57%	1.96%	1.71%	2.03%	1.23%	4.59%	-0.56%	-0.65%	-0.96%	-1.02%	-3.28%	-1.61%
04		1.58%	1.98%	1.71%	2.02%	0.95%	4.47%	0.80%	0.61%	0.25%	0.10%	2.20%	2.52%
05		1.56%	1.95%	1.71%	2.03%	4.43%	3.51%	-0.55%	-0.64%	-0.94%	-1.00%	-3.30%	-0.64%
06	VEGETABLE PRODUCTS	4.29%	4.89%	4.22%	4.64%	0.71%	3.62%	-3.46%	-3.83%	-3.92%	-4.22%	-1.63%	-4.03%
07		1.59%	1.92%	1.43%	1.68%	1.99%	0.62%	-0.99%	-1.08%	-1.33%	-1.37%	-2.30%	-1.06%
08		1.60%	1.88%	1.29%	1.51%	2.40%	0.03%	-1.71%	-1.79%	-1.94%	-1.95%	-2.65%	-1.84%
09		5.13%	5.78%	4.96%	5.38%	2.56%	2.36%	-2.38%	-2.62%	-2.79%	-2.95%	-4.02%	-4.06%
10		6.30%	6.70%	5.25%	5.27%	1.12%	1.70%	-2.69%	-3.12%	-4.07%	-4.61%	-1.03%	-0.29%
11		1.56%	1.96%	1.70%	2.01%	4.48%	4.85%	0.06%	0.03%	-0.30%	-0.30%	-4.14%	-2.47%
12		5.19%	5.84%	5.06%	5.49%	2.50%	2.63%	-2.96%	-3.27%	-3.39%	-3.61%	-4.28%	-0.94%
13		2.08%	2.52%	2.17%	2.54%	2.07%	2.63%	-0.55%	-0.65%	-0.95%	-1.02%	-1.18%	-1.80%
14		2.61%	3.11%	2.72%	3.14%	0.20%	0.35%	-0.36%	-0.54%	-0.75%	-0.94%	-3.19%	-1.54%
15		FATS & OILS	4.97%	5.70%	5.11%	5.63%	1.98%	2.93%	-1.57%	-1.91%	-2.16%	-2.41%	-0.13%
16	PREPARED FOODSTUFFS	4.01%	4.73%	4.19%	4.72%	0.41%	3.84%	-1.92%	-2.21%	-2.54%	-2.75%	-1.03%	-2.95%
17		3.42%	3.98%	3.46%	3.86%	2.30%	2.63%	0.78%	0.59%	0.24%	0.09%	2.20%	4.38%
18		2.50%	2.98%	2.59%	2.95%	1.12%	1.65%	-0.66%	-0.76%	-1.06%	-1.13%	-3.60%	-3.01%
19		1.58%	1.98%	1.71%	2.03%	4.21%	0.87%	-0.57%	-0.67%	-0.97%	-1.04%	-0.76%	-2.35%
20		1.58%	1.98%	1.71%	2.03%	2.30%	4.56%	-0.57%	-0.67%	-0.97%	-1.04%	-1.62%	-3.07%
21		1.58%	1.98%	1.71%	2.03%	1.48%	3.54%	-0.09%	-0.21%	-0.53%	-0.63%	-0.31%	-2.62%
22		0.42%	0.69%	0.63%	0.89%	0.95%	3.61%	0.94%	0.98%	0.62%	0.67%	0.87%	4.88%
23		4.68%	5.38%	4.83%	5.34%	1.84%	2.82%	-1.22%	-1.46%	-1.67%	-1.83%	-3.11%	-0.26%
24		4.39%	5.01%	4.34%	4.76%	3.88%	1.09%	0.91%	0.95%	0.59%	0.64%	3.15%	4.27%
25		MINERAL PRODUCTS	0.70%	0.96%	1.04%	1.31%	4.50%	3.04%	3.63%	3.98%	3.36%	3.58%	3.59%
26	0.68%		0.93%	1.03%	1.30%	2.94%	1.44%	3.99%	4.36%	3.71%	3.94%	4.51%	1.45%
27	3.24%		3.71%	3.51%	3.87%	2.30%	3.01%	5.21%	5.78%	5.53%	5.97%	4.53%	0.75%
28	CHEMICAL PRODUCTS	3.03%	3.53%	3.18%	3.54%	4.93%	0.74%	1.03%	1.02%	0.50%	0.40%	0.25%	3.54%
29		3.03%	3.53%	3.17%	3.53%	4.13%	1.66%	0.76%	0.70%	0.14%	-0.01%	4.67%	2.48%
30		2.96%	3.45%	3.08%	3.43%	1.76%	2.99%	0.71%	0.65%	0.09%	-0.06%	-2.59%	-1.34%
31		2.94%	3.42%	3.09%	3.44%	4.04%	3.60%	0.86%	0.81%	0.25%	0.12%	0.30%	4.54%
32		3.04%	3.53%	3.17%	3.53%	3.85%	0.92%	0.77%	0.71%	0.14%	0.00%	-0.68%	-4.68%
33		3.04%	3.53%	3.17%	3.53%	3.14%	0.30%	0.77%	0.71%	0.14%	0.00%	-3.55%	-1.09%
34		2.71%	3.20%	2.82%	3.16%	4.53%	2.23%	0.69%	0.62%	0.05%	-0.10%	-4.23%	-3.26%
35		2.74%	3.22%	2.88%	3.23%	0.67%	1.40%	0.65%	0.55%	0.07%	-0.07%	-5.98%	-4.07%
36		0.77%	1.13%	0.60%	0.82%	1.20%	3.45%	-0.02%	-0.16%	-0.80%	-1.01%	-4.08%	-2.50%
37		3.04%	3.53%	3.17%	3.53%	0.68%	4.47%	0.77%	0.71%	0.14%	0.00%	4.57%	-1.10%
38		2.98%	3.48%	3.12%	3.48%	4.18%	2.97%	0.56%	0.48%	-0.09%	-0.25%	-3.51%	-3.92%
39	PLASTICS	3.04%	3.53%	3.17%	3.53%	4.95%	0.78%	0.77%	0.71%	0.14%	0.00%	5.99%	-1.13%
40		2.82%	3.31%	2.94%	3.31%	0.77%	4.56%	0.76%	0.70%	0.14%	-0.01%	-2.36%	-1.71%
41	LEATHER GOODS	-1.69%	-1.57%	-2.36%	-2.43%	-1.11%	-4.44%	-4.71%	-5.06%	-5.78%	-6.15%	-4.32%	-2.25%
42		-1.53%	-1.40%	-2.17%	-2.22%	-1.94%	-0.15%	-4.13%	-4.50%	-5.29%	-5.71%	-1.08%	-2.72%
43		0.84%	1.12%	0.92%	1.17%	2.12%	3.88%	-0.04%	-0.06%	-0.40%	-0.38%	-3.82%	-0.29%
44	WOOD PRODUCTS	1.61%	2.02%	1.69%	2.04%	2.30%	2.90%	-0.94%	-1.13%	-1.55%	-1.76%	-2.55%	-1.42%
45		1.87%	2.30%	1.95%	2.32%	4.23%	0.30%	-1.22%	-1.44%	-1.81%	-2.04%	-3.24%	-2.59%
46		0.56%	0.88%	0.61%	0.87%	0.70%	2.28%	-1.56%	-1.82%	-2.24%	-2.49%	-4.02%	-0.28%
47	PAPER	2.21%	2.69%	2.38%	2.75%	3.66%	4.39%	0.83%	0.75%	0.18%	0.05%	1.50%	2.66%
48		2.21%	2.69%	2.38%	2.75%	3.48%	2.93%	0.83%	0.75%	0.18%	0.05%	0.28%	3.76%
49		2.21%	2.69%	2.38%	2.75%	0.22%	3.23%	0.83%	0.75%	0.18%	0.05%	4.97%	3.66%

Table 7.27 Predicted Annual Growth Rate in Commodity Trade between EU-27 and ASEAN (Median Growth Scenario) (cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	0.53%	0.77%	0.16%	0.22%	0.59%	3.65%	-4.74%	-5.08%	-5.94%	-6.39%	-3.50%	-2.02%
51		0.53%	0.77%	0.16%	0.22%	3.45%	3.90%	-4.73%	-5.08%	-5.94%	-6.39%	-4.44%	-3.77%
52		0.53%	0.77%	0.16%	0.22%	0.63%	0.87%	-4.67%	-5.00%	-5.85%	-6.29%	-0.93%	-0.39%
53		0.52%	0.77%	0.16%	0.22%	2.60%	3.58%	-2.78%	-2.83%	-3.47%	-3.56%	-3.08%	-2.38%
54		0.53%	0.77%	0.16%	0.22%	0.32%	1.39%	-4.74%	-5.08%	-5.94%	-6.40%	-1.09%	-0.47%
55		0.53%	0.77%	0.16%	0.22%	1.66%	3.49%	-4.74%	-5.08%	-5.94%	-6.40%	-0.80%	-3.92%
56		0.53%	0.77%	0.16%	0.22%	2.31%	3.71%	-4.74%	-5.08%	-5.94%	-6.40%	-2.87%	-1.56%
57		0.53%	0.77%	0.16%	0.22%	1.00%	1.10%	-4.74%	-5.08%	-5.94%	-6.40%	-3.94%	-1.98%
58		0.53%	0.77%	0.16%	0.22%	1.73%	4.28%	-4.74%	-5.08%	-5.94%	-6.40%	-3.19%	-2.35%
59		0.39%	0.67%	0.08%	0.20%	2.68%	3.55%	-1.47%	-1.65%	-2.32%	-2.57%	-0.22%	-1.51%
60		0.53%	0.77%	0.16%	0.22%	2.71%	3.36%	-4.74%	-5.08%	-5.94%	-6.40%	-0.14%	-1.27%
61		-0.24%	0.00%	-0.60%	-0.53%	-1.51%	-0.69%	-4.97%	-5.31%	-6.02%	-6.41%	-1.88%	-0.14%
62		-0.29%	-0.06%	-0.65%	-0.59%	-1.34%	-4.17%	-5.03%	-5.37%	-6.04%	-6.41%	-2.21%	-2.42%
63		0.59%	0.84%	0.24%	0.32%	1.09%	1.91%	-3.87%	-4.18%	-5.02%	-5.41%	-0.13%	-0.19%
64	FOOTWEAR	-1.70%	-1.59%	-2.38%	-2.46%	-1.36%	-2.31%	-5.15%	-5.56%	-6.35%	-6.80%	-3.22%	-4.06%
65		0.21%	0.51%	-0.04%	0.10%	-2.41%	2.84%	-1.13%	-1.20%	-1.71%	-1.84%	-4.32%	-4.38%
66		-1.22%	-1.08%	-1.87%	-1.92%	-0.16%	-4.58%	-1.83%	-2.22%	-3.08%	-3.55%	-3.83%	-1.24%
67		-1.22%	-1.08%	-1.87%	-1.92%	-0.96%	-2.54%	-1.83%	-2.22%	-3.08%	-3.55%	-4.28%	-4.19%
68	STONE & GLASS	1.78%	2.22%	1.87%	2.20%	0.79%	3.90%	-0.66%	-0.75%	-1.26%	-1.38%	-1.73%	-2.78%
69		1.78%	2.22%	1.87%	2.20%	2.29%	1.54%	-0.66%	-0.75%	-1.26%	-1.38%	-0.90%	-1.98%
70		1.71%	2.15%	1.78%	2.10%	1.29%	0.66%	-0.73%	-0.82%	-1.33%	-1.45%	-2.71%	-1.90%
71	PRECIOUS STONES	-0.36%	-0.12%	-0.77%	-0.68%	-3.51%	-1.30%	0.30%	0.19%	-0.54%	-0.73%	-2.01%	-0.01%
72	BASE METALS	1.66%	2.06%	1.80%	2.13%	0.20%	3.43%	1.42%	1.61%	0.96%	1.02%	4.07%	2.85%
73		1.50%	1.90%	1.48%	1.79%	2.22%	0.37%	-0.27%	-0.29%	-0.91%	-0.98%	-1.83%	-0.98%
74		2.26%	2.75%	2.46%	2.86%	2.26%	3.13%	0.84%	0.81%	0.12%	0.02%	4.86%	0.47%
75		2.82%	3.29%	2.65%	2.95%	1.58%	0.93%	1.07%	1.03%	0.32%	0.18%	3.00%	1.40%
76		2.24%	2.68%	2.10%	2.38%	0.36%	3.48%	0.33%	0.27%	-0.38%	-0.51%	-0.02%	-1.87%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		2.85%	3.32%	2.68%	2.98%	3.43%	3.85%	1.11%	1.07%	0.36%	0.22%	4.34%	2.87%
79		2.85%	3.32%	2.68%	2.98%	3.45%	1.27%	1.11%	1.07%	0.36%	0.22%	4.95%	0.90%
80		2.78%	3.25%	2.62%	2.91%	0.07%	0.14%	1.02%	0.98%	0.27%	0.14%	1.46%	0.12%
81		3.10%	3.58%	2.92%	3.22%	4.28%	4.58%	1.43%	1.39%	0.65%	0.50%	1.28%	3.97%
82		1.19%	1.54%	1.03%	1.28%	3.74%	4.25%	-1.16%	-1.27%	-1.83%	-1.97%	-3.03%	-1.77%
83		1.19%	1.54%	1.03%	1.28%	3.38%	2.11%	-1.16%	-1.27%	-1.83%	-1.97%	-2.60%	-1.98%
84	MACHINE	1.14%	1.60%	1.18%	1.52%	4.26%	1.99%	-1.46%	-1.77%	-2.61%	-2.94%	-1.29%	-0.43%
85		0.06%	0.43%	-0.03%	0.23%	-0.20%	4.19%	-1.29%	-1.60%	-2.42%	-2.78%	-1.93%	-1.79%
86	VEHICLES	3.74%	4.24%	3.58%	3.92%	0.23%	3.67%	-0.98%	-1.49%	-2.43%	-2.86%	-1.65%	-1.58%
87		2.42%	2.92%	2.62%	3.03%	3.19%	4.08%	-0.14%	-0.37%	-1.14%	-1.35%	-1.32%	-3.13%
88		3.78%	4.27%	3.59%	3.93%	4.89%	1.95%	-1.02%	-1.54%	-2.49%	-2.92%	-2.34%	-0.66%
89		3.81%	4.30%	3.62%	3.96%	2.31%	1.77%	-1.02%	-1.54%	-2.49%	-2.92%	-2.61%	-3.42%
90	CLOCKS & MUSICAL INST.	2.14%	2.67%	2.25%	2.65%	4.87%	0.11%	-1.63%	-1.94%	-2.78%	-3.12%	-3.29%	-3.22%
91		1.94%	2.46%	2.03%	2.42%	0.44%	4.80%	-1.63%	-1.94%	-2.79%	-3.12%	-0.13%	-3.63%
92		-1.22%	-1.08%	-1.87%	-1.92%	-4.45%	-3.99%	-1.83%	-2.22%	-3.08%	-3.55%	-0.15%	-1.33%
93	ARMS	2.17%	2.70%	2.27%	2.67%	0.07%	3.07%	-1.61%	-1.92%	-2.76%	-3.09%	-1.70%	-2.35%
94	MISC. ART.	-0.67%	-0.44%	-1.15%	-1.10%	-4.52%	-1.25%	-1.65%	-1.98%	-2.81%	-3.18%	-3.89%	-3.47%
95		-1.22%	-1.08%	-1.87%	-1.92%	-0.17%	-1.08%	-1.83%	-2.22%	-3.08%	-3.55%	-1.69%	-1.01%
96		-1.24%	-1.09%	-1.89%	-1.94%	-1.48%	-3.40%	-1.85%	-2.24%	-3.11%	-3.58%	-2.62%	-1.16%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

7.3 Module II – Freight Mode Choice Model

Based on the proposed integrated trade demand forecasting framework as presented in Chapter 3, after predicting commodity trade between regions via the first module (as discussed in Chapter 4), freight mode choice has to be determined. As discussed in Chapter 5, binary probit mode is used to determine the amount of maritime commodity trade flow between countries.

A total of twelve binary probit models were developed using the commodity trade data from the USA Trade Online®. However, it should be noted that this database provides detailed commodity trade data with either end of the trade leg in the U.S. For the other trade routes not bounded by U.S., the modal split was estimated using the mean of modal shares between U.S. imports for origin countries and U.S. exports for destination countries.

In this chapter, all commodity groups traded along all the routes under all case scenarios were studied. Selected routes (i.e. between U.S. and her trading partners, and EU-27 and her trading partners) are discussed in details in this Section.

7.3.1 Estimated Maritime Trade between U.S. and her Trading Partners

From the models as presented in Chapter 5, it can be observed that each trade route have a unique model coefficients, meaning that mode share model should be trade-route specific. Besides, from the sign of coefficients attached to commodity value and weight parameters, it shows that the higher the value of a commodity, the higher the tendency of it will be transported by air.

The probabilities of commodity carried by sea between U.S. and her trading partners are listed in Table 7.28. It can be observed from the table that the probability of commodities carried by sea varies across commodity groups.

Some commodity groups (especially those of higher values and higher weights such as HS 71 – “Precious Stones”) are carried by other transport modes while commodity groups with lower values and higher weights are usually carried by sea. Probabilities of shipping for commodity groups within same HS category also vary by trade flows directions (i.e. import and export) for the same country-pair. This may be due to the broad classification of commodity group at HS 2-digit which allows both low-value raw materials (i.e. usually transported in sea) and high-value final products (i.e. transported by other modes) to be considered in the analyses. Furthermore, the probabilities of transporting commodity groups within same HS category but between different country pairs can also vary and this is indicative of goods under same category carried by different transport modes based on their trading routes.

After the determination of the probability of commodities carried by sea, the resultant amount of commodity (in terms of million US dollars) carried by maritime transport is presented in Tables 7.29 to 7.34. It can be observed that some of the commodities are not transported by sea at all. For example, HS 1 “Live Animals” are not transported by sea. When looking into more detailed or finer commodity classifications under this commodity category, HS 1 “Live Animals” is actually comprised of living animals such as “HS 0101 Live Horses”, “HS 0102 Live Bovine Animals”, “HS 0103 Live Swine”, etc., which are mostly transported by land when alive due to high-valued especially for Live Horses while chances of them transporting by sea is minimal because of long travelling time from Australia to the United States.

Table 7.28 Probability of Commodity Transported by Sea

HS-2	SECTION	IMPORT						EXPORT					
		Australia	China	Japan	Korea	ASEAN	EU-27	Australia	China	Japan	Korea	ASEAN	EU-27
01	LIVE ANIMALS	---	0.007	---	---	0.003	0.009	0.013	0.008	0.002	0.004	0.007	0.001
02		0.989	0.999	0.165	1.000	0.912	0.900	0.999	1.000	0.996	0.995	0.980	0.932
03		0.625	0.994	0.834	0.880	0.967	0.446	0.982	0.937	0.918	0.950	0.859	0.750
04		0.936	0.888	0.702	0.953	0.827	0.959	0.979	0.969	0.977	0.968	0.988	0.615
05		0.711	0.965	0.717	0.761	0.758	0.829	0.791	0.949	0.707	0.782	0.908	0.507
06	VEGETABLE PRODUCTS	0.012	0.800	0.356	0.593	0.333	0.613	0.405	0.810	0.548	0.209	0.578	0.530
07		0.726	0.975	0.945	0.993	0.894	0.562	0.813	0.963	0.837	0.934	0.970	0.641
08		0.963	0.964	0.980	0.998	0.970	0.963	0.770	0.938	0.846	0.888	0.977	0.959
09		0.544	0.969	0.915	0.995	0.986	0.941	0.911	0.978	0.927	0.960	0.981	0.937
10		0.850	0.988	0.873	0.996	0.997	0.936	0.997	0.995	0.999	0.999	0.999	0.937
11		0.998	0.968	0.995	0.982	0.836	0.857	0.987	0.980	0.975	0.956	0.980	0.644
12		0.958	0.791	0.411	0.854	0.344	0.507	0.500	0.997	0.950	0.980	0.976	0.916
13		0.209	0.751	0.280	0.839	0.851	0.665	0.738	0.926	0.769	0.581	0.874	0.761
14		1.000	0.981	0.940	0.993	0.877	0.934	0.837	0.991	0.972	0.819	0.872	0.910
15	FATS & OILS	0.981	0.935	0.971	0.881	0.991	0.975	0.592	0.974	0.951	0.938	0.822	0.842
16	PREPARED FOODSTUFFS	0.959	0.996	0.995	0.989	0.997	0.962	0.986	0.883	0.959	0.866	0.986	0.611
17		0.987	0.970	0.982	0.932	0.995	0.902	0.979	0.967	0.975	0.953	0.976	0.902
18		0.747	0.995	0.969	0.982	0.976	0.925	0.969	0.973	0.858	0.940	0.978	0.889
19		0.970	0.995	0.991	0.999	0.996	0.955	0.953	0.843	0.990	0.964	0.970	0.862
20		0.949	0.984	0.990	0.998	0.992	0.969	0.985	0.989	0.986	0.976	0.989	0.900
21		0.885	0.929	0.829	0.967	0.972	0.771	0.905	0.811	0.766	0.803	0.828	0.754
22		0.994	0.992	0.995	0.992	0.996	0.978	0.995	0.934	0.959	0.949	0.949	0.979
23		0.997	0.984	0.969	0.992	0.996	0.653	0.987	0.955	0.978	0.984	0.965	0.965
24		---	0.769	0.914	0.999	0.989	0.913	0.867	0.995	0.924	0.992	0.994	0.993
25	MINERAL PRODUCTS	0.987	0.991	0.935	0.997	0.991	0.957	0.976	0.959	0.966	0.960	0.966	0.940
26		0.989	0.955	0.983	0.948	0.943	0.946	0.987	0.986	0.997	0.994	0.941	0.967
27		0.995	0.997	0.993	1.000	1.000	0.999	0.985	0.992	0.997	0.953	0.999	0.998
28	CHEMICAL PRODUCTS	0.920	0.867	0.818	0.871	0.935	0.612	0.862	0.681	0.878	0.815	0.773	0.822
29		0.207	0.857	0.489	0.959	0.184	0.208	0.833	0.956	0.773	0.960	0.835	0.507
30		0.056	0.728	0.152	0.488	0.059	0.203	0.151	0.160	0.039	0.172	0.172	0.179
31		0.764	0.987	0.988	0.988	0.984	0.952	0.999	0.997	0.999	0.998	0.990	0.953
32		0.897	0.900	0.763	0.893	0.889	0.761	0.861	0.587	0.736	0.743	0.836	0.771
33		0.729	0.946	0.704	0.861	0.868	0.797	0.755	0.765	0.728	0.695	0.788	0.668
34		0.918	0.959	0.897	0.942	0.963	0.814	0.951	0.949	0.924	0.923	0.941	0.847
35		0.976	0.935	0.611	0.867	0.706	0.671	0.795	0.653	0.741	0.662	0.643	0.576
36		0.967	0.997	0.792	0.999	0.772	0.371	0.713	0.725	0.726	0.589	0.204	0.338
37		0.661	0.887	0.634	0.367	0.651	0.788	0.826	0.901	0.582	0.267	0.553	0.525
38		0.453	0.816	0.394	0.403	0.742	0.520	0.597	0.655	0.495	0.658	0.769	0.524
39	PLASTICS	0.849	0.922	0.805	0.913	0.940	0.682	0.873	0.893	0.779	0.838	0.844	0.741
40		0.828	0.929	0.948	0.916	0.983	0.788	0.939	0.927	0.877	0.877	0.831	0.837
41	LEATHER GOODS	0.462	0.744	0.119	0.793	0.565	0.416	0.539	0.982	0.963	0.989	0.908	0.761
42		0.323	0.877	0.415	0.412	0.885	0.142	0.491	0.361	0.226	0.238	0.233	0.353
43		0.089	0.365	---	0.300	0.813	0.054	0.209	0.021	0.016	0.001	0.333	0.042
44	WOOD PRODUCTS	0.952	0.970	0.683	0.931	0.976	0.922	0.979	0.992	0.983	0.982	0.985	0.942
45		0.802	0.959	0.463	0.577	0.971	0.868	0.742	0.944	0.483	0.696	0.728	0.821
46		1.000	0.944	0.609	0.219	0.959	0.468	0.677	0.859	0.646	0.548	0.695	0.644
47	PAPER	0.776	0.962	0.982	0.937	0.904	0.987	0.998	0.993	0.999	0.997	0.967	0.998
48		0.970	0.953	0.907	0.943	0.977	0.887	0.953	0.929	0.963	0.951	0.913	0.859
49		0.641	0.928	0.602	0.894	0.746	0.471	0.548	0.098	0.065	0.476	0.338	0.408

Table 7.28 Probability of Commodity Transported by Sea (cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		Australia	China	Japan	Korea	ASEAN	EU-27	Australia	China	Japan	Korea	ASEAN	EU-27
50	TEXTILES AND TEXTILE ARTICLES	0.935	0.373	0.371	0.102	0.017	0.167	0.432	0.462	0.095	0.466	0.198	0.161
51		0.985	0.694	0.535	0.384	0.974	0.327	0.409	0.880	0.163	0.316	0.671	0.674
52		0.820	0.955	0.796	0.951	0.901	0.434	0.694	0.999	0.971	0.994	0.997	0.767
53		0.527	0.961	0.460	0.886	0.335	0.221	0.541	0.748	0.340	0.317	0.493	0.570
54		0.513	0.946	0.796	0.923	0.903	0.664	0.859	0.863	0.895	0.953	0.785	0.783
55		0.938	0.947	0.961	0.973	0.942	0.772	0.798	0.982	0.660	0.971	0.964	0.933
56		0.954	0.933	0.881	0.900	0.955	0.808	0.806	0.948	0.882	0.865	0.904	0.633
57		0.953	0.934	0.774	0.945	0.874	0.849	0.939	0.892	0.832	0.870	0.835	0.641
58		0.297	0.791	0.566	0.784	0.596	0.217	0.535	0.638	0.626	0.471	0.490	0.394
59		0.845	0.917	0.827	0.916	0.964	0.613	0.658	0.670	0.596	0.451	0.539	0.539
60		0.519	0.937	0.625	0.904	0.928	0.487	0.744	0.740	0.764	0.696	0.721	0.627
61		0.121	0.864	0.280	0.846	0.904	0.192	0.638	0.488	0.239	0.330	0.439	0.345
62		0.053	0.807	0.189	0.722	0.889	0.107	0.451	0.371	0.166	0.194	0.270	0.176
63	0.478	0.951	0.571	0.883	0.935	0.683	0.793	0.599	0.578	0.683	0.773	0.531	
64	FOOTWEAR	0.820	0.948	0.431	0.888	0.942	0.268	0.657	0.209	0.458	0.276	0.188	0.590
65		0.321	0.896	0.953	0.936	0.893	0.420	0.579	0.605	0.303	0.444	0.592	0.372
66		0.470	0.978	0.602	0.623	0.980	0.624	0.766	0.787	0.316	0.586	0.611	0.548
67		0.445	0.893	0.787	0.489	0.819	0.108	0.431	0.914	0.251	0.569	0.618	0.453
68	STONE & GLASS	0.390	0.951	0.709	0.726	0.967	0.803	0.795	0.611	0.620	0.739	0.496	0.419
69		0.369	0.951	0.452	0.555	0.968	0.850	0.671	0.552	0.405	0.593	0.410	0.469
70		0.956	0.914	0.672	0.763	0.693	0.679	0.876	0.547	0.681	0.674	0.662	0.383
71	PRECIOUS STONES	0.015	0.207	0.131	0.133	0.031	0.055	0.072	0.109	0.169	0.067	0.014	0.112
72	BASE METALS	0.992	0.969	0.946	0.977	0.975	0.910	0.876	0.973	0.903	0.986	0.972	0.871
73		0.833	0.952	0.940	0.968	0.962	0.815	0.805	0.746	0.537	0.690	0.592	0.476
74		0.800	0.915	0.810	0.953	0.956	0.750	0.672	0.980	0.845	0.914	0.710	0.823
75		0.994	0.832	0.819	0.956	0.571	0.794	0.691	0.705	0.763	0.685	0.544	0.579
76		0.966	0.952	0.765	0.934	0.952	0.811	0.856	0.972	0.867	0.948	0.696	0.661
77		---	---	---	---	---	---	---	---	---	---	---	---
78		0.966	0.932	0.424	0.903	0.671	0.776	0.770	0.843	0.606	0.990	0.872	0.903
79		1.000	0.896	0.982	0.894	0.945	0.875	0.878	0.932	0.922	0.787	0.818	0.912
80		0.999	0.968	0.860	0.576	0.991	0.812	0.490	0.836	0.757	0.400	0.639	0.849
81		0.976	0.755	0.847	0.826	0.405	0.551	0.272	0.668	0.474	0.599	0.191	0.523
82		0.628	0.915	0.545	0.595	0.677	0.357	0.540	0.399	0.325	0.418	0.271	0.315
83	0.575	0.900	0.890	0.878	0.886	0.639	0.682	0.591	0.576	0.567	0.497	0.479	
84	MACHINE	0.624	0.503	0.731	0.666	0.300	0.479	0.702	0.519	0.264	0.390	0.402	0.349
85		0.244	0.489	0.432	0.219	0.274	0.335	0.315	0.142	0.155	0.125	0.072	0.153
86	VEHICLES	0.796	0.875	0.913	0.959	0.529	0.695	0.890	0.813	0.708	0.701	0.748	0.617
87		0.869	0.881	0.989	0.982	0.930	0.924	0.967	0.945	0.818	0.849	0.893	0.864
88		0.486	0.735	0.716	0.860	0.251	0.101	0.094	0.022	0.051	0.080	0.027	0.043
89		0.963	0.956	0.959	0.954	0.989	0.942	0.967	0.952	0.900	0.831	0.926	0.938
90	CLOCKS & MUSICAL INST.	0.382	0.487	0.365	0.491	0.220	0.119	0.145	0.156	0.075	0.131	0.097	0.114
91		0.218	0.622	0.181	0.879	0.222	0.074	0.167	0.254	0.083	0.138	0.107	0.095
92		0.025	0.946	0.924	0.859	0.980	0.373	0.574	0.563	0.301	0.411	0.572	0.476
93	ARMS	0.134	0.947	0.890	0.806	0.691	0.298	0.674	0.539	0.141	0.423	0.351	0.379
94	MISC. ART.	0.698	0.941	0.886	0.917	0.938	0.710	0.768	0.803	0.761	0.687	0.758	0.567
95		0.616	0.907	0.262	0.834	0.907	0.553	0.704	0.452	0.479	0.556	0.553	0.616
96		0.125	0.905	0.729	0.880	0.913	0.651	0.747	0.565	0.436	0.634	0.496	0.597
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

Table 7.29 Estimated Maritime Trade between US and Australia

HS-2	SECTION	IMPORT (million USD)						EXPORT (million USD)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	---	---	---	---	---	---	0.21	0.21	0.22	0.22	0.22	0.23
02		1299.60	1341.42	1386.13	1428.39	1445.58	1460.72	56.35	55.69	55.17	54.80	55.10	55.48
03		53.65	54.36	55.09	55.65	55.88	56.17	77.82	76.89	76.19	75.63	75.65	75.50
04		93.97	96.47	99.10	101.47	102.27	103.02	31.39	31.27	31.24	31.29	31.43	31.48
05		3.76	3.76	3.75	3.71	3.68	3.64	2.80	2.81	2.82	2.85	2.86	2.88
06	VEGETABLE PRODUCTS	0.04	0.04	0.04	0.04	0.04	0.04	2.94	2.93	2.93	2.91	2.91	2.90
07		34.75	34.82	34.93	35.00	35.01	34.96	68.07	67.12	66.29	65.49	65.29	64.99
08		41.45	41.43	41.48	41.53	41.53	41.46	62.34	61.45	60.64	59.84	59.46	59.23
09		5.80	5.82	5.85	5.87	5.86	5.84	19.58	19.46	19.36	19.22	19.14	19.07
10		0.05	0.05	0.05	0.05	0.05	0.05	14.44	14.28	14.15	14.02	13.88	13.74
11		85.96	87.08	88.16	88.93	89.02	89.01	47.27	46.81	46.47	46.22	46.33	46.36
12		13.06	13.16	13.31	13.46	13.50	13.57	16.03	15.99	15.98	15.93	15.91	15.96
13		1.70	1.72	1.73	1.74	1.74	1.73	8.34	8.24	8.17	8.10	8.09	8.10
14		1.10	1.11	1.12	1.12	1.13	1.13	1.18	1.17	1.17	1.18	1.18	1.18
15	FATS & OILS	204.30	210.73	217.62	224.13	227.35	230.57	15.14	14.92	14.75	14.60	14.52	14.47
16	PREPARED FOODSTUFFS	15.61	15.81	16.00	16.12	16.08	16.07	34.69	34.26	33.93	33.67	33.74	33.86
17		75.59	77.46	79.44	81.25	81.93	82.78	2.80	2.79	2.80	2.80	2.83	2.85
18		5.97	6.02	6.07	6.09	6.07	6.03	11.07	10.93	10.83	10.74	10.73	10.70
19		15.95	16.09	16.23	16.29	16.22	16.19	21.92	21.65	21.43	21.26	21.25	21.18
20		42.73	43.10	43.46	43.64	43.37	43.00	61.99	61.22	60.62	60.13	60.04	59.79
21		15.77	15.98	16.20	16.36	16.35	16.36	17.67	17.47	17.31	17.18	17.20	17.25
22		610.15	619.32	628.17	634.99	641.47	647.88	96.88	97.05	97.42	97.97	99.16	100.33
23		4.50	4.54	4.58	4.61	4.59	4.56	8.83	8.72	8.63	8.55	8.54	8.50
24		---	---	---	---	---	---	24.71	24.76	24.85	24.98	25.19	25.43
25	MINERAL PRODUCTS	241.62	244.62	248.03	251.42	252.55	253.94	18.49	18.27	18.10	17.97	17.80	17.63
26		98.45	99.68	101.08	102.48	103.39	104.19	6.46	6.41	6.38	6.36	6.30	6.25
27		364.12	383.63	403.55	425.27	441.66	459.42	309.91	328.32	350.70	377.00	394.81	413.04
28	CHEMICAL PRODUCTS	140.91	145.36	150.28	155.14	156.41	157.43	653.93	646.11	641.15	638.58	637.64	637.39
29		35.08	36.13	37.30	38.43	38.69	38.84	783.97	772.51	764.22	758.54	755.07	749.43
30		2.28	2.35	2.42	2.50	2.52	2.54	34.24	33.72	33.35	33.09	32.99	32.81
31		11.56	11.85	12.18	12.50	12.55	12.59	63.22	62.30	61.63	61.18	61.02	60.80
32		18.26	18.81	19.42	20.01	20.14	20.33	97.87	96.44	95.40	94.69	94.27	93.65
33		11.54	11.89	12.27	12.65	12.74	12.84	66.80	65.82	65.11	64.63	64.17	63.76
34		10.49	10.74	11.02	11.28	11.29	11.32	56.96	56.03	55.34	54.85	54.58	54.23
35		12.10	12.39	12.71	13.00	13.08	13.15	26.06	25.70	25.44	25.26	25.13	25.04
36		5.14	5.10	5.05	4.98	4.85	4.73	12.84	12.45	12.12	11.84	11.64	11.47
37		10.76	11.09	11.45	11.80	11.90	12.00	75.09	73.99	73.19	72.65	72.52	72.55
38		21.07	21.65	22.28	22.89	22.96	23.03	151.04	148.62	146.83	145.56	144.44	143.06
39	PLASTICS	48.37	49.82	51.43	53.01	53.46	53.98	277.92	273.85	270.91	268.90	267.07	264.54
40		30.06	30.95	31.94	32.91	33.21	33.45	188.06	185.32	183.34	181.99	180.90	179.99
41	LEATHER GOODS	2.48	2.40	2.32	2.23	2.11	2.00	4.95	4.47	4.04	3.66	3.36	3.09
42		1.22	1.16	1.11	1.04	0.98	0.93	3.85	3.55	3.28	3.04	2.87	2.69
43		0.10	0.10	0.10	0.10	0.10	0.10	0.02	0.02	0.02	0.02	0.02	0.02
44	WOOD PRODUCTS	9.73	9.82	9.91	9.96	9.91	9.88	29.84	29.15	28.60	28.14	27.84	27.55
45		0.40	0.40	0.41	0.41	0.41	0.40	0.94	0.92	0.90	0.88	0.87	0.86
46		0.95	0.96	0.96	0.96	0.96	0.95	1.91	1.86	1.82	1.78	1.75	1.73
47	PAPER	2.24	2.28	2.32	2.35	2.34	2.34	30.79	30.18	29.68	29.28	28.98	28.72
48		46.71	47.50	48.29	48.89	48.84	48.92	490.56	480.80	472.85	466.46	463.01	460.37
49		1.75	1.78	1.81	1.84	1.83	1.83	16.02	15.71	15.45	15.24	15.19	15.14

**Table 7.29 Estimated Maritime Trade between US and Australia
(cont'd)**

HS-2	SECTION	IMPORT (million USD)						EXPORT (million USD)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	1.86	1.80	1.71	1.59	1.53	1.47	0.58	0.54	0.50	0.47	0.45	0.42
51		9.33	8.98	8.52	7.90	7.60	7.32	2.14	2.00	1.87	1.76	1.66	1.57
52		5.16	5.08	5.00	4.90	4.76	4.63	13.25	12.17	11.20	10.32	9.67	9.06
53		0.63	0.62	0.61	0.60	0.58	0.56	2.31	2.16	2.02	1.90	1.80	1.70
54		2.06	2.03	2.00	1.95	1.90	1.85	10.41	9.56	8.79	8.10	7.55	7.07
55		5.34	5.27	5.18	5.07	4.92	4.77	13.73	12.60	11.59	10.68	9.95	9.25
56		1.61	1.58	1.56	1.53	1.48	1.43	4.10	3.76	3.46	3.19	2.97	2.77
57		1.09	1.07	1.05	1.03	1.00	0.97	3.23	2.96	2.73	2.51	2.35	2.20
58		0.60	0.59	0.59	0.57	0.55	0.54	3.28	3.01	2.77	2.55	2.38	2.22
59		4.62	4.54	4.46	4.37	4.23	4.10	11.36	10.88	10.46	10.10	9.80	9.50
60		1.13	1.12	1.10	1.08	1.04	1.01	4.89	4.49	4.13	3.81	3.55	3.30
61		0.49	0.48	0.48	0.46	0.45	0.43	7.47	6.81	6.23	5.71	5.31	4.93
62		0.18	0.18	0.18	0.17	0.17	0.16	4.35	3.96	3.61	3.30	3.06	2.85
63	1.80	1.78	1.76	1.74	1.69	1.64	11.70	11.01	10.40	9.86	9.43	9.03	
64	FOOTWEAR	0.98	0.90	0.83	0.75	0.68	0.62	2.81	2.53	2.28	2.06	1.88	1.72
65		0.37	0.38	0.39	0.40	0.39	0.39	3.35	3.27	3.20	3.15	3.11	3.06
66		3.36	3.23	3.09	2.93	2.78	2.63	9.61	8.97	8.37	7.83	7.49	7.15
67		3.63	3.49	3.34	3.17	3.01	2.86	6.17	5.76	5.38	5.03	4.79	4.56
68	STONE & GLASS	9.47	9.57	9.67	9.73	9.67	9.59	31.86	31.09	30.46	29.95	29.71	29.52
69		3.94	3.98	4.03	4.05	4.03	4.00	11.82	11.53	11.30	11.11	10.99	10.91
70		22.73	22.95	23.18	23.33	23.22	23.06	34.59	33.74	33.03	32.44	32.05	31.69
71	PRECIOUS STONES	2.22	2.20	2.18	2.15	2.09	2.05	4.20	3.99	3.81	3.65	3.54	3.42
72	BASE METALS	346.33	350.49	355.32	359.75	357.51	356.15	55.46	55.10	55.04	55.28	55.41	55.51
73		119.39	120.47	121.67	122.61	121.51	120.58	153.84	149.09	145.12	141.90	139.40	137.10
74		204.69	204.02	203.47	202.17	198.52	194.80	287.78	285.24	283.87	283.58	286.18	289.27
75		77.43	76.89	76.39	75.61	73.94	72.46	8.34	8.19	8.11	8.08	8.01	7.94
76		116.63	115.83	115.10	113.94	111.56	109.22	27.35	26.65	26.12	25.75	25.38	25.01
77		---	---	---	---	---	---	---	---	---	---	---	---
78		42.95	42.65	42.37	41.94	41.15	40.46	5.17	5.08	5.04	5.02	4.98	4.94
79		44.44	44.13	43.85	43.40	42.62	41.79	5.90	5.80	5.74	5.72	5.66	5.60
80		33.40	33.16	32.95	32.61	31.97	31.27	2.62	2.57	2.54	2.53	2.51	2.49
81		285.06	283.05	281.22	278.34	272.71	266.96	9.82	9.70	9.66	9.68	9.60	9.50
82		14.65	14.62	14.58	14.47	14.20	13.89	44.96	43.32	41.90	40.71	39.87	39.05
83	7.32	7.31	7.29	7.23	7.07	6.93	30.97	29.84	28.86	28.04	27.48	26.99	
84	MACHINE	410.70	412.94	414.49	413.64	412.35	410.83	3094.93	2994.82	2910.62	2840.28	2784.33	2748.69
85		65.04	64.94	64.76	64.20	63.55	62.76	698.73	667.75	640.89	617.39	600.61	584.61
86	VEHICLES	68.85	70.40	71.98	73.35	73.44	73.57	467.50	453.53	441.63	431.37	425.15	417.90
87		153.58	157.17	160.80	163.91	166.97	169.85	1719.63	1695.05	1677.23	1665.53	1658.53	1655.38
88		26.87	27.47	28.08	28.61	28.70	28.72	30.74	29.79	28.97	28.27	27.99	27.75
89		60.36	61.71	63.09	64.28	64.28	64.10	357.89	346.82	337.34	329.11	324.34	320.58
90	CLOCKS & MUSICAL INST.	62.37	62.67	62.85	62.65	61.70	60.67	147.92	143.40	139.62	136.51	134.75	132.73
91		12.24	12.30	12.34	12.30	12.14	11.96	59.04	57.24	55.73	54.49	53.69	52.75
92		0.60	0.57	0.55	0.52	0.50	0.47	23.65	22.06	20.60	19.26	18.41	17.60
93	ARMS	2.84	2.85	2.86	2.85	2.82	2.79	88.99	86.27	84.00	82.13	81.11	80.29
94	MISC. ART.	25.24	24.59	23.89	23.04	22.08	21.13	83.25	79.46	76.11	73.15	71.17	69.31
95		28.26	27.17	26.01	24.68	23.36	22.03	56.81	53.00	49.49	46.27	44.27	42.34
96		6.11	5.88	5.62	5.34	5.06	4.80	64.38	60.05	56.07	52.42	50.01	47.64
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

Table 7.30 Estimated Maritime Trade between US and China

HS-2	SECTION	IMPORT (million USD)						EXPORT (million USD)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.16	0.16	0.17	0.17	0.18	0.18	1.41	1.44	1.46	1.48	1.52	1.55
02		70.91	86.78	105.99	128.79	156.37	189.54	392.88	373.30	355.66	339.92	325.71	312.72
03		1737.82	1862.67	1993.78	2124.63	2268.04	2425.57	241.67	240.74	240.26	240.26	241.60	243.14
04		120.75	131.93	144.21	157.27	170.93	185.85	139.49	136.05	132.92	130.16	128.26	126.02
05		86.54	102.32	120.30	139.72	162.69	188.95	7.10	7.10	7.12	7.14	7.19	7.23
06	VEGETABLE PRODUCTS	96.19	106.85	119.08	132.81	147.57	163.60	48.05	49.18	50.39	51.58	53.04	54.69
07		758.08	810.87	866.77	923.74	984.81	1049.14	120.89	119.80	119.00	118.30	118.28	118.03
08		451.97	482.06	514.27	547.93	585.39	625.10	80.82	79.86	79.12	78.35	78.20	77.85
09		381.06	418.18	459.71	504.95	554.50	607.51	82.41	83.69	85.04	86.25	87.69	89.30
10		77.54	81.73	86.62	91.81	97.61	103.59	19.24	19.29	19.33	19.37	19.39	19.41
11		811.21	869.89	931.44	992.77	1060.88	1136.11	117.31	116.75	116.41	116.33	117.09	117.87
12		255.43	281.16	310.29	342.49	375.92	412.61	7058.23	7528.89	8044.88	8606.76	9227.31	9904.59
13		180.76	193.79	207.47	221.11	236.20	252.25	57.63	58.12	58.75	59.51	60.23	61.05
14		17.50	18.54	19.69	20.89	21.98	23.14	80.07	81.82	83.82	86.02	88.11	90.43
15	FATS & OILS	181.96	200.12	220.07	241.18	264.17	288.84	183.23	177.26	172.10	167.27	162.81	158.64
16	PREPARED FOODSTUFFS	410.13	443.15	478.57	515.00	554.30	597.55	139.57	133.52	128.10	123.27	118.44	113.64
17		6.25	7.14	8.16	9.32	10.54	11.92	9.74	9.35	8.99	8.66	8.37	8.11
18		242.22	260.15	279.05	298.03	318.11	338.66	34.26	34.14	34.08	34.08	34.24	34.42
19		492.49	528.20	565.65	602.99	644.37	687.83	58.60	58.28	58.08	58.01	58.14	58.23
20		1332.93	1429.59	1530.97	1632.01	1745.69	1863.79	188.00	186.99	186.34	186.10	186.32	186.56
21		364.64	391.22	419.12	446.98	476.94	507.97	48.40	48.00	47.70	47.50	47.55	47.63
22		69.04	72.55	76.16	79.65	83.21	86.90	29.70	30.26	30.85	31.50	32.40	33.34
23		93.46	101.08	109.31	117.80	126.47	136.11	57.52	55.95	54.61	53.34	52.17	50.88
24		23.04	24.94	27.06	29.39	31.71	34.27	12.60	12.88	13.17	13.46	13.83	14.24
25	MINERAL PRODUCTS	936.11	984.37	1034.94	1085.38	1130.64	1175.66	1301.30	1401.91	1512.48	1635.22	1767.07	1909.55
26		176.37	182.12	188.39	194.86	199.31	203.37	545.27	588.07	635.09	687.25	746.00	808.86
27		1214.15	1307.52	1410.27	1520.22	1610.94	1703.54	649.93	714.88	791.18	881.00	959.12	1042.70
28	CHEMICAL PRODUCTS	7322.55	8013.05	8761.73	9546.83	10372.87	11242.68	2005.11	2069.81	2145.27	2233.28	2324.85	2422.28
29		9166.38	10032.12	10970.63	11954.60	12951.47	14025.70	3543.93	3653.66	3781.55	3930.56	4077.10	4234.91
30		2100.73	2295.61	2505.79	2724.69	2959.01	3221.74	143.40	147.78	152.89	158.85	165.01	171.58
31		713.04	779.99	852.57	928.67	1004.22	1084.15	268.82	278.16	288.94	301.39	313.73	325.68
32		1161.30	1271.05	1390.02	1514.77	1646.43	1789.50	263.04	271.20	280.70	291.77	302.13	312.65
33		949.07	1038.76	1135.99	1237.94	1346.45	1467.91	266.47	274.73	284.36	295.57	306.30	317.78
34		1080.29	1172.11	1268.83	1366.63	1476.13	1592.81	219.00	225.71	233.55	242.68	252.52	263.46
35		369.15	402.53	438.56	476.08	515.24	558.29	81.86	83.91	86.35	89.24	91.91	94.44
36		1541.51	1655.14	1769.53	1878.18	2008.99	2145.81	39.94	41.01	42.27	43.76	45.27	46.72
37		915.71	1002.25	1096.06	1194.43	1297.25	1405.56	323.08	333.10	344.77	358.37	371.54	385.57
38		2629.19	2871.27	3131.63	3402.05	3689.88	4009.26	633.56	651.77	673.17	698.32	724.63	753.63
39	PLASTICS	3330.38	3645.11	3986.31	4344.06	4700.68	5099.66	1120.51	1155.24	1195.72	1242.88	1291.16	1343.41
40		2113.38	2312.73	2528.84	2755.43	2981.79	3223.42	774.51	798.20	825.77	857.80	887.73	916.51
41	LEATHER GOODS	11744.17	12123.34	12471.88	12750.32	13141.68	13510.88	577.44	572.78	569.30	567.11	568.53	570.03
42		5095.07	5331.85	5560.60	5762.02	6019.97	6299.21	31.31	30.54	29.87	29.32	28.98	28.56
43		4.56	4.70	4.85	4.99	5.14	5.30	2.05	2.08	2.11	2.15	2.20	2.26
44	WOOD PRODUCTS	4253.94	4488.46	4721.00	4935.92	5197.58	5463.80	177.59	179.77	182.40	185.44	188.96	192.71
45		195.76	206.45	217.04	226.80	237.95	250.23	11.93	12.12	12.34	12.58	12.82	13.10
46		476.65	502.68	528.42	552.11	580.46	611.06	6.18	6.10	6.03	5.96	5.95	5.91
47	PAPER	442.76	482.84	525.58	569.53	617.63	671.47	88.63	89.43	90.43	91.69	93.15	94.75
48		7317.52	7979.89	8686.17	9412.55	10170.47	10972.18	1384.29	1396.68	1412.35	1432.08	1457.06	1478.14
49		404.34	440.94	479.97	520.10	563.26	611.49	8.29	8.37	8.46	8.58	8.75	8.91

Table 7.30 Estimated Maritime Trade between US and China (cont'd)

HS-2	SECTION	IMPORT (million USD)						EXPORT (million USD)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	146.22	161.40	177.66	194.21	213.04	233.99	5.83	5.80	5.78	5.78	5.80	5.82
51		1069.65	1187.72	1315.18	1445.97	1591.77	1753.04	44.74	44.53	44.41	44.42	44.57	44.77
52		5068.30	5471.43	5885.61	6289.11	6797.50	7348.88	449.10	465.64	484.10	504.61	524.32	543.28
53		964.70	1041.44	1120.30	1197.14	1292.29	1398.64	1556.37	1650.57	1752.62	1862.53	1978.26	2097.25
54		3201.29	3455.92	3717.53	3972.39	4286.83	4618.43	86.16	85.35	84.78	84.52	84.75	85.20
55		4549.56	4911.43	5283.22	5645.42	6083.24	6568.25	139.33	138.01	137.09	136.66	137.02	137.08
56		1325.70	1431.15	1539.48	1645.03	1774.18	1912.59	39.74	39.36	39.10	38.98	39.09	39.25
57		897.10	968.45	1041.76	1113.18	1199.95	1293.77	25.31	25.07	24.90	24.83	24.84	24.83
58		1355.33	1463.13	1573.89	1681.79	1815.87	1960.17	32.28	31.98	31.76	31.67	31.72	31.72
59		2077.60	2234.04	2392.41	2543.83	2724.08	2924.17	41.57	42.03	42.65	43.47	44.16	44.99
60		1723.27	1860.33	2001.16	2138.35	2311.59	2493.87	40.16	39.79	39.52	39.40	39.45	39.51
61		15042.02	16158.91	17299.82	18390.08	19716.58	21108.34	19.12	18.89	18.72	18.63	18.59	18.54
62		15753.12	16917.71	18106.90	19241.83	20583.12	22007.45	4.24	4.16	4.09	4.04	4.00	3.96
63	2286.34	2469.46	2657.64	2841.09	3068.73	3320.75	49.38	48.91	48.59	48.47	48.57	48.62	
64	FOOTWEAR	7115.27	7344.99	7556.11	7724.71	7975.77	8255.99	33.87	33.01	32.27	31.64	31.18	30.76
65		1373.82	1476.44	1581.54	1682.33	1801.68	1930.96	12.57	12.94	13.36	13.87	14.34	14.85
66		3202.20	3431.43	3659.82	3873.42	4138.78	4424.39	9.70	9.56	9.45	9.39	9.35	9.33
67		3340.16	3579.27	3817.50	4040.30	4333.87	4655.66	12.88	12.69	12.55	12.46	12.46	12.49
68	STONE & GLASS	3066.03	3282.52	3506.62	3728.04	3971.74	4229.54	117.79	118.67	119.97	121.80	123.95	126.02
69		1347.35	1442.49	1540.97	1638.27	1747.81	1859.77	46.80	47.15	47.67	48.39	49.37	50.35
70		3010.26	3224.18	3445.52	3664.03	3912.44	4187.09	105.12	105.87	106.98	108.56	110.49	112.38
71	PRECIOUS STONES	2255.67	2421.85	2589.06	2747.87	2946.03	3163.09	35.41	36.68	38.17	39.94	41.57	43.21
72	BASE METALS	5892.85	6222.19	6555.14	6875.97	7270.90	7706.82	647.41	671.90	701.19	736.79	769.13	803.11
73		10906.49	11729.52	12564.25	13370.06	14327.61	15325.27	462.11	466.45	473.16	482.98	492.63	502.87
74		2984.20	3276.77	3593.80	3928.48	4277.88	4648.45	889.58	898.93	911.87	929.80	950.43	972.91
75		508.85	560.23	616.16	675.58	741.58	814.06	98.95	101.52	104.71	108.68	112.28	115.73
76		2122.36	2306.78	2500.09	2695.61	2923.05	3177.97	240.13	245.46	252.20	260.74	269.20	277.40
77		---	---	---	---	---	---	---	---	---	---	---	---
78		309.81	341.47	376.03	412.87	452.96	496.75	67.26	69.02	71.19	73.90	76.46	78.93
79		297.89	328.33	361.56	396.99	435.37	476.57	74.33	76.28	78.68	81.68	84.46	87.53
80		270.22	297.11	326.29	357.15	390.40	426.04	50.73	52.04	53.66	55.68	57.46	59.15
81		1066.98	1191.05	1330.14	1483.29	1645.16	1821.94	338.24	347.48	358.84	372.91	386.90	401.69
82		7202.77	7757.65	8318.77	8858.07	9510.83	10198.05	87.13	87.14	87.50	88.32	89.45	90.68
83	3862.79	4160.36	4461.29	4750.51	5101.20	5476.59	70.39	70.40	70.69	71.35	72.24	73.29	
84	MACHINE	53314.25	57420.22	61611.88	65674.82	69772.92	74043.03	6588.16	6554.12	6545.51	6566.42	6599.91	6644.78
85		63711.58	67627.14	71555.05	75242.06	79011.69	82859.56	1651.96	1659.13	1672.20	1690.39	1728.52	1770.12
86	VEHICLES	1378.51	1537.92	1710.85	1893.70	2098.88	2322.65	1743.46	1703.24	1669.69	1644.81	1634.43	1628.37
87		8067.56	8810.23	9597.75	10405.78	11240.33	12091.22	3387.59	3343.02	3309.03	3290.01	3288.69	3297.90
88		727.21	811.79	903.51	1000.45	1109.94	1228.42	30.00	29.30	28.71	28.28	27.98	27.76
89		1027.47	1148.63	1280.23	1419.63	1581.40	1764.70	1487.69	1452.90	1423.86	1402.24	1390.28	1378.31
90	CLOCKS & MUSICAL INST.	8361.41	9125.83	9913.81	10691.02	11636.85	12697.34	357.60	354.20	352.25	352.21	353.80	354.60
91		3747.54	4082.94	4428.37	4768.57	5197.73	5660.24	201.88	199.94	198.82	198.77	199.87	201.32
92		10170.36	10898.41	11623.79	12302.19	13196.76	14135.20	22.83	22.49	22.24	22.08	22.06	22.02
93	ARMS	2137.62	2332.54	2533.45	2731.60	2967.74	3225.58	159.69	158.19	157.34	157.34	158.20	159.29
94	MISC. ART.	12164.55	13055.63	13947.06	14786.20	15879.33	17030.19	156.09	154.82	154.16	154.29	155.46	156.39
95		19076.17	20441.75	21802.32	23074.77	24325.42	25546.56	35.85	35.33	34.93	34.68	34.65	34.60
96		20544.37	22006.15	23462.01	24822.64	26613.92	28545.43	50.83	50.05	49.45	49.06	48.85	48.53
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

Table 7.31 Estimated Maritime Trade between US and Japan

HS-2	SECTION	IMPORT (million USD)						EXPORT (million USD)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	---	---	---	---	---	---	0.01	0.01	0.01	0.01	0.01	0.01
02		1.73	1.76	1.79	1.82	1.83	1.85	697.05	642.72	591.33	543.25	509.45	476.33
03		106.67	107.33	107.87	107.92	107.66	107.30	386.24	372.41	359.44	347.33	337.65	329.06
04		4.05	4.06	4.07	4.05	4.04	4.04	155.26	151.96	148.97	146.41	144.55	142.54
05		2.34	2.36	2.38	2.39	2.39	2.40	6.25	6.05	5.87	5.69	5.54	5.41
06	VEGETABLE PRODUCTS	1.73	1.72	1.71	1.70	1.69	1.67	58.62	56.60	54.66	52.68	51.05	49.42
07		30.21	30.27	30.29	30.16	30.01	29.94	292.16	280.39	269.28	258.67	250.68	243.36
08		12.22	12.24	12.25	12.21	12.20	12.19	270.10	258.98	248.46	238.35	230.33	222.36
09		17.05	17.02	16.97	16.85	16.79	16.69	171.31	164.64	158.09	151.35	146.00	140.99
10		0.47	0.46	0.45	0.44	0.43	0.42	3378.21	3315.79	3254.05	3193.74	3134.97	3077.92
11		49.59	49.75	49.83	49.66	49.58	49.59	249.45	241.50	234.02	227.04	220.98	214.56
12		5.39	5.38	5.37	5.34	5.32	5.29	1073.74	1049.80	1026.06	1001.28	977.55	954.19
13		3.60	3.61	3.61	3.59	3.58	3.58	68.72	66.48	64.42	62.52	60.66	58.74
14		0.43	0.43	0.43	0.42	0.42	0.41	94.10	91.71	89.61	87.70	85.64	83.80
15	FATS & OILS	32.25	31.87	31.47	30.89	30.32	29.81	203.40	190.22	177.82	165.96	157.49	149.15
16	PREPARED FOODSTUFFS	21.78	21.83	21.85	21.75	21.62	21.49	235.01	217.29	200.60	184.95	174.38	164.71
17		0.03	0.03	0.03	0.03	0.03	0.03	16.91	16.53	16.19	15.90	15.61	15.36
18		12.81	12.83	12.84	12.78	12.74	12.73	51.08	49.15	47.32	45.59	44.21	42.80
19		26.86	26.92	26.94	26.82	26.66	26.49	113.00	108.73	104.72	100.97	98.11	95.28
20		73.44	73.61	73.67	73.33	73.04	72.76	307.83	296.20	285.29	275.08	266.32	258.20
21		17.75	17.80	17.81	17.73	17.61	17.45	74.18	71.48	68.95	66.59	64.53	62.51
22		45.15	45.69	46.19	46.51	46.84	47.15	646.90	637.75	628.88	620.79	615.87	609.95
23		8.38	8.35	8.32	8.25	8.19	8.13	71.96	68.04	64.38	60.87	58.03	55.37
24		12.15	12.29	12.41	12.49	12.56	12.59	186.61	183.75	180.97	178.38	176.01	173.34
25	MINERAL PRODUCTS	54.47	54.19	53.84	53.25	52.45	51.79	443.12	439.96	437.31	435.19	432.82	430.19
26		12.70	12.65	12.60	12.49	12.35	12.20	182.31	181.26	180.41	179.75	179.01	177.78
27		1552.21	1643.89	1763.42	1925.19	2000.51	2079.36	1305.90	1338.82	1378.59	1424.21	1444.97	1463.80
28	CHEMICAL PRODUCTS	1986.71	1963.04	1934.22	1893.83	1856.29	1814.36	1612.36	1574.85	1543.23	1517.35	1489.77	1466.01
29		1444.57	1423.06	1397.27	1362.47	1336.41	1310.23	1714.82	1670.00	1631.32	1598.65	1565.35	1529.34
30		108.25	106.63	104.68	102.06	100.08	97.98	20.58	20.03	19.56	19.17	18.76	18.39
31		196.03	193.11	189.62	184.90	181.64	178.69	155.28	151.37	148.00	145.16	142.35	139.77
32		272.34	268.28	263.42	256.85	251.84	246.66	196.85	191.71	187.28	183.53	179.02	174.99
33		195.32	192.41	188.92	184.21	180.94	178.18	151.52	147.56	144.15	141.27	137.80	134.73
34		169.65	166.84	163.54	159.19	155.82	152.43	131.25	127.58	124.39	121.68	118.91	116.26
35		55.94	55.16	54.20	52.91	51.92	50.90	66.84	64.97	63.33	61.90	60.31	58.75
36		47.21	45.76	44.19	42.36	41.00	39.70	32.99	31.55	30.26	29.12	28.08	27.07
37		180.99	178.29	175.06	170.70	167.23	164.02	124.55	121.30	118.50	116.13	113.41	111.07
38		325.79	321.04	315.33	307.57	300.74	293.98	285.61	277.66	270.77	264.92	258.60	253.02
39	PLASTICS	804.22	792.23	777.87	758.49	744.50	730.21	583.47	568.24	555.10	544.00	532.74	521.20
40		594.20	585.34	574.73	560.41	550.45	541.09	463.90	451.87	441.47	432.63	423.28	414.36
41	LEATHER GOODS	0.58	0.52	0.47	0.43	0.39	0.35	42.33	38.09	34.31	30.96	28.12	25.54
42		9.03	8.47	7.89	7.28	6.82	6.41	6.06	5.53	5.04	4.61	4.26	3.93
43		---	---	---	---	---	---	0.02	0.02	0.02	0.02	0.02	0.02
44	WOOD PRODUCTS	18.72	18.56	18.35	18.02	17.72	17.40	160.67	156.22	152.24	148.59	145.43	142.07
45		0.25	0.25	0.25	0.25	0.25	0.25	6.46	6.29	6.14	6.00	5.87	5.75
46		0.82	0.82	0.82	0.81	0.80	0.80	2.55	2.45	2.36	2.27	2.19	2.12
47	PAPER	15.64	15.66	15.65	15.55	15.38	15.21	39.66	38.48	37.39	36.41	35.48	34.62
48		240.85	241.17	241.01	239.49	238.08	237.31	638.09	619.21	601.67	585.91	574.02	563.65
49		9.09	9.10	9.09	9.03	8.96	8.87	2.43	2.36	2.29	2.23	2.19	2.14

Table 7.31 Estimated Maritime Trade between US and Japan (cont'd)

HS-2	SECTION	IMPORT (million USD)						EXPORT (million USD)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	2.33	2.27	2.20	2.11	2.05	1.98	0.16	0.14	0.12	0.11	0.10	0.09
51		12.60	12.26	11.87	11.41	11.04	10.68	1.00	0.89	0.79	0.70	0.63	0.57
52		79.43	77.24	74.83	71.90	69.89	68.00	35.67	32.51	29.70	27.20	24.87	22.66
53		8.67	8.44	8.17	7.85	7.61	7.40	26.92	26.06	25.22	24.40	23.63	22.88
54		50.67	49.28	47.74	45.87	44.53	43.36	14.93	13.24	11.74	10.44	9.35	8.40
55		86.79	84.40	81.76	78.56	76.22	73.91	15.62	13.85	12.28	10.92	9.79	8.79
56		23.53	22.88	22.17	21.30	20.63	19.95	6.18	5.47	4.86	4.32	3.87	3.48
57		13.98	13.60	13.17	12.66	12.30	11.96	3.94	3.50	3.10	2.76	2.46	2.21
58		18.23	17.73	17.17	16.50	15.94	15.45	5.29	4.69	4.16	3.70	3.31	2.96
59		48.54	46.91	45.15	43.11	41.53	40.03	23.43	22.15	20.99	19.97	19.01	18.14
60		21.62	21.03	20.37	19.57	19.02	18.46	6.92	6.13	5.44	4.83	4.35	3.90
61		10.46	10.17	9.86	9.47	9.14	8.82	10.64	9.57	8.61	7.77	7.09	6.48
62		4.18	4.07	3.94	3.78	3.66	3.54	7.79	7.02	6.33	5.72	5.23	4.77
63	40.59	39.70	38.69	37.41	36.49	35.57	10.96	9.94	9.04	8.25	7.56	6.93	
64	FOOTWEAR	0.97	0.88	0.80	0.72	0.65	0.59	8.81	7.89	7.06	6.33	5.74	5.20
65		16.72	16.45	16.13	15.71	15.34	14.95	4.67	4.47	4.30	4.15	3.98	3.81
66		27.99	26.25	24.47	22.56	21.09	19.70	11.56	10.67	9.85	9.12	8.57	8.08
67		41.78	39.20	36.53	33.68	31.59	29.56	10.47	9.67	8.93	8.26	7.75	7.28
68	STONE & GLASS	162.79	161.29	159.44	156.68	154.50	152.75	90.47	86.94	83.78	81.00	78.61	76.10
69		45.56	45.14	44.62	43.85	43.02	42.28	25.97	24.96	24.05	23.25	22.55	21.93
70		151.66	150.22	148.46	145.85	143.03	140.08	96.99	93.16	89.74	86.73	83.83	80.86
71	PRECIOUS STONES	28.80	27.61	26.38	25.03	23.88	22.81	56.63	54.31	52.29	50.56	48.77	47.06
72	BASE METALS	1088.98	1068.23	1045.54	1018.36	998.32	980.18	77.25	76.31	75.73	75.57	74.61	73.83
73		1269.54	1244.99	1217.37	1182.60	1151.33	1123.00	165.84	157.33	149.74	143.16	137.03	130.84
74		9417.25	9520.69	9608.90	9650.08	9647.12	9636.93	597.23	582.49	570.35	560.62	551.32	542.84
75		48.67	48.41	48.11	47.64	47.09	46.66	104.47	101.78	99.69	98.10	96.14	94.45
76		146.45	144.28	141.87	138.77	135.61	132.81	203.50	197.61	192.89	189.18	184.05	179.07
77		---	---	---	---	---	---	---	---	---	---	---	---
78		13.83	13.76	13.69	13.57	13.41	13.22	47.18	45.97	45.03	44.32	43.36	42.33
79		32.02	31.87	31.70	31.42	30.93	30.48	71.84	69.99	68.57	67.48	66.08	64.75
80		23.05	22.90	22.74	22.49	22.21	21.97	44.75	43.59	42.69	42.00	41.16	40.21
81		130.84	131.18	131.52	131.54	130.79	129.96	236.22	230.36	225.89	222.53	218.30	214.13
82		334.09	326.40	317.92	307.52	298.02	288.75	57.12	54.21	51.61	49.34	47.27	45.28
83		297.77	290.91	283.35	274.09	266.60	260.06	55.17	52.36	49.85	47.66	45.58	43.64
84	MACHINE	16378.40	16226.72	16032.13	15734.51	15429.26	15140.73	1517.14	1428.26	1347.88	1276.41	1212.46	1155.48
85		3527.55	3436.09	3337.15	3216.92	3103.04	2985.75	487.98	458.99	432.84	409.51	391.44	373.77
86	VEHICLES	1992.25	1993.75	1991.84	1979.65	1968.34	1956.38	1318.31	1259.25	1202.92	1150.65	1114.03	1080.42
87		39043.54	39454.28	39801.00	39951.30	40119.10	40347.78	2202.19	2120.50	2043.84	1974.18	1911.41	1855.78
88		685.30	682.32	678.13	670.36	659.83	649.07	60.90	58.15	55.54	53.11	51.51	50.03
89		1039.85	1035.34	1029.01	1017.24	1004.68	993.04	1226.53	1171.30	1118.61	1069.69	1034.46	1003.08
90	CLOCKS & MUSICAL INST.	1585.11	1564.28	1538.45	1501.72	1467.12	1432.62	89.66	84.07	79.05	74.60	70.93	67.59
91		271.96	268.41	264.00	257.71	251.90	245.61	34.10	31.97	30.06	28.37	27.07	25.85
92		141.07	132.34	123.35	113.72	106.62	100.16	36.12	33.34	30.79	28.49	26.76	25.21
93	ARMS	503.29	496.63	488.39	476.70	466.87	457.25	21.90	20.55	19.32	18.24	17.40	16.57
94	MISC. ART.	388.42	376.06	362.69	347.00	333.25	319.83	160.16	148.95	138.73	129.55	122.13	115.19
95		78.19	73.35	68.36	63.02	58.27	53.80	112.65	104.00	96.05	88.86	83.23	77.90
96		232.44	218.06	203.24	187.36	175.75	165.06	109.51	101.09	93.35	86.35	81.12	76.17
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

Table 7.32 Estimated Maritime Trade between US and South Korea

HS-2	SECTION	IMPORT (million USD)						EXPORT (million USD)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	---	---	---	---	---	---	0.06	0.06	0.06	0.06	0.06	0.06
02		0.19	0.21	0.22	0.23	0.25	0.26	279.66	268.55	258.03	248.44	241.76	235.75
03		67.44	69.19	70.92	72.39	73.49	74.63	142.96	138.91	135.06	131.47	128.73	125.86
04		6.95	7.24	7.53	7.79	8.01	8.27	80.86	79.58	78.43	77.48	76.94	76.56
05		1.47	1.51	1.55	1.58	1.61	1.63	2.41	2.35	2.29	2.25	2.21	2.18
06	VEGETABLE PRODUCTS	2.56	2.92	3.33	3.78	4.23	4.73	8.74	8.35	7.98	7.63	7.35	7.06
07		38.28	40.01	41.75	43.41	44.96	46.50	106.49	100.99	96.00	91.40	87.35	83.54
08		31.37	33.11	34.87	36.62	38.37	40.20	88.50	83.11	78.29	73.84	70.08	66.70
09		13.79	15.20	16.75	18.40	19.82	21.39	66.69	62.22	57.92	53.73	50.66	47.63
10		1.47	1.61	1.76	1.92	2.05	2.20	1007.06	979.06	950.94	923.33	894.70	865.72
11		32.34	33.16	33.94	34.59	35.18	35.73	71.55	69.53	67.59	65.80	64.35	62.97
12		8.48	9.45	10.53	11.69	12.78	14.00	196.63	187.74	178.86	169.90	160.93	152.21
13		6.64	6.81	6.98	7.11	7.20	7.31	20.16	19.91	19.70	19.54	19.44	19.32
14		0.37	0.38	0.39	0.40	0.40	0.41	33.75	34.08	34.50	35.03	35.41	35.70
15	FATS & OILS	7.30	7.18	7.02	6.82	6.69	6.57	107.52	104.68	102.03	99.44	97.63	95.63
16	PREPARED FOODSTUFFS	12.89	13.22	13.54	13.81	14.02	14.23	64.73	61.65	58.70	55.91	53.86	51.74
17		0.40	0.42	0.44	0.46	0.48	0.50	8.70	8.60	8.51	8.45	8.41	8.38
18		7.96	8.21	8.45	8.66	8.83	9.01	20.63	19.92	19.25	18.61	18.19	17.80
19		16.42	16.85	17.25	17.58	17.82	18.07	40.40	39.19	38.04	36.97	36.13	35.37
20		44.90	46.06	47.17	48.07	48.98	49.85	112.00	108.65	105.45	102.47	100.03	97.45
21		12.73	13.06	13.38	13.64	13.90	14.18	29.49	28.65	27.85	27.12	26.65	26.13
22		55.42	56.67	57.89	58.94	59.99	60.99	44.28	44.17	44.05	43.99	44.15	44.24
23		2.93	3.01	3.08	3.15	3.21	3.26	33.76	32.97	32.24	31.50	30.90	30.37
24		16.35	16.80	17.25	17.66	17.97	18.23	16.73	16.40	16.08	15.79	15.61	15.39
25	MINERAL PRODUCTS	23.81	24.25	24.66	24.98	25.05	25.06	374.82	384.97	396.09	408.54	417.93	428.44
26		2.53	2.47	2.40	2.31	2.26	2.21	157.63	162.11	167.00	172.45	176.91	181.29
27		4063.74	4216.07	4381.22	4548.95	4662.24	4774.93	642.87	668.47	697.41	730.22	753.51	777.22
28	CHEMICAL PRODUCTS	889.19	883.17	874.47	861.18	851.23	841.66	1153.39	1162.18	1175.88	1195.41	1202.90	1213.35
29		819.89	794.96	764.84	727.94	710.52	694.44	1675.01	1685.36	1702.78	1728.59	1742.79	1759.14
30		104.83	101.73	97.98	93.37	90.91	88.47	71.88	72.31	73.05	74.14	74.57	75.10
31		56.72	55.00	52.91	50.35	48.98	47.52	122.75	123.65	125.06	127.07	128.10	129.40
32		92.28	89.47	86.07	81.91	79.72	77.70	156.49	157.46	159.10	161.52	162.57	163.57
33		69.19	67.08	64.53	61.42	59.68	58.08	113.84	114.55	115.74	117.50	118.50	119.72
34		51.81	50.25	48.36	46.05	44.86	43.72	100.53	101.08	102.06	103.54	104.49	105.69
35		24.30	23.70	22.96	22.03	21.51	20.97	40.86	40.91	41.11	41.49	41.51	41.60
36		17.92	17.43	16.83	16.09	15.59	15.11	16.01	15.98	16.01	16.11	16.09	16.05
37		30.35	29.42	28.31	26.94	26.19	25.43	45.03	45.31	45.78	46.48	46.79	47.18
38		97.49	95.30	92.58	89.10	87.00	84.85	297.84	299.12	301.63	305.61	306.45	308.16
39	PLASTICS	264.21	256.16	246.43	234.53	229.00	223.20	494.34	497.42	502.58	510.23	512.68	515.85
40		166.33	161.27	155.16	147.68	144.23	141.24	346.16	348.42	352.11	357.50	359.80	361.74
41	LEATHER GOODS	12.14	11.40	10.68	9.95	9.26	8.59	45.12	42.53	40.14	37.95	36.17	34.47
42		6.20	6.05	5.88	5.68	5.48	5.31	2.76	2.55	2.37	2.20	2.07	1.96
43		0.06	0.06	0.06	0.06	0.06	0.06	0.01	0.01	0.01	0.01	0.01	0.01
44	WOOD PRODUCTS	7.73	7.63	7.50	7.30	7.20	7.10	70.08	70.30	70.72	71.39	71.51	71.63
45		0.11	0.12	0.12	0.12	0.12	0.12	3.85	3.87	3.91	3.96	3.99	4.03
46		0.08	0.08	0.09	0.08	0.08	0.09	0.81	0.79	0.76	0.74	0.73	0.71
47	PAPER	10.03	10.28	10.51	10.68	10.83	10.97	21.09	20.85	20.65	20.50	20.43	20.43
48		168.51	172.64	176.49	179.44	181.40	183.88	335.87	331.94	328.74	326.41	325.54	324.73
49		9.07	9.30	9.50	9.66	9.76	9.89	9.55	9.44	9.35	9.28	9.24	9.20

**Table 7.32 Estimated Maritime Trade between US and South Korea
(cont'd)**

HS-2	SECTION	IMPORT (million USD)						EXPORT (million USD)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	1.07	1.06	1.05	1.02	1.00	0.99	0.51	0.47	0.43	0.40	0.37	0.34
51		15.13	14.96	14.72	14.37	14.05	13.72	1.31	1.20	1.10	1.01	0.93	0.87
52		158.64	156.81	154.31	150.62	147.62	144.73	30.72	29.12	27.65	26.29	25.01	23.80
53		27.92	27.60	27.16	26.51	25.96	25.49	30.74	30.36	29.97	29.53	29.09	28.72
54		98.23	97.09	95.55	93.26	91.72	90.03	10.65	9.75	8.94	8.20	7.59	7.03
55		146.99	145.29	142.98	139.56	136.86	134.25	15.41	14.11	12.93	11.87	11.00	10.19
56		40.18	39.72	39.08	38.15	37.40	36.74	4.05	3.71	3.40	3.12	2.89	2.67
57		28.54	28.22	27.77	27.10	26.58	26.07	2.76	2.53	2.31	2.12	1.97	1.83
58		42.23	41.74	41.08	40.10	39.42	38.73	2.66	2.44	2.23	2.05	1.90	1.75
59		34.42	33.85	33.13	32.15	31.34	30.55	9.65	9.50	9.39	9.32	9.21	9.08
60		52.24	51.64	50.82	49.60	48.63	47.68	4.22	3.87	3.55	3.25	3.01	2.79
61		133.39	133.21	132.58	130.94	129.21	127.57	6.74	6.19	5.68	5.22	4.86	4.52
62		108.33	108.46	108.25	107.22	106.17	104.95	3.96	3.63	3.34	3.07	2.85	2.66
63	70.09	69.56	68.76	67.44	66.20	64.83	9.68	9.11	8.60	8.15	7.77	7.40	
64	FOOTWEAR	6.28	5.88	5.49	5.10	4.71	4.36	3.93	3.61	3.31	3.04	2.83	2.63
65		14.92	14.81	14.63	14.33	14.14	13.98	4.85	4.82	4.81	4.83	4.79	4.75
66		9.38	9.17	8.92	8.60	8.30	7.99	5.16	4.88	4.62	4.37	4.22	4.06
67		8.42	8.23	8.00	7.71	7.45	7.20	5.72	5.42	5.12	4.85	4.69	4.53
68	STONE & GLASS	90.07	92.20	94.27	96.00	96.66	97.16	57.36	56.05	54.89	53.93	53.13	52.42
69		30.25	30.96	31.66	32.24	32.60	32.89	20.21	19.75	19.34	19.01	18.75	18.47
70		95.84	97.97	100.02	101.68	102.55	103.51	51.09	49.91	48.85	47.98	47.35	46.69
71	PRECIOUS STONES	10.74	10.67	10.58	10.43	10.27	10.15	8.63	8.58	8.56	8.57	8.54	8.51
72	BASE METALS	880.60	897.65	915.06	930.69	935.76	942.94	107.15	107.87	109.00	110.72	111.40	112.02
73		736.93	753.20	769.11	782.31	788.49	794.55	140.44	136.49	133.07	130.31	127.73	125.43
74		2428.60	2522.10	2615.91	2702.24	2768.75	2843.22	302.72	301.08	300.27	300.63	300.48	299.47
75		30.67	31.37	32.09	32.74	33.05	33.38	36.10	36.04	36.12	36.37	36.29	36.22
76		103.90	106.21	108.47	110.37	111.17	111.92	87.86	87.19	86.87	86.99	86.57	85.94
77		---	---	---	---	---	---	---	---	---	---	---	---
78		15.80	16.17	16.54	16.88	17.03	17.15	29.65	29.60	29.67	29.89	29.91	29.93
79		15.65	16.01	16.38	16.72	16.85	16.96	23.56	23.52	23.58	23.75	23.81	23.82
80		8.39	8.58	8.78	8.95	9.06	9.17	9.12	9.10	9.11	9.17	9.19	9.20
81		64.36	65.89	67.50	69.06	69.94	70.71	113.94	113.95	114.42	115.45	115.86	116.16
82		225.43	230.30	234.93	238.53	239.74	240.37	34.05	32.64	31.37	30.27	29.30	28.30
83	181.29	185.20	188.93	191.83	192.53	193.72	25.18	24.14	23.20	22.39	21.67	21.03	
84	MACHINE	4058.78	4178.34	4295.61	4395.28	4488.46	4580.02	1856.50	1803.08	1755.37	1714.75	1680.11	1650.88
85		738.24	747.93	756.97	762.34	768.51	774.66	354.49	343.28	333.28	324.53	317.27	310.81
86	VEHICLES	319.52	333.97	348.88	363.22	373.91	384.84	722.73	701.62	680.91	661.86	655.24	650.07
87		8261.62	8584.20	8907.96	9206.19	9504.47	9801.01	1285.27	1257.59	1231.23	1208.27	1188.46	1170.16
88		101.35	106.42	111.74	116.99	120.08	123.57	53.54	51.96	50.41	48.99	48.43	47.76
89		126.00	132.38	139.10	145.73	149.67	153.69	626.82	608.37	590.27	573.60	568.02	563.55
90	CLOCKS & MUSICAL INST.	550.20	567.83	585.00	599.60	605.90	611.13	134.77	130.96	127.60	124.78	122.53	120.30
91		340.27	351.18	361.82	370.87	376.17	381.09	49.16	47.77	46.54	45.51	44.76	44.10
92		42.53	41.58	40.44	38.97	37.73	36.48	11.88	11.25	10.64	10.07	9.74	9.40
93	ARMS	120.10	123.91	127.62	130.78	132.23	133.51	56.21	54.62	53.21	52.03	51.21	50.50
94	MISC. ART.	120.01	120.87	121.43	121.27	120.09	119.16	67.39	65.05	62.90	61.01	59.63	58.28
95		80.75	78.95	76.78	74.00	71.28	68.59	31.49	29.82	28.20	26.69	25.81	25.02
96		91.09	89.06	86.60	83.46	80.60	77.64	38.58	36.53	34.54	32.68	31.60	30.64
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

Table 7.33 Estimated Maritime Trade between US and ASEAN

HS-2	SECTION	IMPORT (million USD)						EXPORT (million USD)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.05	0.05	0.05	0.05	0.05	0.05	0.11	0.11	0.11	0.11	0.11	0.11
02		1.74	1.86	1.96	2.07	2.18	2.29	131.67	124.10	116.99	110.18	105.85	101.61
03		1478.68	1528.22	1570.98	1608.96	1648.12	1689.78	176.73	175.02	173.13	171.55	171.11	170.93
04		79.45	82.18	84.53	86.61	88.62	90.65	480.36	479.07	477.66	477.38	479.21	482.34
05		21.96	22.71	23.37	23.96	24.58	25.15	3.47	3.44	3.40	3.38	3.36	3.35
06	VEGETABLE PRODUCTS	172.14	181.93	191.10	200.88	210.38	220.88	10.63	10.36	10.09	9.79	9.56	9.34
07		596.04	618.01	637.07	655.19	673.60	691.93	152.30	148.14	144.07	140.17	137.04	134.09
08		390.45	406.37	420.39	434.61	448.47	463.49	133.14	128.53	124.10	119.77	116.18	112.54
09		673.23	712.38	747.88	784.98	823.43	865.80	42.30	41.35	40.37	39.34	38.49	37.63
10		297.14	302.56	306.14	309.44	316.19	322.36	810.82	787.38	754.66	717.20	680.63	644.76
11		603.66	623.63	640.64	655.53	671.07	685.77	100.46	99.48	98.38	97.48	96.74	95.92
12		194.35	206.05	216.73	227.96	239.78	252.51	710.88	708.63	705.88	702.60	699.01	694.75
13		386.50	402.77	417.85	433.06	445.38	456.83	29.97	29.63	29.27	28.96	28.67	28.35
14		619.55	650.11	679.62	711.12	739.40	768.26	20.10	19.81	19.53	19.27	18.97	18.74
15	FATS & OILS	1137.97	1197.29	1251.86	1306.76	1358.16	1415.14	193.33	190.00	186.92	183.81	180.96	177.89
16	PREPARED FOODSTUFFS	334.15	345.26	354.72	363.02	371.48	379.49	74.06	71.43	68.87	66.46	64.75	62.98
17		123.32	131.55	139.37	147.39	154.95	163.34	46.50	46.38	46.24	46.22	46.43	46.54
18		215.95	223.73	230.44	236.53	243.44	250.34	28.01	27.70	27.36	27.07	26.97	26.92
19		422.51	436.53	448.47	458.93	470.70	481.95	56.80	56.21	55.55	55.00	54.62	54.36
20		1151.46	1189.67	1222.21	1250.70	1283.81	1319.62	158.62	156.95	155.13	153.59	152.69	152.07
21		325.61	336.42	345.63	353.69	362.53	371.82	57.82	57.37	56.88	56.50	56.50	56.37
22		99.11	101.63	103.86	105.76	107.58	109.38	41.45	41.76	41.96	42.22	42.77	43.35
23		490.33	514.60	537.02	559.63	580.00	599.43	73.25	72.08	70.98	69.86	68.83	67.75
24		61.97	65.05	67.86	70.76	73.57	76.34	13.34	13.38	13.39	13.42	13.46	13.52
25	MINERAL PRODUCTS	56.30	58.07	59.53	60.79	62.28	63.68	117.79	122.20	126.15	130.63	135.02	139.44
26		10.59	11.01	11.40	11.77	12.11	12.44	44.15	45.99	47.64	49.49	51.49	53.52
27		4899.92	5430.79	5974.61	6581.51	7084.09	7607.11	2114.11	2249.34	2389.92	2553.22	2682.07	2817.41
28	CHEMICAL PRODUCTS	2443.36	2555.91	2656.41	2751.93	2838.16	2932.62	1407.39	1422.34	1436.19	1456.66	1468.48	1477.99
29		599.90	627.47	651.95	675.13	698.41	722.36	1755.76	1763.83	1769.87	1782.98	1795.39	1804.38
30		48.74	50.86	52.72	54.46	56.24	58.14	86.77	87.14	87.41	88.03	88.36	88.77
31		214.61	224.49	233.26	241.57	250.21	259.31	141.28	142.00	142.55	143.67	145.04	146.78
32		348.68	364.74	379.00	392.50	405.43	419.90	212.32	213.30	214.03	215.62	216.46	217.71
33		264.91	277.11	287.94	298.20	308.31	319.11	155.61	156.33	156.86	158.03	158.76	159.71
34		222.69	231.24	238.44	245.00	251.26	257.33	125.17	125.64	125.97	126.79	127.83	128.96
35		115.22	119.92	124.04	127.84	131.60	135.52	60.96	61.05	61.08	61.31	61.59	61.75
36		104.64	105.35	105.04	104.13	103.89	103.63	7.70	7.67	7.62	7.61	7.62	7.62
37		204.34	213.75	222.10	230.02	237.18	244.74	112.39	112.91	113.30	114.14	115.20	116.17
38		631.50	660.17	685.47	709.31	732.08	755.87	430.33	431.35	431.86	434.11	436.53	439.08
39	PLASTICS	1032.73	1080.29	1122.52	1162.53	1204.03	1246.73	600.03	602.80	604.88	609.38	615.20	621.68
40		1092.11	1143.70	1191.13	1238.49	1279.00	1319.43	379.52	381.10	382.26	384.91	388.40	392.50
41	LEATHER GOODS	457.19	437.40	414.55	390.90	370.31	350.98	43.80	42.18	40.51	38.97	37.86	36.78
42		435.30	428.39	417.71	404.88	395.21	386.43	3.92	3.76	3.58	3.42	3.31	3.19
43		7.57	7.77	7.94	8.10	8.27	8.42	2.48	2.48	2.46	2.45	2.46	2.47
44	WOOD PRODUCTS	1222.44	1272.09	1318.16	1364.76	1402.11	1443.84	52.29	51.61	50.87	50.21	49.62	48.91
45		99.84	104.27	108.46	112.82	116.44	120.16	2.27	2.23	2.19	2.16	2.13	2.09
46		43.94	44.90	45.61	46.07	46.78	47.51	1.63	1.59	1.55	1.51	1.49	1.48
47	PAPER	32.55	33.88	35.03	36.05	37.10	38.10	35.00	35.03	35.00	35.08	35.21	35.36
48		586.33	610.38	631.01	649.53	670.43	691.88	551.46	551.98	551.45	552.79	557.02	562.65
49		25.44	26.49	27.38	28.19	29.07	29.97	11.57	11.58	11.57	11.60	11.64	11.69

**Table 7.33 Estimated Maritime Trade between US and ASEAN
(cont'd)**

HS-2	SECTION	IMPORT (million USD)						EXPORT (million USD)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	0.98	0.99	0.99	0.99	0.99	1.00	0.55	0.51	0.48	0.45	0.43	0.41
51		208.35	210.29	210.19	208.73	208.99	209.60	6.96	6.55	6.13	5.74	5.43	5.14
52		815.42	823.01	822.64	816.92	821.52	828.40	134.00	133.72	132.88	132.27	131.26	130.36
53		57.31	57.84	57.81	57.41	57.55	57.75	316.73	324.55	330.50	336.56	341.58	346.42
54		521.24	526.09	525.86	522.20	523.37	523.48	21.97	20.66	19.34	18.12	17.12	16.14
55		771.93	779.12	778.77	773.35	777.77	781.84	38.31	36.02	33.72	31.59	29.97	28.34
56		231.56	233.71	233.61	231.98	233.09	234.18	10.62	9.98	9.34	8.76	8.30	7.87
57		143.30	144.63	144.57	143.56	144.48	145.73	6.64	6.24	5.84	5.48	5.18	4.90
58		174.07	175.69	175.61	174.39	174.64	174.89	6.95	6.53	6.12	5.73	5.44	5.16
59		239.20	240.54	239.48	236.88	236.52	236.70	18.65	18.34	18.00	17.73	17.55	17.34
60		291.22	293.93	293.80	291.75	293.08	294.09	10.97	10.31	9.65	9.04	8.56	8.08
61		4962.56	5004.14	5001.46	4965.70	4985.34	5014.63	7.02	6.59	6.17	5.79	5.47	5.17
62		5628.25	5675.24	5672.18	5631.60	5636.13	5640.54	2.48	2.33	2.18	2.04	1.94	1.85
63	377.39	381.24	381.42	379.14	380.38	381.70	24.20	23.08	21.93	20.89	20.15	19.40	
64	FOOTWEAR	352.68	336.66	318.25	299.23	284.06	269.21	2.61	2.46	2.30	2.16	2.06	1.96
65		443.22	447.51	447.92	445.44	446.67	447.34	7.09	7.09	7.09	7.12	7.14	7.16
66		210.01	207.52	202.53	195.99	193.18	189.98	13.66	13.25	12.81	12.40	12.21	12.02
67		200.54	198.16	193.40	187.15	183.90	180.31	15.79	15.32	14.81	14.34	14.07	13.83
68	STONE & GLASS	243.84	251.22	256.96	261.64	267.33	272.44	48.47	48.08	47.65	47.43	47.40	47.49
69		107.21	110.46	112.98	115.04	117.67	120.09	17.59	17.45	17.29	17.21	17.11	17.03
70		189.16	194.47	198.45	201.56	205.37	209.62	63.57	63.00	62.40	62.06	61.79	61.53
71	PRECIOUS STONES	23.23	23.11	22.73	22.21	21.96	21.65	2.01	2.00	1.98	1.97	1.96	1.96
72	BASE METALS	561.85	579.64	595.18	610.11	624.87	640.22	256.95	262.29	267.08	273.45	279.48	285.31
73		761.77	783.22	798.69	810.67	825.72	839.87	290.71	286.03	281.08	277.62	275.83	274.29
74		269.05	282.49	294.77	306.95	319.04	332.09	240.00	240.81	241.03	242.31	245.63	248.41
75		31.85	33.33	34.63	35.94	37.11	38.25	27.98	28.15	28.28	28.58	28.82	29.01
76		150.71	156.04	160.27	164.11	167.84	172.02	81.59	81.33	80.99	81.11	81.48	81.70
77		---	---	---	---	---	---	---	---	---	---	---	---
78		20.74	21.72	22.58	23.45	24.28	25.15	25.19	25.35	25.49	25.76	25.99	26.16
79		29.21	30.58	31.80	33.03	34.14	35.33	23.62	23.78	23.90	24.16	24.40	24.70
80		24.66	25.79	26.77	27.75	28.69	29.64	14.43	14.51	14.57	14.71	14.84	15.01
81		64.64	68.13	71.33	74.67	77.80	81.07	31.93	32.27	32.56	33.03	33.58	34.21
82		303.12	310.06	314.24	316.67	320.96	324.84	65.00	63.61	62.23	61.19	60.28	59.21
83	216.50	221.45	224.44	226.17	229.78	233.03	65.10	63.72	62.33	61.29	60.57	59.92	
84	MACHINE	4103.64	4204.53	4271.95	4318.40	4362.02	4404.33	3809.25	3716.61	3616.39	3531.39	3449.82	3374.96
85		5434.78	5504.04	5529.71	5526.51	5503.30	5469.73	491.88	481.12	469.27	458.96	455.42	451.69
86	VEHICLES	111.81	118.99	125.49	131.99	138.91	146.46	1368.57	1335.95	1299.30	1267.24	1262.51	1259.45
87		704.57	738.66	769.18	798.19	824.45	849.27	2059.44	2024.04	1982.58	1948.17	1909.40	1877.51
88		35.06	37.24	39.19	41.13	43.17	45.19	32.15	31.38	30.51	29.75	29.62	29.52
89		148.32	157.95	166.66	175.37	184.56	193.93	1245.70	1215.80	1182.23	1152.85	1148.04	1143.18
90	CLOCKS & MUSICAL INST.	401.68	417.63	430.18	440.73	452.79	465.95	187.38	182.44	177.17	172.72	170.68	168.53
91		140.96	146.44	150.74	154.36	159.00	163.35	70.95	69.08	67.08	65.39	64.75	64.09
92		690.54	682.34	665.96	644.43	634.51	625.73	41.98	40.72	39.36	38.11	37.29	36.45
93	ARMS	163.95	170.53	175.71	180.09	185.32	190.90	87.64	85.34	82.88	80.81	79.88	78.84
94	MISC. ART.	846.81	843.00	829.59	810.20	802.91	797.28	153.22	149.12	144.71	140.86	139.34	137.80
95		1249.51	1234.68	1205.04	1166.08	1125.73	1081.94	79.42	77.04	74.46	72.09	70.93	69.99
96		1353.36	1336.91	1304.49	1262.03	1240.60	1217.61	76.27	73.98	71.49	69.21	67.75	66.25
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

Table 7.34 Estimated Maritime Trade between US and EU-27

HS-2	SECTION	IMPORT (million USD)						EXPORT (million USD)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.14	0.14	0.14	0.14	0.14	0.14	0.09	0.09	0.09	0.09	0.09	0.08
02		241.45	245.95	249.17	250.02	254.21	258.68	63.95	62.82	62.03	61.66	60.42	59.27
03		396.30	398.39	399.80	399.15	399.73	401.21	401.48	397.77	395.09	393.77	388.25	382.05
04		931.67	949.28	964.56	974.49	987.64	998.41	52.53	51.75	51.17	50.84	49.80	48.90
05		15.05	15.15	15.24	15.26	15.27	15.28	8.74	8.68	8.63	8.60	8.48	8.35
06	VEGETABLE PRODUCTS	75.54	74.92	74.36	73.60	72.95	72.50	77.71	77.47	77.33	77.17	76.20	75.33
07		221.35	221.93	222.30	221.87	222.30	222.34	548.22	536.08	524.43	513.22	504.16	494.88
08		240.97	241.37	241.77	241.77	241.58	240.84	917.84	896.58	875.90	855.64	837.06	819.99
09		294.42	292.48	290.59	287.70	286.29	285.63	269.63	269.18	269.05	268.81	265.94	263.73
10		20.80	20.49	20.24	19.97	19.75	19.49	1092.02	1080.34	1069.66	1059.57	1050.35	1041.85
11		920.56	929.08	936.03	938.69	941.27	942.90	160.75	158.90	157.49	156.69	154.24	151.51
12		134.80	133.78	132.84	131.47	130.48	129.74	1285.37	1285.18	1287.23	1289.88	1293.87	1298.66
13		80.60	80.95	81.15	80.91	80.80	80.75	56.67	55.83	55.18	54.76	53.61	52.57
14		35.93	36.08	36.25	36.32	36.28	36.19	61.51	60.41	59.52	58.88	57.72	56.67
15	FATS & OILS	680.84	676.93	673.04	665.49	660.29	654.06	170.26	168.66	167.76	167.53	164.72	161.56
16	PREPARED FOODSTUFFS	259.84	261.99	263.33	262.88	263.75	264.17	58.89	58.05	57.41	57.02	56.02	55.12
17		85.66	87.36	88.86	89.86	91.15	92.52	26.72	26.46	26.30	26.27	25.79	25.32
18		112.29	112.60	112.69	112.18	112.37	112.60	53.15	52.56	52.13	51.86	50.91	50.06
19		226.97	227.81	228.18	227.27	226.78	226.33	91.63	90.43	89.53	89.00	87.46	85.89
20		630.28	632.61	633.63	631.10	631.24	632.06	261.99	258.58	255.99	254.47	250.13	246.14
21		179.97	181.20	182.04	181.87	182.67	183.31	65.38	64.53	63.88	63.50	62.47	61.45
22		6931.41	7018.27	7094.97	7143.19	7176.76	7201.88	730.12	724.35	720.03	717.89	710.41	704.21
23		142.30	141.55	140.83	139.38	138.37	137.68	60.44	59.82	59.40	59.17	58.01	57.00
24		1862.17	1885.17	1905.49	1918.18	1933.28	1944.95	228.69	227.03	225.81	225.19	222.86	220.11
25	MINERAL PRODUCTS	866.57	874.23	881.86	887.68	893.22	897.55	1520.60	1526.27	1535.67	1549.63	1545.15	1540.01
26		274.33	277.90	281.76	285.40	286.87	288.01	625.54	628.27	632.48	638.49	639.62	641.38
27		30037.31	31111.05	32253.46	33353.24	34035.33	34779.87	6924.45	7083.14	7290.63	7553.69	7606.24	7675.30
28	CHEMICAL PRODUCTS	9616.91	9686.82	9736.72	9735.35	9781.29	9826.79	8337.48	8266.72	8239.72	8265.95	8134.14	8020.49
29		3654.51	3665.74	3666.64	3645.09	3654.38	3659.36	6314.83	6246.65	6210.85	6214.48	6108.36	6015.74
30		861.15	863.56	863.53	858.21	857.66	856.98	533.41	527.59	524.49	524.73	517.24	508.71
31		1133.78	1137.37	1137.79	1131.31	1128.41	1125.51	819.38	810.89	806.54	807.23	794.52	783.29
32		1617.85	1622.82	1623.21	1613.67	1611.94	1605.61	1160.49	1147.96	1141.39	1142.06	1124.67	1104.45
33		1318.28	1322.33	1322.65	1314.88	1315.23	1314.73	782.28	773.83	769.40	769.85	755.26	738.88
34		912.27	913.63	912.37	905.49	905.86	903.72	663.56	655.83	651.50	651.31	641.77	633.56
35		404.53	406.31	406.96	405.16	405.32	404.36	223.23	220.79	219.48	219.54	216.56	213.27
36		124.44	122.85	120.85	118.08	116.06	113.96	71.25	69.80	68.72	68.06	66.49	65.03
37		1340.08	1344.20	1344.53	1336.62	1339.09	1339.09	632.39	625.57	621.98	622.35	612.07	600.56
38		2423.71	2429.39	2427.85	2411.12	2406.11	2395.11	1689.08	1669.63	1658.91	1658.84	1635.21	1608.69
39	PLASTICS	4058.49	4070.96	4071.95	4048.01	4042.80	4045.23	3119.95	3086.26	3068.58	3070.38	3014.03	2964.60
40		2954.59	2963.77	2964.64	2947.41	2952.72	2950.55	2245.58	2221.08	2208.04	2208.95	2178.82	2144.80
41	LEATHER GOODS	337.92	307.85	279.10	250.90	229.84	210.45	99.01	94.79	90.95	87.50	83.96	80.72
42		45.63	42.30	39.00	35.62	33.20	31.02	22.87	21.51	20.28	19.17	18.08	17.07
43		0.37	0.37	0.37	0.37	0.37	0.37	0.96	0.95	0.93	0.92	0.91	0.90
44	WOOD PRODUCTS	687.41	689.65	689.51	684.73	685.04	686.09	424.82	415.24	407.72	402.70	392.60	382.98
45		27.85	27.95	27.96	27.79	27.82	27.82	18.28	17.85	17.50	17.26	16.80	16.32
46		34.17	34.27	34.24	33.97	34.01	33.98	22.93	22.33	21.84	21.50	20.85	20.21
47	PAPER	127.76	128.53	128.86	128.31	128.76	129.24	185.48	182.67	180.75	180.00	180.05	180.54
48		1916.04	1927.62	1932.51	1924.35	1929.46	1934.16	2665.89	2625.52	2597.98	2587.15	2538.59	2485.15
49		57.81	58.16	58.31	58.06	58.28	58.44	71.82	70.73	69.99	69.70	68.28	66.81

Table 7.34 Estimated Maritime Trade between US and EU-27 (cont'd)

HS-2	SECTION	IMPORT (million USD)						EXPORT (million USD)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	5.14	4.96	4.77	4.54	4.39	4.24	1.94	1.85	1.78	1.71	1.64	1.56
51		37.65	36.37	34.93	33.24	32.29	31.36	30.92	29.55	28.31	27.23	25.95	24.81
52		210.82	203.66	195.66	186.23	179.91	173.55	144.42	138.19	132.61	127.74	121.93	116.30
53		20.86	20.18	19.43	18.54	18.02	17.54	42.38	41.32	40.38	39.55	38.32	37.23
54		205.82	198.81	190.99	181.78	175.85	169.98	91.23	87.19	83.58	80.43	77.12	74.15
55		339.87	328.30	315.39	300.18	291.70	283.51	154.28	147.46	141.35	136.02	130.36	124.65
56		105.16	101.58	97.59	92.88	90.18	87.80	30.95	29.58	28.35	27.28	26.13	25.06
57		74.71	72.16	69.33	65.98	63.94	61.86	21.21	20.27	19.43	18.70	17.83	16.96
58		34.00	32.84	31.55	30.03	29.17	28.29	23.22	22.19	21.27	20.47	19.61	18.75
59		193.91	189.70	184.79	178.65	175.29	172.51	96.70	94.08	91.95	90.39	87.43	84.82
60		82.03	79.24	76.12	72.45	70.00	67.58	39.70	37.95	36.37	35.00	33.53	32.18
61		181.13	174.36	166.94	158.28	152.38	146.93	50.69	48.06	45.68	43.58	41.40	39.21
62		107.62	103.57	99.12	93.94	90.64	87.49	23.59	22.31	21.15	20.12	19.03	18.00
63	192.98	187.68	181.54	174.00	169.41	164.68	64.22	61.74	59.59	57.82	55.46	53.31	
64	FOOTWEAR	101.41	92.18	83.35	74.70	68.00	61.76	20.03	18.70	17.49	16.40	15.40	14.45
65		71.84	70.75	69.44	67.66	66.56	65.29	28.68	28.20	27.88	27.73	27.15	26.60
66		144.20	136.90	128.97	120.12	114.48	109.01	55.52	52.36	49.46	46.88	44.17	41.72
67		28.44	27.00	25.44	23.69	22.62	21.58	52.37	49.38	46.65	44.22	41.92	39.69
68	STONE & GLASS	1303.75	1299.29	1290.20	1272.64	1267.30	1262.52	246.10	242.75	240.68	240.21	234.95	229.96
69		606.08	604.00	599.78	591.62	587.56	584.94	120.91	119.27	118.25	118.02	115.45	112.99
70		1078.97	1074.96	1067.11	1052.26	1048.09	1046.51	219.85	216.80	214.88	214.39	210.51	207.06
71	PRECIOUS STONES	91.78	90.43	88.89	86.96	85.40	83.85	100.75	98.33	96.43	95.15	92.84	90.43
72	BASE METALS	5099.30	5100.45	5094.67	5070.09	5052.98	5047.54	1182.54	1172.15	1168.36	1172.80	1155.37	1135.97
73		3817.67	3791.44	3751.93	3688.85	3664.42	3634.36	933.66	911.05	893.82	883.31	857.15	832.65
74		9320.51	9473.50	9603.10	9682.11	9801.84	9936.03	2708.75	2681.03	2666.59	2669.69	2630.91	2590.99
75		526.07	531.94	537.63	541.79	545.85	549.73	192.10	190.26	189.58	190.33	187.42	184.20
76		1071.71	1077.49	1081.85	1081.99	1085.52	1087.36	435.52	429.35	425.76	425.37	418.90	412.53
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78		290.20	293.52	296.75	299.15	302.28	305.79	169.42	167.83	167.27	167.97	165.30	162.97
79		327.41	331.15	334.79	337.49	340.79	344.41	171.07	169.47	168.90	169.61	167.04	164.57
80		233.87	236.40	238.84	240.58	242.38	244.70	122.57	121.37	120.90	121.34	119.53	117.51
81		1256.31	1273.22	1290.18	1304.02	1314.03	1320.41	599.79	595.15	594.14	597.62	589.08	582.07
82		703.24	694.75	683.25	666.74	657.54	647.04	304.46	295.81	288.88	284.10	275.36	267.19
83		685.29	677.02	665.82	649.73	643.02	634.70	252.41	245.25	239.50	235.53	228.70	221.41
84	MACHINE	23747.10	23606.88	23346.13	22893.55	22412.79	21904.02	10330.27	10032.43	9796.20	9636.03	9535.81	9480.51
85		6102.50	6011.14	5890.10	5720.38	5541.90	5350.15	2150.94	2069.73	2001.39	1948.08	1878.72	1813.62
86	VEHICLES	4891.05	4921.61	4932.55	4909.78	4934.09	4953.40	4660.52	4548.84	4459.85	4400.38	4302.30	4198.42
87		37979.99	38555.44	39013.05	39239.94	39255.64	39196.75	12552.38	12337.58	12181.34	12103.19	12088.67	12139.44
88		420.08	422.21	422.61	420.07	422.43	424.86	206.37	201.37	197.37	194.69	190.17	185.22
89		4443.70	4466.42	4470.81	4444.11	4453.63	4467.48	5132.97	5008.63	4909.31	4842.53	4720.31	4596.76
90	CLOCKS & MUSICAL INST.	1338.11	1326.89	1308.23	1278.12	1270.39	1262.34	744.97	724.00	707.61	696.91	674.88	655.15
91		286.71	284.26	280.23	273.75	272.66	271.50	214.67	208.64	203.92	200.85	194.93	188.70
92		283.48	269.13	253.56	236.15	225.10	214.08	158.36	149.33	141.07	133.70	126.68	119.81
93	ARMS	438.66	435.00	428.91	419.08	416.53	413.08	321.96	312.92	305.85	301.24	292.86	285.02
94	MISC. ART.	1123.83	1089.96	1050.73	1003.26	978.24	954.98	452.45	434.18	418.40	405.62	388.72	372.56
95		821.85	780.24	735.09	684.63	640.33	599.48	400.76	377.90	357.01	338.36	320.09	302.17
96		1040.72	987.70	930.26	866.16	825.09	786.08	414.98	391.31	369.67	350.35	332.10	315.37
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

7.3.2 Estimated Maritime Trade between Other Countries/Regions

As discussed in Chapter 5 and Section 7.3, there is a lack of detailed commodity value and weight data by transport mode (except those bounded by U.S.), thus impeding the development of transport mode choice model for other regions and countries. Therefore, assumptions have to be made in order to determine the modal split behaviours of goods transported along trade routes which neither end of the trade leg is bounded by the U.S. For the other trade routes not bounded by U.S., the modal split was estimated using the mean of modal shares between U.S. imports for origin countries and U.S. exports for destination countries. The probabilities of commodity carried by sea between between countries/regions (except the U.S.) are listed in Table 7.35. Similar to the findings presented in Section 7.3.1, it can be noticed from the table that the probability of commodities carried by sea varies across commodity groups.

After the determination of the probability of commodities carried by sea, the resultant amount of commodity (in terms of million US dollars) carried by maritime transport between countries/regions beyond the U.S. can be estimated. Resultant maritime commodity trade between EU-27 and her trading partners are presented in Tables 7.36 to 7.41 while others trade routes are shown in Appendix V.

**Table 7.35 Probability of Commodity Transported by Sea
(Other Countries/Regions)**

HS-2	SECTION	Countries / Regions					
		Australia	China	Japan	Korea	ASEAN	EU-27
01	LIVE ANIMALS	0.013	0.007	0.002	0.004	0.005	0.005
02		0.994	0.999	0.580	0.998	0.946	0.916
03		0.803	0.965	0.876	0.915	0.913	0.598
04		0.957	0.929	0.840	0.960	0.908	0.787
05		0.751	0.957	0.712	0.771	0.833	0.668
06	VEGETABLE PRODUCTS	0.209	0.805	0.452	0.401	0.455	0.572
07		0.770	0.969	0.891	0.963	0.932	0.602
08		0.867	0.951	0.913	0.943	0.973	0.961
09		0.727	0.974	0.921	0.978	0.984	0.939
10		0.923	0.991	0.936	0.997	0.998	0.937
11		0.993	0.974	0.985	0.969	0.908	0.750
12		0.729	0.894	0.681	0.917	0.660	0.711
13		0.473	0.838	0.524	0.710	0.862	0.713
14		0.919	0.986	0.956	0.906	0.875	0.922
15	FATS & OILS	0.787	0.955	0.961	0.910	0.907	0.908
16	PREPARED FOODSTUFFS	0.973	0.939	0.977	0.928	0.991	0.786
17		0.983	0.969	0.978	0.943	0.985	0.902
18		0.858	0.984	0.913	0.961	0.977	0.907
19		0.962	0.919	0.990	0.981	0.983	0.908
20		0.967	0.986	0.988	0.987	0.991	0.935
21		0.895	0.870	0.798	0.885	0.900	0.762
22		0.995	0.963	0.977	0.970	0.973	0.978
23		0.992	0.970	0.973	0.988	0.981	0.809
24		0.867	0.882	0.919	0.996	0.991	0.953
25	MINERAL PRODUCTS	0.982	0.975	0.950	0.979	0.978	0.949
26		0.988	0.971	0.990	0.971	0.942	0.957
27		0.990	0.994	0.995	0.976	0.999	0.999
28	CHEMICAL PRODUCTS	0.891	0.774	0.848	0.843	0.854	0.717
29		0.520	0.907	0.631	0.960	0.509	0.358
30		0.104	0.444	0.095	0.330	0.115	0.191
31		0.882	0.992	0.993	0.993	0.987	0.953
32		0.879	0.744	0.749	0.818	0.862	0.766
33		0.742	0.855	0.716	0.778	0.828	0.733
34		0.935	0.954	0.911	0.933	0.952	0.831
35		0.885	0.794	0.676	0.764	0.675	0.623
36		0.840	0.861	0.759	0.794	0.488	0.355
37		0.743	0.894	0.608	0.317	0.602	0.656
38		0.525	0.735	0.445	0.530	0.756	0.522
39	PLASTICS	0.861	0.908	0.792	0.876	0.892	0.711
40		0.883	0.928	0.913	0.896	0.907	0.813
41	LEATHER GOODS	0.500	0.863	0.541	0.891	0.736	0.588
42		0.407	0.619	0.320	0.325	0.559	0.247
43		0.149	0.193	0.016	0.151	0.573	0.048
44	WOOD PRODUCTS	0.966	0.981	0.833	0.956	0.981	0.932
45		0.772	0.951	0.473	0.636	0.850	0.844
46		0.839	0.902	0.627	0.384	0.827	0.556
47	PAPER	0.887	0.978	0.990	0.967	0.936	0.992
48		0.961	0.941	0.935	0.947	0.945	0.873
49		0.595	0.513	0.333	0.685	0.542	0.440

**Table 7.35 Probability of Commodity Transported by Sea
(Other Countries/Regions) (cont'd)**

HS-2	SECTION	Countries / Regions					
		Australia	China	Japan	Korea	ASEAN	EU-27
50	TEXTILES AND TEXTILE ARTICLES	0.683	0.417	0.233	0.284	0.107	0.164
51		0.697	0.787	0.349	0.350	0.823	0.501
52		0.757	0.977	0.883	0.973	0.949	0.600
53		0.534	0.854	0.400	0.601	0.414	0.396
54		0.686	0.904	0.846	0.938	0.844	0.724
55		0.868	0.965	0.810	0.972	0.953	0.853
56		0.880	0.940	0.881	0.882	0.929	0.721
57		0.946	0.913	0.803	0.907	0.855	0.745
58		0.416	0.715	0.596	0.628	0.543	0.305
59		0.752	0.794	0.712	0.684	0.751	0.576
60		0.631	0.839	0.695	0.800	0.825	0.557
61		0.380	0.676	0.260	0.588	0.671	0.269
62		0.252	0.589	0.178	0.458	0.580	0.141
63	0.635	0.775	0.575	0.783	0.854	0.607	
64	FOOTWEAR	0.739	0.578	0.445	0.582	0.565	0.429
65		0.450	0.751	0.628	0.690	0.742	0.396
66		0.618	0.883	0.459	0.604	0.795	0.586
67		0.438	0.903	0.519	0.529	0.718	0.280
68	STONE & GLASS	0.592	0.781	0.665	0.733	0.732	0.611
69		0.520	0.751	0.428	0.574	0.689	0.659
70		0.916	0.731	0.677	0.719	0.677	0.531
71	PRECIOUS STONES	0.044	0.158	0.150	0.100	0.022	0.083
72	BASE METALS	0.934	0.971	0.925	0.981	0.974	0.891
73		0.819	0.849	0.739	0.829	0.777	0.645
74		0.736	0.948	0.827	0.934	0.833	0.786
75		0.843	0.768	0.791	0.820	0.557	0.687
76		0.911	0.962	0.816	0.941	0.824	0.736
77		---	---	---	---	---	---
78		0.868	0.887	0.515	0.946	0.772	0.839
79		0.939	0.914	0.952	0.840	0.881	0.893
80		0.744	0.902	0.809	0.488	0.815	0.830
81		0.624	0.711	0.660	0.712	0.298	0.537
82		0.584	0.657	0.435	0.507	0.474	0.336
83	0.629	0.745	0.733	0.722	0.692	0.559	
84	MACHINE	0.663	0.511	0.497	0.528	0.351	0.414
85		0.280	0.315	0.293	0.172	0.173	0.244
86	VEHICLES	0.843	0.844	0.810	0.830	0.638	0.656
87		0.918	0.913	0.904	0.916	0.912	0.894
88		0.290	0.378	0.383	0.470	0.139	0.072
89		0.965	0.954	0.930	0.893	0.957	0.940
90	CLOCKS & MUSICAL INST.	0.263	0.322	0.220	0.311	0.159	0.116
91		0.192	0.438	0.132	0.508	0.164	0.084
92		0.300	0.755	0.612	0.635	0.776	0.425
93	ARMS	0.404	0.743	0.515	0.614	0.521	0.339
94	MISC. ART.	0.733	0.872	0.823	0.802	0.848	0.639
95		0.660	0.679	0.370	0.695	0.730	0.584
96		0.436	0.735	0.582	0.757	0.705	0.624
97	ARTS	---	---	---	---	---	---

Table 7.36 Estimated Maritime Trade between EU-27 and Australia

HS-2	SECTION	IMPORT (million USD)						EXPORT (million USD)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.54	0.54	0.54	0.55	0.57	0.58	0.11	0.12	0.12	0.12	0.12	0.13
02		125.69	127.01	129.10	131.92	133.49	137.81	110.48	110.73	110.73	110.39	111.46	107.67
03		23.56	23.56	23.61	23.73	24.66	25.34	140.16	138.98	137.93	136.80	131.84	131.72
04		35.17	35.18	35.33	35.62	36.05	37.08	94.31	94.72	95.12	95.45	97.89	101.49
05		26.73	25.91	25.19	24.52	23.68	23.23	4.63	4.62	4.63	4.64	4.82	4.88
06	VEGETABLE PRODUCTS	3.83	3.81	3.80	3.81	3.84	3.98	6.30	6.20	6.12	6.02	5.87	5.87
07		29.18	28.55	27.97	27.45	26.10	25.66	50.84	50.39	49.99	49.56	48.96	48.16
08		52.11	50.86	49.72	48.67	48.27	46.75	33.08	32.77	32.49	32.21	31.76	31.59
09		13.57	13.50	13.49	13.52	13.60	13.79	40.76	40.24	39.77	39.25	38.78	38.21
10		5.11	5.09	5.09	5.13	5.29	5.44	5.17	5.02	4.90	4.78	4.76	4.68
11		68.14	67.88	67.75	67.79	66.74	67.89	117.36	116.69	116.14	115.55	114.66	112.90
12		11.65	11.60	11.61	11.66	11.83	12.03	24.90	24.56	24.25	23.91	22.72	22.04
13		2.52	2.51	2.50	2.50	2.50	2.57	24.27	24.07	23.90	23.70	23.33	22.91
14		1.68	1.67	1.65	1.64	1.60	1.56	5.45	5.41	5.39	5.36	5.20	5.12
15	FATS & OILS	23.01	23.24	23.60	24.09	25.23	26.04	152.49	150.49	148.76	146.79	140.92	140.30
16	PREPARED FOODSTUFFS	7.12	7.11	7.12	7.17	7.34	7.66	72.96	72.66	72.32	71.86	69.32	67.47
17		11.58	11.61	11.69	11.82	12.32	12.43	10.05	10.11	10.17	10.22	10.29	10.52
18		3.03	3.02	3.01	3.02	3.10	3.19	30.88	30.61	30.36	30.10	28.92	28.88
19		5.52	5.50	5.49	5.50	5.77	5.92	63.78	63.23	62.74	62.21	62.15	59.94
20		15.53	15.47	15.46	15.49	14.64	15.29	179.60	178.05	176.66	175.17	173.42	167.44
21		5.23	5.22	5.22	5.24	5.42	5.55	46.26	45.92	45.61	45.29	44.04	43.34
22		828.04	824.91	823.25	823.56	803.88	781.29	395.12	396.50	398.28	400.27	409.47	424.99
23		1.83	1.83	1.84	1.85	1.88	1.92	46.13	45.55	45.06	44.51	43.24	42.03
24		231.24	230.36	229.90	229.99	223.41	223.63	110.45	110.82	111.30	111.84	117.34	118.22
25	MINERAL PRODUCTS	1827.78	1827.96	1831.37	1838.51	1850.09	1910.96	44.04	43.37	42.72	42.03	41.24	40.13
26		760.93	761.01	762.44	765.42	790.60	791.55	11.36	11.27	11.20	11.11	10.92	10.45
27		3932.80	3984.59	4044.46	4110.31	4305.13	4406.30	100.96	101.07	101.43	101.88	104.34	106.90
28	CHEMICAL PRODUCTS	141.78	144.47	148.01	152.38	159.84	165.09	1144.77	1130.95	1116.63	1100.05	1084.10	1081.07
29		80.41	81.97	84.02	86.56	87.23	87.37	730.25	721.38	712.19	701.55	701.41	692.29
30		10.44	10.64	10.90	11.22	11.78	11.81	93.75	92.57	91.36	89.95	88.37	86.43
31		43.50	43.78	44.20	44.77	46.03	47.09	130.74	129.16	127.51	125.61	123.83	120.17
32		20.81	21.21	21.74	22.40	22.50	23.06	188.88	186.59	184.21	181.45	174.25	173.03
33		15.48	15.78	16.18	16.67	17.16	17.72	140.52	138.82	137.05	135.00	130.42	126.89
34		11.83	12.04	12.33	12.68	12.94	13.41	107.29	105.86	104.39	102.70	99.80	96.30
35		6.03	6.10	6.22	6.36	6.37	6.45	47.76	47.26	46.76	46.17	43.98	42.53
36		1.45	1.46	1.47	1.49	1.52	1.58	13.04	12.72	12.40	12.06	12.00	11.97
37		14.27	14.54	14.91	15.36	15.49	15.57	129.51	127.93	126.30	124.41	120.54	116.18
38		30.55	31.10	31.82	32.73	32.78	33.23	282.81	279.12	275.29	270.91	269.09	257.87
39	PLASTICS	54.08	55.13	56.51	58.22	60.28	61.41	490.93	484.97	478.79	471.62	465.92	461.82
40		39.66	40.40	41.38	42.60	42.84	43.68	352.94	348.67	344.25	339.13	322.85	309.78
41	LEATHER GOODS	40.99	39.30	37.72	36.20	34.89	33.49	33.13	29.97	27.06	24.34	23.81	22.92
42		3.48	3.31	3.15	2.99	2.86	2.77	6.08	5.59	5.12	4.67	4.57	4.54
43		0.30	0.30	0.29	0.29	0.29	0.28	0.01	0.01	0.01	0.01	0.01	0.01
44	WOOD PRODUCTS	12.76	12.66	12.60	12.58	12.04	12.00	121.64	119.44	117.37	115.20	112.16	108.19
45		0.59	0.59	0.58	0.58	0.56	0.56	4.85	4.76	4.68	4.60	4.52	4.46
46		0.67	0.66	0.66	0.66	0.63	0.63	7.62	7.48	7.34	7.20	6.85	6.83
47	PAPER	4.13	4.14	4.17	4.21	4.37	4.44	61.10	60.30	59.48	58.55	57.46	55.26
48		60.66	60.83	61.23	61.87	63.98	64.78	897.20	885.44	873.34	859.78	832.95	797.89
49		1.73	1.74	1.75	1.77	1.85	1.94	25.64	25.31	24.96	24.57	24.40	23.52

**Table 7.36 Estimated Maritime Trade between EU-27 and Australia
(cont'd)**

HS-2	SECTION	IMPORT (million USD)						EXPORT (million USD)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	4.64	4.43	4.24	4.06	3.94	3.76	0.61	0.57	0.53	0.49	0.49	0.47
51		70.05	66.94	64.10	61.35	61.03	58.83	7.12	6.66	6.21	5.78	5.56	5.30
52		9.43	9.29	9.18	9.09	8.69	8.61	32.49	30.11	27.83	25.61	24.64	23.76
53		2.04	2.01	2.00	1.99	1.97	1.96	4.08	3.78	3.50	3.22	3.06	2.99
54		7.11	7.00	6.91	6.84	6.59	6.53	24.98	23.15	21.40	19.69	19.59	19.50
55		11.89	11.71	11.57	11.44	10.88	10.57	41.79	38.73	35.79	32.94	32.74	31.71
56		2.97	2.93	2.89	2.86	2.84	2.74	10.44	9.68	8.94	8.23	8.00	7.60
57		2.08	2.05	2.02	2.00	1.99	1.98	7.30	6.77	6.26	5.76	5.57	5.43
58		1.52	1.49	1.48	1.46	1.40	1.34	5.33	4.94	4.57	4.20	4.08	3.95
59		3.04	3.02	3.01	3.01	2.97	2.88	21.14	20.36	19.58	18.79	18.10	18.09
60		2.97	2.93	2.89	2.86	2.80	2.78	10.45	9.69	8.95	8.24	8.04	7.83
61		2.47	2.41	2.36	2.31	2.24	2.20	16.13	14.83	13.59	12.42	12.10	12.02
62		1.05	1.03	1.00	0.98	0.96	0.91	8.38	7.69	7.04	6.42	6.17	5.91
63	4.69	4.63	4.57	4.53	4.49	4.42	20.16	18.98	17.83	16.70	16.35	16.06	
64	FOOTWEAR	10.95	10.40	9.88	9.37	9.24	9.08	11.38	10.29	9.28	8.33	7.96	7.88
65		0.70	0.71	0.71	0.72	0.75	0.77	6.12	5.92	5.73	5.53	5.53	5.48
66		1.46	1.41	1.35	1.30	1.25	1.22	12.81	12.04	11.27	10.50	10.18	9.90
67		0.80	0.77	0.74	0.71	0.71	0.71	6.99	6.58	6.16	5.74	5.52	5.50
68	STONE & GLASS	2.97	2.97	2.99	3.01	3.04	3.10	93.41	91.25	89.08	86.81	84.17	81.14
69		1.41	1.41	1.42	1.43	1.46	1.49	44.27	43.25	42.22	41.14	40.10	40.00
70		2.75	2.75	2.76	2.79	2.90	2.93	79.54	77.65	75.77	73.79	73.73	72.63
71	PRECIOUS STONES	24.21	23.85	23.53	23.23	22.90	22.46	9.89	9.51	9.13	8.75	8.44	8.07
72	BASE METALS	105.51	105.64	106.18	107.11	107.17	111.91	400.33	396.88	393.75	390.63	371.88	366.45
73		44.20	44.05	44.05	44.20	44.47	45.99	349.76	341.96	334.12	325.90	309.93	295.64
74		288.98	282.16	275.83	269.52	269.28	268.47	998.54	994.41	990.75	986.51	942.02	913.19
75		80.48	78.43	76.50	74.56	73.99	70.29	24.69	24.37	24.09	23.80	22.86	21.90
76		131.65	128.33	125.22	122.09	116.07	112.53	72.50	71.05	69.67	68.23	65.54	63.98
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78		56.19	54.76	53.41	52.05	50.15	48.65	16.76	16.55	16.37	16.18	15.56	14.99
79		59.81	58.29	56.86	55.41	53.80	52.61	17.84	17.62	17.43	17.22	17.15	17.14
80		41.75	40.69	39.69	38.68	38.14	37.55	13.28	13.10	12.94	12.78	12.57	12.23
81		237.21	231.15	225.45	219.70	210.63	209.07	56.65	56.16	55.80	55.42	52.72	51.79
82		6.12	6.06	6.02	6.00	5.98	5.76	89.92	87.37	84.80	82.14	78.31	77.05
83	5.55	5.49	5.46	5.44	5.21	4.98	81.50	79.19	76.86	74.45	70.84	67.57	
84	MACHINE	277.75	275.35	273.88	273.27	269.69	260.30	2666.42	2603.50	2538.56	2468.05	2407.58	2288.41
85		77.46	76.24	75.29	74.56	74.56	74.30	655.31	633.79	612.17	589.46	565.41	555.63
86	VEHICLES	34.58	34.61	34.72	34.91	35.00	35.70	274.42	269.16	263.56	257.19	253.51	245.65
87		119.05	119.22	119.77	120.73	123.95	126.52	3812.54	3792.35	3772.95	3750.51	3715.63	3535.05
88		2.41	2.41	2.42	2.43	2.51	2.57	16.19	15.83	15.43	14.99	14.26	13.58
89		35.59	35.62	35.72	35.92	37.43	38.89	239.86	234.47	228.70	222.14	217.70	213.93
90	CLOCKS & MUSICAL INST.	19.20	19.05	18.97	18.95	18.55	18.48	177.47	173.27	168.89	164.10	159.05	154.55
91		4.87	4.83	4.81	4.80	4.60	4.52	44.47	43.41	42.31	41.11	39.54	38.43
92		3.48	3.35	3.22	3.10	2.94	2.87	30.48	28.66	26.84	25.00	23.92	23.34
93	ARMS	7.24	7.18	7.15	7.14	7.04	6.81	67.40	65.81	64.14	62.32	61.41	59.24
94	MISC. ART.	12.52	12.26	12.03	11.84	11.78	11.33	114.00	109.51	104.96	100.24	95.30	94.09
95		9.37	9.02	8.68	8.35	8.30	8.27	82.08	77.17	72.26	67.31	65.72	64.72
96		11.20	10.77	10.36	9.96	9.78	9.46	94.05	88.41	82.76	77.07	73.86	71.68
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

Table 7.37 Estimated Maritime Trade between EU-27 and China

HS-2	SECTION	IMPORT (million USD)						EXPORT (million USD)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.09	0.09	0.09	0.10	0.10	0.10	0.32	0.33	0.33	0.34	0.35	0.35
02		61.43	73.10	87.30	104.78	108.05	108.05	110.72	113.06	115.19	117.13	120.90	126.62
03		474.65	500.53	528.55	559.41	575.97	584.20	126.46	126.44	126.44	126.45	128.17	128.95
04		84.24	92.72	102.50	113.97	118.61	124.08	155.82	151.44	146.98	142.44	136.29	134.37
05		9.42	9.92	10.46	11.06	11.13	11.28	8.15	8.11	8.05	8.00	7.80	7.68
06	VEGETABLE PRODUCTS	120.34	133.68	149.09	167.02	167.64	169.93	22.68	23.14	23.62	24.06	24.16	24.31
07		359.50	376.41	394.54	414.37	433.18	454.15	34.54	34.47	34.42	34.35	32.84	32.18
08		486.10	507.18	529.64	554.10	574.99	588.10	20.48	20.42	20.38	20.32	20.28	19.75
09		455.52	503.62	558.97	623.20	638.10	661.58	57.89	58.25	58.64	58.93	60.47	62.35
10		34.10	36.98	40.40	44.31	45.98	46.74	25.74	26.09	26.45	26.81	27.83	28.00
11		300.44	316.85	334.61	354.18	357.30	373.02	101.73	102.55	103.38	104.21	107.59	108.94
12		718.39	790.64	873.54	969.38	997.39	1027.01	34.62	34.96	35.32	35.64	36.97	38.05
13		88.67	93.48	98.70	104.46	107.82	110.44	29.31	29.72	30.14	30.55	31.92	32.38
14		33.21	34.99	36.95	39.15	40.53	41.91	43.84	45.30	46.80	48.29	49.72	50.69
15	FATS & OILS	187.22	206.24	227.90	252.81	257.89	258.17	68.50	68.63	68.80	68.89	70.69	72.69
16	PREPARED FOODSTUFFS	162.62	173.78	186.28	200.55	209.38	213.56	33.88	33.69	33.49	33.29	32.68	32.65
17		8.25	9.25	10.41	11.77	11.94	12.49	16.13	15.61	15.07	14.53	14.43	13.75
18		115.10	122.24	130.10	138.86	144.04	148.12	22.92	22.90	22.89	22.86	22.30	21.88
19		214.18	225.94	238.67	252.69	254.28	258.07	45.19	45.13	45.07	44.99	44.81	43.14
20		603.13	636.24	672.08	711.56	718.96	736.72	127.26	127.09	126.91	126.69	121.95	117.69
21		143.98	152.07	160.87	170.59	173.47	176.97	36.68	36.41	36.15	35.87	34.45	34.02
22		44.66	45.98	47.43	49.04	49.14	50.45	534.19	546.69	559.26	572.13	593.47	596.08
23		54.88	59.38	64.49	70.37	71.74	74.05	18.15	18.02	17.92	17.80	17.09	16.46
24		38.05	41.56	45.61	50.33	50.77	52.91	151.19	154.70	158.23	161.84	167.52	173.70
25	MINERAL PRODUCTS	1344.13	1391.93	1445.05	1505.22	1544.80	1611.85	1472.16	1582.80	1703.80	1837.42	1843.12	1895.09
26		339.46	345.10	351.58	359.16	369.54	384.32	599.48	645.60	696.05	751.78	760.27	793.27
27		1414.62	1519.96	1640.62	1779.36	1824.20	1844.82	392.58	419.87	450.50	484.94	493.04	502.26
28	CHEMICAL PRODUCTS	4952.35	5370.95	5839.40	6369.41	6436.93	6595.92	2381.44	2463.56	2547.64	2632.05	2695.22	2816.51
29		3095.45	3357.66	3651.03	3982.90	4178.46	4285.85	1502.93	1554.30	1606.80	1659.37	1661.36	1735.63
30		447.30	484.93	526.87	574.12	590.54	599.22	194.80	201.36	208.06	214.76	218.18	224.92
31		565.58	612.62	665.27	724.84	737.81	769.91	291.47	302.42	313.73	325.27	334.80	335.47
32		800.95	868.83	944.78	1030.70	1068.63	1097.91	389.20	402.51	416.12	429.74	437.09	450.73
33		595.89	646.39	702.90	766.82	776.18	786.27	289.56	299.46	309.58	319.72	324.80	329.05
34		652.82	706.15	765.06	830.89	851.75	877.47	220.84	228.19	235.68	243.18	244.96	246.57
35		184.25	199.28	216.06	235.02	245.04	249.10	87.83	90.29	92.81	95.32	96.48	99.33
36		308.75	332.37	357.81	385.55	385.66	388.36	26.57	27.21	27.86	28.49	29.19	30.04
37		549.17	595.71	647.78	706.70	713.13	718.83	266.85	275.98	285.31	294.65	298.60	310.87
38		1411.68	1527.42	1656.35	1801.78	1833.31	1889.96	616.99	635.28	653.84	672.29	704.49	727.25
39	PLASTICS	2081.79	2258.22	2455.63	2678.95	2688.59	2805.55	1011.59	1046.19	1081.55	1116.96	1168.89	1180.23
40		1509.29	1636.60	1779.01	1940.11	1982.01	1989.15	748.82	774.44	800.62	826.84	865.04	865.12
41	LEATHER GOODS	8853.38	9486.15	10148.66	10844.16	11258.41	11787.56	99.47	99.23	98.88	98.41	98.32	97.86
42		1260.39	1350.55	1445.46	1545.91	1612.39	1642.70	10.77	10.61	10.43	10.23	10.12	9.80
43		0.44	0.44	0.45	0.46	0.47	0.48	1.53	1.56	1.58	1.61	1.66	1.71
44	WOOD PRODUCTS	1780.95	1844.46	1911.65	1984.83	2056.68	2141.01	156.41	158.35	160.28	162.02	163.01	164.58
45		75.72	78.36	81.14	84.17	87.60	90.94	8.38	8.52	8.66	8.80	9.18	9.26
46		118.79	122.84	127.11	131.74	137.11	137.84	5.66	5.61	5.56	5.50	5.49	5.22
47	PAPER	199.15	214.42	231.35	250.49	262.49	273.26	49.73	50.49	51.20	51.82	53.31	55.27
48		2924.30	3148.40	3397.09	3678.19	3747.34	3785.19	730.23	741.40	751.74	760.91	769.21	784.13
49		83.58	89.99	97.10	105.13	107.48	111.43	20.87	21.19	21.49	21.75	22.83	23.24

Table 7.37 Estimated Maritime Trade between EU-27 and China (cont'd)

HS-2	SECTION	IMPORT (million USD)						EXPORT (million USD)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	45.26	48.85	52.72	56.94	59.67	62.63	3.75	3.73	3.71	3.69	3.58	3.54
51		517.81	558.86	603.19	651.44	670.99	680.45	47.41	47.24	46.96	46.62	45.81	44.70
52		2619.93	2828.02	3052.75	3297.40	3390.72	3470.74	149.82	149.98	149.88	149.48	144.14	139.18
53		326.56	352.50	380.51	411.00	412.44	427.32	28.95	29.74	30.57	31.48	32.08	33.41
54		2014.64	2174.65	2347.46	2535.59	2555.37	2673.42	113.45	113.44	113.22	112.74	112.17	110.47
55		3370.26	3637.95	3927.04	4241.75	4309.20	4434.16	189.79	189.77	189.40	188.61	182.23	173.74
56		842.22	909.11	981.35	1060.00	1063.29	1097.95	47.43	47.42	47.33	47.13	45.13	44.75
57		589.00	635.78	686.30	741.30	749.38	751.56	33.17	33.17	33.10	32.96	31.73	31.44
58		430.18	464.35	501.25	541.42	546.13	566.72	24.22	24.22	24.18	24.07	23.22	22.18
59		836.88	901.72	971.56	1047.58	1095.56	1125.36	51.72	52.34	52.91	53.41	54.96	55.20
60		842.90	909.84	982.15	1060.86	1068.60	1086.45	47.47	47.46	47.37	47.17	46.18	44.72
61		5387.60	5755.67	6146.64	6566.47	6584.85	6871.29	41.52	41.19	40.81	40.36	38.62	36.94
62		3234.64	3454.08	3686.99	3936.90	4112.88	4154.01	18.19	17.98	17.75	17.51	17.06	16.73
63	1202.31	1297.81	1400.99	1513.40	1564.71	1626.51	90.41	90.34	90.10	89.67	86.78	82.76	
64	FOOTWEAR	3070.06	3289.74	3519.74	3761.19	3850.70	3920.40	17.85	17.45	17.02	16.54	16.29	15.69
65		704.63	752.74	803.90	858.89	869.80	890.15	12.81	13.07	13.34	13.60	14.25	14.61
66		1031.46	1109.04	1192.05	1281.96	1344.90	1367.76	25.24	25.07	24.86	24.58	24.06	23.53
67		563.42	605.79	651.14	700.25	712.78	729.11	13.79	13.70	13.58	13.43	13.34	13.25
68	STONE & GLASS	2165.77	2308.46	2465.22	2640.43	2681.36	2685.38	183.24	184.74	186.05	187.19	194.97	202.89
69		1026.45	1094.08	1168.37	1251.41	1286.08	1322.34	86.85	87.56	88.18	88.72	93.14	94.54
70		1896.23	2022.15	2160.38	2314.69	2335.53	2418.44	158.37	159.63	160.72	161.67	169.09	170.73
71	PRECIOUS STONES	528.18	568.99	612.89	660.67	664.44	682.84	55.19	56.83	58.52	60.27	63.03	63.90
72	BASE METALS	10634.54	11121.45	11627.84	12163.87	12596.91	13152.43	3193.78	3307.75	3428.82	3558.93	3703.42	3837.11
73		8324.98	8862.50	9435.18	10056.37	10459.63	10751.45	1664.20	1693.32	1722.74	1752.94	1752.94	1656.00
74		1931.78	2096.72	2278.85	2482.42	2490.12	2593.46	2712.81	2738.69	2762.59	2785.71	2890.17	2998.55
75		520.24	566.63	617.57	674.10	687.99	710.90	225.00	231.42	237.93	244.53	256.34	265.49
76		1791.17	1933.31	2087.42	2256.88	2334.97	2415.30	472.70	483.94	495.24	506.56	523.38	540.07
77		---	---	---	---	---	---	---	---	---	---	---	---
78		349.30	380.71	415.22	453.55	474.73	478.72	155.54	160.01	164.55	169.15	172.58	176.79
79		371.83	405.26	442.00	482.80	488.65	495.78	165.58	170.33	175.16	180.05	181.68	183.40
80		283.69	308.72	336.19	366.65	371.93	389.56	118.27	121.61	125.00	128.43	131.03	132.85
81		1061.23	1164.69	1279.28	1407.25	1450.59	1520.94	610.65	629.18	648.07	667.23	683.71	711.19
82		2616.88	2802.05	2999.97	3215.30	3267.71	3388.29	303.95	306.48	308.73	310.69	323.06	323.19
83		2371.81	2539.63	2719.01	2914.18	3029.87	3123.19	275.48	277.78	279.81	281.60	295.40	306.65
84	MACHINE	30561.31	32691.83	34994.71	37534.63	37898.72	39115.26	11061.67	11040.34	10998.60	10936.32	10683.69	10273.43
85		17395.20	18329.21	19321.25	20400.02	20530.58	20542.90	2522.05	2528.08	2529.58	2524.98	2509.07	2420.75
86	VEHICLES	1955.71	2150.80	2365.07	2603.53	2727.72	2848.83	1590.61	1568.98	1543.90	1515.70	1506.16	1487.18
87		5447.00	5888.03	6371.37	6910.09	6941.19	7089.03	9476.11	9468.31	9447.44	9418.62	9230.25	8981.03
88		139.82	153.79	169.14	186.22	190.84	197.23	106.36	104.80	103.00	100.98	99.32	98.89
89		2038.54	2243.12	2467.81	2717.85	2767.86	2835.95	1576.53	1553.35	1526.63	1496.67	1433.07	1385.06
90	CLOCKS & MUSICAL INST.	1650.89	1782.01	1924.75	2083.04	2183.45	2208.12	771.17	769.24	765.85	761.07	739.23	704.56
91		426.59	460.34	497.04	537.66	547.01	566.60	193.24	192.75	191.91	190.71	186.30	181.21
92		2455.45	2640.13	2837.74	3051.77	3170.79	3318.55	60.09	59.69	59.17	58.52	58.49	57.13
93	ARMS	644.52	695.41	750.77	812.12	837.70	867.27	291.89	291.21	289.99	288.24	284.72	283.72
94	MISC. ART.	4695.95	5051.00	5431.86	5845.73	6069.62	6242.00	363.43	362.50	360.93	358.67	348.27	333.40
95		6611.56	7108.82	7640.91	8217.21	8455.51	8462.27	161.81	160.71	159.33	157.58	153.55	150.54
96		7680.05	8257.13	8874.39	9542.55	9575.95	9914.94	185.18	183.91	182.32	180.30	173.13	164.73
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

Table 7.38 Estimated Maritime Trade between EU-27 and Japan

HS-2	SECTION	IMPORT (million USD)						EXPORT (million USD)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.02	0.02
02		2.78	2.73	2.69	2.66	2.59	2.55	448.84	411.96	374.65	337.20	333.69	321.88
03		29.44	29.26	29.12	29.02	27.76	26.46	146.09	141.17	136.29	131.43	125.61	121.99
04		1.79	1.77	1.76	1.74	1.70	1.61	287.36	284.25	280.73	276.95	269.69	259.82
05		1.04	1.04	1.04	1.03	1.03	0.98	2.82	2.72	2.63	2.54	2.52	2.47
06	VEGETABLE PRODUCTS	3.64	3.60	3.57	3.53	3.49	3.41	21.95	20.91	19.89	18.87	18.20	17.29
07		5.13	5.07	5.03	4.99	4.89	4.70	69.44	66.96	64.55	62.19	59.80	58.08
08		3.01	2.98	2.95	2.92	2.86	2.77	67.33	64.82	62.42	60.11	58.64	56.32
09		13.98	13.85	13.72	13.59	12.94	12.89	93.35	89.11	84.96	80.80	77.85	74.84
10		0.20	0.20	0.19	0.19	0.19	0.18	22.14	21.74	21.35	20.97	20.73	20.20
11		10.09	9.99	9.91	9.84	9.58	9.57	176.95	172.77	168.55	164.34	161.76	159.50
12		9.47	9.41	9.35	9.30	9.28	9.14	54.97	52.38	49.85	47.32	46.50	46.41
13		2.73	2.71	2.68	2.66	2.60	2.57	25.79	24.94	24.09	23.24	22.43	22.14
14		0.91	0.90	0.89	0.89	0.87	0.83	6.21	6.03	5.86	5.68	5.64	5.44
15	FATS & OILS	19.05	18.65	18.27	17.90	17.76	17.35	164.53	154.06	143.69	133.23	126.63	122.12
16	PREPARED FOODSTUFFS	5.34	5.28	5.23	5.19	5.05	5.01	161.85	150.51	139.07	127.61	127.43	124.99
17		0.85	0.85	0.84	0.84	0.82	0.79	33.67	33.30	32.89	32.44	32.07	31.00
18		3.61	3.57	3.54	3.51	3.51	3.48	33.93	32.73	31.55	30.37	29.44	28.62
19		6.74	6.67	6.61	6.56	6.40	6.35	66.30	64.05	61.81	59.57	58.53	57.31
20		18.97	18.78	18.61	18.49	17.83	17.74	186.71	180.35	174.04	167.74	161.52	154.19
21		4.49	4.44	4.40	4.37	4.37	4.19	57.23	55.60	53.97	52.32	50.12	49.66
22		10.20	10.13	10.08	10.04	9.81	9.71	1163.08	1148.64	1133.51	1118.39	1099.48	1071.34
23		2.30	2.28	2.26	2.25	2.20	2.14	43.64	41.13	38.66	36.17	35.39	33.82
24		3.62	3.59	3.57	3.55	3.42	3.27	328.03	323.78	319.35	314.92	310.13	303.74
25	MINERAL PRODUCTS	60.30	59.58	58.97	58.47	57.03	55.84	130.41	128.56	126.77	125.05	119.76	115.05
26		14.14	14.01	13.89	13.79	13.53	13.11	46.53	46.11	45.72	45.35	44.13	42.99
27		747.80	766.99	789.87	817.25	837.27	842.04	838.22	844.26	852.08	861.18	876.25	918.75
28	CHEMICAL PRODUCTS	1493.19	1457.71	1423.35	1389.94	1384.80	1366.10	1574.47	1538.93	1502.22	1463.22	1440.11	1390.71
29		925.38	901.90	878.98	856.48	847.06	823.51	974.31	951.30	927.48	902.15	878.60	854.35
30		119.52	116.48	113.52	110.61	109.14	106.19	125.18	122.15	119.03	115.71	114.74	112.62
31		165.95	161.74	157.64	153.62	149.01	143.84	175.71	171.59	167.33	162.79	160.25	158.71
32		239.75	233.67	227.73	221.90	220.04	209.10	252.11	246.16	240.00	233.45	228.61	225.39
33		178.37	173.84	169.42	165.09	157.13	150.88	187.56	183.14	178.55	173.68	167.34	163.22
34		138.31	134.60	130.99	127.45	124.61	119.09	144.10	140.50	136.78	132.86	131.66	126.68
35		48.45	47.23	46.04	44.88	43.15	41.28	68.22	66.68	65.09	63.41	62.77	61.03
36		19.27	18.53	17.82	17.12	16.54	16.29	18.55	17.86	17.16	16.44	15.67	15.48
37		164.38	160.21	156.14	152.14	145.27	140.21	172.86	168.78	164.55	160.06	155.50	151.49
38		377.84	368.32	359.11	350.16	332.93	324.34	370.94	361.58	351.94	341.75	330.71	328.76
39	PLASTICS	623.15	607.33	591.90	576.75	572.19	548.85	655.27	639.81	623.79	606.76	583.16	560.53
40		447.08	435.74	424.67	413.80	409.50	402.62	471.84	460.72	449.21	436.97	425.96	414.67
41	LEATHER GOODS	8.88	8.35	7.84	7.34	7.25	6.92	296.49	266.59	238.70	212.77	211.35	201.71
42		5.88	5.53	5.18	4.85	4.81	4.65	36.55	32.99	29.66	26.55	25.96	25.18
43		0.01	0.01	0.01	0.01	0.01	0.01	0.12	0.12	0.11	0.11	0.11	0.10
44	WOOD PRODUCTS	18.30	17.88	17.46	17.06	16.60	15.98	269.80	260.52	251.35	242.03	240.75	231.82
45		0.27	0.27	0.27	0.26	0.25	0.25	11.12	10.74	10.36	9.98	9.76	9.62
46		0.30	0.30	0.29	0.29	0.29	0.28	17.57	16.95	16.34	15.71	15.04	15.03
47	PAPER	9.89	9.77	9.66	9.58	9.39	9.12	20.28	19.81	19.30	18.76	18.55	18.39
48		145.28	143.40	141.85	140.64	139.40	138.86	297.86	290.91	283.44	275.48	264.54	251.36
49		4.15	4.10	4.05	4.02	3.91	3.76	8.51	8.31	8.10	7.87	7.75	7.66

Table 7.38 Estimated Maritime Trade between EU-27 and Japan (cont'd)

HS-2	SECTION	IMPORT (million USD)						EXPORT (million USD)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	1.16	1.12	1.09	1.06	1.04	1.02	0.79	0.71	0.63	0.56	0.54	0.54
51		13.23	12.86	12.49	12.12	11.82	11.65	9.06	8.11	7.23	6.42	6.18	5.90
52		67.04	65.14	63.28	61.42	59.73	57.98	45.70	40.90	36.47	32.39	31.34	29.94
53		8.37	8.13	7.90	7.67	7.34	7.00	6.30	5.70	5.14	4.62	4.51	4.45
54		51.55	50.09	48.66	47.23	46.78	44.61	35.04	31.35	27.95	24.81	23.83	23.68
55		86.23	83.80	81.40	79.00	78.34	76.19	58.61	52.44	46.75	41.50	40.36	40.13
56		21.55	20.94	20.34	19.74	19.49	19.14	14.65	13.11	11.68	10.37	10.02	9.56
57		15.07	14.64	14.23	13.81	13.57	13.04	10.24	9.17	8.17	7.25	6.91	6.58
58		11.01	10.70	10.39	10.08	9.91	9.43	7.48	6.69	5.97	5.30	5.14	4.96
59		32.69	31.44	30.22	29.02	28.01	27.71	28.51	26.91	25.36	23.85	23.18	22.48
60		21.57	20.96	20.36	19.76	19.68	18.95	14.66	13.12	11.69	10.38	10.23	9.82
61		10.99	10.63	10.29	9.94	9.93	9.71	96.36	87.48	79.14	71.34	71.14	68.80
62		3.33	3.21	3.09	2.97	2.91	2.84	57.92	52.62	47.63	42.96	41.53	40.27
63	43.62	42.42	41.28	40.16	38.87	38.85	25.77	23.35	21.09	18.98	18.36	17.65	
64	FOOTWEAR	2.97	2.78	2.61	2.44	2.42	2.33	101.63	91.30	81.67	72.71	71.34	68.64
65		6.22	6.05	5.89	5.73	5.68	5.63	18.09	16.82	15.62	14.48	14.08	13.83
66		26.73	25.10	23.53	21.99	21.09	20.72	21.51	20.01	18.53	17.08	16.71	16.06
67		14.60	13.71	12.85	12.01	11.74	11.18	11.75	10.93	10.12	9.33	9.02	8.94
68	STONE & GLASS	138.10	135.67	133.51	131.62	125.81	122.94	110.26	106.07	101.85	97.61	96.88	93.07
69		65.45	64.30	63.28	62.38	60.72	58.55	52.26	50.27	48.27	46.26	44.03	43.23
70		118.12	116.03	114.16	112.51	109.32	108.62	94.09	90.43	86.75	83.07	81.35	79.42
71	PRECIOUS STONES	19.28	18.44	17.61	16.81	16.77	16.07	22.06	21.13	20.21	19.27	18.60	18.40
72	BASE METALS	500.37	485.42	470.83	456.69	450.16	443.32	243.00	239.32	235.75	232.31	223.08	215.25
73		568.02	551.66	536.41	522.19	508.88	501.14	336.82	322.86	308.93	295.05	291.98	291.78
74		3430.06	3389.00	3355.69	3331.37	3214.77	3117.04	1487.73	1459.06	1429.15	1397.81	1382.15	1340.27
75		44.38	43.57	42.81	42.08	41.00	40.40	71.07	69.41	67.76	66.00	62.70	60.30
76		118.96	116.21	113.62	111.18	107.47	105.58	151.29	147.04	142.81	138.38	134.56	132.95
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78		30.30	29.76	29.24	28.75	27.83	27.79	49.10	47.97	46.84	45.63	44.70	43.17
79		32.25	31.68	31.13	30.61	30.16	30.09	52.27	51.06	49.86	48.57	47.64	46.32
80		23.70	23.27	22.85	22.45	21.89	21.16	37.39	36.50	35.63	34.69	33.36	33.19
81		107.51	105.87	104.28	102.77	101.07	100.01	191.89	187.77	183.69	179.25	177.95	172.71
82		130.48	126.48	122.76	119.28	115.67	113.81	101.43	97.10	92.76	88.42	87.75	85.14
83		118.26	114.64	111.26	108.11	104.91	99.96	91.94	88.00	84.07	80.14	78.27	77.92
84	MACHINE	6962.68	6776.77	6608.12	6455.19	6437.12	6412.66	2686.69	2550.16	2413.50	2277.06	2166.62	2113.54
85		1904.93	1829.84	1760.19	1694.79	1631.06	1589.80	613.69	580.93	548.27	515.67	507.37	506.40
86	VEHICLES	973.20	951.27	930.88	911.82	905.99	895.57	294.07	284.50	273.91	262.45	253.27	241.29
87		13471.93	13298.97	13156.46	13048.63	13019.93	12742.60	5082.54	4980.73	4872.99	4760.42	4741.85	4593.91
88		57.33	55.91	54.56	53.28	51.19	50.79	16.35	15.75	15.09	14.36	14.15	13.54
89		849.99	828.88	808.97	790.00	784.55	759.45	242.10	233.25	223.39	212.66	204.11	202.27
90	CLOCKS & MUSICAL INST.	426.79	415.77	405.79	396.77	389.94	388.38	174.16	164.48	154.82	145.22	139.24	137.40
91		106.81	104.06	101.57	99.31	95.05	91.62	44.17	41.68	39.21	36.76	36.75	35.11
92		63.63	59.76	56.01	52.34	51.74	49.41	51.20	47.64	44.12	40.66	38.80	36.87
93	ARMS	160.83	156.68	152.92	149.52	144.70	143.21	66.25	62.59	58.94	55.31	54.37	53.41
94	MISC. ART.	250.37	240.29	230.72	221.61	221.15	215.86	148.73	139.49	130.31	121.24	116.62	114.63
95		171.32	160.92	150.81	140.94	138.95	132.46	137.86	128.28	118.80	109.48	105.81	103.78
96		195.30	183.44	171.91	160.66	157.14	151.84	161.96	150.55	139.29	128.24	123.33	119.40
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

Table 7.39 Estimated Maritime Trade between EU-27 and South Korea

HS-2	SECTION	IMPORT (million USD)						EXPORT (million USD)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.05	0.05	0.04	0.04
02		0.77	0.81	0.85	0.90	0.90	0.91	233.16	222.73	211.51	199.64	193.69	193.26
03		22.61	22.90	23.23	23.62	24.08	24.92	55.09	53.66	52.20	50.71	49.59	49.39
04		1.87	1.89	1.92	1.96	2.04	2.06	106.36	105.68	104.81	103.81	102.10	97.57
05		0.48	0.48	0.49	0.50	0.51	0.51	1.02	1.00	0.97	0.94	0.91	0.88
06	VEGETABLE PRODUCTS	3.45	3.95	4.51	5.14	5.27	5.40	6.29	5.99	5.72	5.46	5.36	5.24
07		7.15	7.25	7.36	7.49	7.72	7.82	18.89	18.38	17.87	17.34	16.59	16.43
08		4.02	4.08	4.15	4.22	4.39	4.54	10.59	10.29	9.98	9.68	9.19	9.03
09		14.58	16.31	18.26	20.45	21.33	22.31	22.00	20.61	19.28	18.00	17.24	17.19
10		0.26	0.27	0.29	0.31	0.32	0.33	0.02	0.02	0.02	0.02	0.02	0.02
11		13.76	13.94	14.14	14.38	14.46	14.97	60.03	59.11	58.15	57.17	56.31	55.22
12		8.19	9.27	10.49	11.85	12.11	12.37	13.65	12.80	11.99	11.20	10.76	10.42
13		3.67	3.72	3.78	3.84	3.88	4.03	12.22	12.03	11.84	11.65	11.38	11.34
14		0.43	0.44	0.45	0.46	0.47	0.47	11.60	11.77	11.94	12.11	12.43	12.60
15	FATS & OILS	7.18	7.03	6.87	6.72	6.38	6.29	111.91	108.87	105.69	102.20	100.12	95.69
16	PREPARED FOODSTUFFS	6.74	6.84	6.95	7.07	7.38	7.58	74.37	71.19	67.80	64.23	62.49	60.39
17		0.01	0.01	0.01	0.01	0.02	0.02	11.63	11.57	11.49	11.39	11.23	11.02
18		4.93	5.05	5.19	5.34	5.53	5.59	12.45	12.10	11.74	11.38	11.07	10.75
19		9.56	9.69	9.83	10.00	10.19	10.59	25.29	24.63	23.95	23.27	22.16	21.93
20		26.92	27.28	27.68	28.16	29.49	29.78	71.22	69.36	67.45	65.52	63.16	61.62
21		6.34	6.42	6.52	6.63	6.73	6.80	21.62	21.16	20.67	20.18	19.84	19.64
22		6.75	6.78	6.82	6.87	6.95	7.16	341.39	341.38	341.04	340.70	328.78	324.47
23		1.64	1.67	1.70	1.74	1.75	1.82	28.70	27.96	27.19	26.35	25.76	25.65
24		2.59	2.72	2.87	3.05	3.18	3.31	95.64	95.56	95.39	95.23	91.69	87.38
25	MINERAL PRODUCTS	20.10	20.30	20.55	20.88	21.57	21.98	57.15	57.40	57.67	58.00	58.19	58.92
26		4.91	4.86	4.82	4.77	4.69	4.50	15.54	15.90	16.29	16.71	16.73	17.56
27		495.05	505.43	517.81	532.71	540.22	560.81	648.51	669.06	691.45	715.88	736.57	744.67
28	CHEMICAL PRODUCTS	473.86	456.48	438.12	419.22	419.18	407.31	936.99	945.97	954.79	963.15	1003.89	1040.13
29		283.58	272.00	259.72	246.97	235.09	231.05	573.25	578.18	582.96	587.35	594.87	605.76
30		38.16	36.65	35.06	33.41	32.62	31.81	73.75	74.34	74.91	75.43	76.04	77.35
31		50.85	48.78	46.58	44.30	42.92	42.01	102.98	103.88	104.75	105.55	107.45	110.12
32		73.43	70.43	67.25	63.94	62.91	62.40	148.41	149.69	150.93	152.07	154.92	160.28
33		54.63	52.40	50.03	47.57	45.31	43.36	110.41	111.37	112.29	113.14	115.66	121.44
34		41.74	40.05	38.27	36.41	34.62	32.94	83.92	84.55	85.16	85.71	86.46	87.19
35		15.65	15.07	14.45	13.81	13.20	12.69	36.24	36.41	36.55	36.67	36.87	38.12
36		5.11	4.92	4.73	4.53	4.34	4.22	9.76	9.73	9.69	9.64	9.37	8.97
37		50.35	48.29	46.11	43.84	43.11	42.72	101.75	102.63	103.48	104.27	108.77	112.77
38		119.33	115.54	111.57	107.53	106.65	104.93	228.11	229.37	230.51	231.47	232.65	235.70
39	PLASTICS	190.86	183.06	174.78	166.20	161.46	155.15	385.73	389.06	392.29	395.26	410.35	428.53
40		137.02	131.43	125.51	119.36	117.80	116.13	281.82	284.33	286.75	289.00	289.29	298.84
41	LEATHER GOODS	11.61	11.23	10.84	10.46	10.18	10.00	89.36	82.82	76.45	70.31	69.88	66.72
42		2.62	2.56	2.50	2.44	2.41	2.39	11.00	10.19	9.39	8.61	8.23	8.16
43		0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.23	0.22	0.22	0.21	0.20
44	WOOD PRODUCTS	9.45	9.29	9.12	8.97	8.73	8.40	43.03	42.79	42.54	42.27	40.39	40.16
45		0.26	0.26	0.26	0.26	0.26	0.27	2.08	2.08	2.08	2.08	2.04	1.96
46		0.35	0.35	0.35	0.35	0.35	0.36	1.59	1.55	1.51	1.47	1.45	1.40
47	PAPER	4.07	4.12	4.19	4.26	4.47	4.57	11.33	11.27	11.19	11.09	10.70	10.67
48		59.78	60.56	61.48	62.58	63.96	65.22	166.35	165.43	164.26	162.78	162.36	154.28
49		1.71	1.73	1.76	1.79	1.82	1.91	4.75	4.73	4.69	4.65	4.54	4.49

Table 7.39 Estimated Maritime Trade between EU-27 and South Korea (cont'd)

HS-2	SECTION	IMPORT (million USD)						EXPORT (million USD)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	1.69	1.67	1.65	1.62	1.60	1.52	0.52	0.48	0.44	0.41	0.40	0.39
51		19.30	19.07	18.83	18.57	17.65	17.42	5.95	5.50	5.07	4.65	4.55	4.47
52		97.98	96.80	95.56	94.24	90.81	89.87	30.59	28.32	26.11	23.98	23.18	22.57
53		12.28	12.14	11.99	11.84	11.64	11.12	5.86	5.58	5.31	5.05	4.92	4.81
54		75.33	74.42	73.47	72.45	71.08	69.09	23.17	21.42	19.73	18.09	18.08	17.26
55		126.02	124.50	122.90	121.20	120.69	114.77	38.77	35.84	33.00	30.26	29.18	28.20
56		31.49	31.11	30.71	30.29	30.06	30.05	9.69	8.96	8.25	7.56	7.43	7.35
57		22.02	21.76	21.48	21.18	20.59	20.27	6.78	6.26	5.77	5.29	5.11	5.01
58		16.09	15.89	15.69	15.47	15.45	14.88	4.95	4.57	4.21	3.86	3.83	3.72
59		19.28	18.93	18.55	18.16	17.95	17.80	15.33	14.92	14.51	14.10	13.66	13.37
60		31.52	31.14	30.74	30.31	29.02	28.75	9.70	8.96	8.25	7.57	7.50	7.45
61		23.05	22.83	22.61	22.38	22.24	22.19	37.91	35.07	32.31	29.67	28.29	27.46
62		9.24	9.17	9.10	9.02	8.62	8.46	22.14	20.48	18.88	17.34	16.68	16.21
63	48.66	48.26	47.84	47.43	45.94	45.72	19.38	18.25	17.13	16.03	15.62	15.16	
64	FOOTWEAR	4.01	3.88	3.75	3.61	3.47	3.46	28.55	26.30	24.11	21.99	21.53	21.01
65		3.65	3.57	3.48	3.38	3.37	3.31	8.11	7.79	7.48	7.17	7.04	6.99
66		5.12	5.01	4.90	4.78	4.76	4.61	8.19	7.81	7.41	6.99	6.96	6.90
67		2.80	2.74	2.68	2.61	2.55	2.47	4.47	4.27	4.05	3.82	3.81	3.64
68	STONE & GLASS	43.21	43.99	44.93	46.07	47.29	48.55	99.07	96.90	94.55	92.09	89.82	88.07
69		20.48	20.85	21.29	21.83	22.76	23.73	46.95	45.93	44.81	43.64	43.63	42.76
70		39.10	39.73	40.49	41.41	41.44	42.36	84.24	82.35	80.32	78.18	77.10	73.65
71	PRECIOUS STONES	4.28	4.22	4.17	4.12	4.10	3.95	10.45	10.31	10.15	9.97	9.77	9.28
72	BASE METALS	1320.17	1331.77	1346.31	1364.62	1381.54	1437.63	943.52	943.87	944.53	946.02	954.34	991.18
73		571.40	578.43	587.08	597.75	624.59	639.33	411.49	405.77	399.74	393.57	384.44	384.24
74		1702.78	1726.67	1755.40	1790.77	1795.97	1881.10	682.33	680.09	676.66	672.40	657.27	637.48
75		15.87	16.02	16.20	16.41	16.86	17.09	39.65	39.63	39.55	39.40	38.03	37.43
76		62.52	63.29	64.24	65.39	66.21	66.68	85.57	84.81	83.94	82.93	80.79	79.17
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78		10.54	10.64	10.75	10.89	11.12	11.52	27.38	27.37	27.33	27.24	26.07	25.66
79		11.22	11.32	11.44	11.59	11.76	11.86	29.14	29.14	29.09	28.99	28.20	27.43
80		8.77	8.85	8.96	9.08	9.46	9.50	20.88	20.85	20.80	20.71	20.47	20.46
81		28.42	28.59	28.79	29.03	29.27	29.81	106.48	106.78	106.93	106.87	112.54	108.73
82		101.42	102.90	104.70	106.89	110.06	115.35	59.77	57.78	55.72	53.62	51.92	50.71
83		91.92	93.26	94.89	96.88	98.43	102.16	54.17	52.37	50.51	48.60	47.03	46.84
84	MACHINE	3460.61	3510.35	3572.64	3650.07	3711.39	3857.99	2626.03	2571.58	2510.17	2441.99	2368.49	2272.57
85		1396.40	1397.62	1402.94	1412.71	1430.23	1480.29	613.24	599.34	583.97	566.98	548.55	534.02
86	VEHICLES	1074.16	1104.26	1138.27	1177.00	1201.49	1258.80	170.00	166.93	163.02	158.43	151.03	145.37
87		7486.64	7610.52	7756.97	7933.54	8193.76	8291.27	2307.64	2293.89	2275.29	2253.61	2182.84	2127.40
88		70.57	72.63	74.95	77.59	79.02	80.40	10.13	9.92	9.65	9.33	9.24	9.21
89		1046.11	1076.69	1111.16	1150.26	1185.46	1235.60	149.89	146.77	142.81	138.15	132.98	132.75
90	CLOCKS & MUSICAL INST.	171.62	174.92	178.93	183.80	185.27	191.57	184.75	180.80	176.35	171.41	165.44	157.75
91		43.01	43.84	44.84	46.06	47.83	49.04	46.44	45.44	44.31	43.06	43.02	42.89
92		12.19	11.93	11.66	11.39	11.29	11.28	19.49	18.60	17.64	16.63	16.57	15.94
93	ARMS	65.48	66.73	68.26	70.11	73.44	74.49	69.71	68.21	66.52	64.65	62.92	60.67
94	MISC. ART.	80.81	81.41	82.23	83.32	84.89	87.95	96.80	93.99	90.91	87.59	87.42	84.67
95		32.82	32.12	31.40	30.67	30.49	30.08	52.47	50.07	47.49	44.77	42.81	42.04
96		37.58	36.78	35.95	35.11	33.96	32.46	61.15	58.31	55.26	52.07	51.72	51.65
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

Table 7.40 Estimated Maritime Trade between EU-27 and U.S.

HS-2	SECTION	IMPORT (million USD)						EXPORT (million USD)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.33	0.33	0.32	0.32	0.31	0.30	0.08	0.08	0.08	0.08	0.08	0.09
02		62.80	61.68	60.91	60.54	58.18	56.66	245.73	250.31	253.58	254.44	264.34	269.52
03		319.79	316.82	314.68	313.62	306.06	292.07	532.36	535.23	537.20	536.41	532.54	519.92
04		67.23	66.22	65.48	65.07	63.09	62.88	764.40	778.85	791.39	799.53	815.20	836.32
05		11.51	11.42	11.36	11.33	10.91	10.41	12.14	12.23	12.31	12.33	12.38	12.55
06	VEGETABLE PRODUCTS	83.75	83.49	83.34	83.18	82.72	82.09	70.48	69.90	69.37	68.67	67.30	64.32
07		514.50	503.11	492.18	481.67	464.86	460.86	236.86	237.44	237.77	237.25	225.10	217.18
08		919.31	898.04	877.34	857.06	820.20	792.07	240.54	240.83	241.12	241.00	226.59	225.09
09		270.15	269.71	269.60	269.37	258.98	249.39	293.92	291.99	290.10	287.22	278.49	274.73
10		1090.91	1079.19	1068.47	1058.31	1054.50	1041.42	20.80	20.50	20.25	19.97	19.87	18.96
11		187.19	185.02	183.38	182.44	174.65	172.09	806.59	814.08	820.20	822.55	855.29	858.88
12		997.40	997.26	998.86	1000.91	1035.24	1077.37	189.46	188.02	186.70	184.78	181.46	180.70
13		53.05	52.26	51.65	51.25	50.53	49.98	86.47	86.84	87.05	86.80	88.27	84.32
14		62.24	61.12	60.22	59.57	58.99	56.41	35.47	35.61	35.78	35.84	36.37	38.06
15	FATS & OILS	183.57	181.85	180.87	180.62	178.90	170.15	634.77	631.14	627.55	620.54	618.61	596.59
16	PREPARED FOODSTUFFS	75.81	74.72	73.89	73.40	71.69	70.28	212.41	214.17	215.27	214.91	202.40	198.98
17		26.67	26.41	26.25	26.21	24.93	24.38	85.70	87.40	88.89	89.90	94.20	96.99
18		54.20	53.60	53.16	52.89	51.19	49.26	110.15	110.45	110.54	110.04	108.99	108.88
19		96.53	95.27	94.32	93.76	89.78	87.93	215.98	216.78	217.14	216.27	216.42	220.23
20		271.84	268.29	265.60	264.02	260.32	251.65	608.19	610.46	611.45	609.02	621.62	647.17
21		66.07	65.20	64.55	64.16	64.16	64.12	178.09	179.32	180.15	179.98	185.87	186.76
22		729.03	723.23	718.89	716.75	700.62	694.18	6939.70	7026.94	7103.99	7152.54	7425.77	7473.30
23		50.64	50.11	49.76	49.57	47.32	45.21	176.36	175.43	174.55	172.75	168.02	166.24
24		219.31	217.71	216.54	215.95	211.30	201.73	1944.69	1968.79	1990.08	2003.40	2071.92	2165.57
25	MINERAL PRODUCTS	1532.92	1538.53	1547.93	1561.92	1576.45	1611.45	860.37	868.19	876.00	882.04	907.35	919.33
26		618.34	621.00	625.13	631.04	637.16	654.56	277.74	281.41	285.37	289.13	295.78	304.21
27		6830.96	6962.42	7138.55	7365.54	7582.83	7870.22	30146.98	31253.45	32432.70	33572.69	33811.06	34321.60
28	CHEMICAL PRODUCTS	7262.41	7198.60	7172.73	7192.99	7146.96	7144.81	11281.72	11366.58	11428.30	11430.18	11659.93	11729.89
29		4448.32	4400.02	4374.56	4376.90	4527.90	4533.33	6294.60	6314.72	6317.11	6280.90	6449.85	6367.29
30		570.10	563.84	560.50	560.72	580.12	598.75	809.25	811.61	811.70	806.81	830.53	862.34
31		818.54	810.02	805.63	806.27	792.40	813.16	1135.12	1138.85	1139.43	1133.10	1096.61	1076.66
32		1152.14	1139.63	1133.04	1133.65	1139.43	1145.93	1629.92	1635.13	1635.74	1626.36	1717.93	1752.46
33		857.17	847.86	842.96	843.41	851.00	880.70	1212.62	1216.50	1216.96	1209.98	1200.42	1192.98
34		650.64	643.02	638.74	638.52	632.20	608.81	930.89	932.38	931.22	924.34	906.03	868.34
35		241.40	238.75	237.31	237.36	241.02	246.08	376.29	377.98	378.63	377.00	394.34	412.28
36		74.67	73.15	72.01	71.32	68.90	66.00	119.00	117.49	115.59	112.95	110.52	108.45
37		789.96	781.38	776.86	777.28	785.67	810.74	1117.54	1121.11	1121.54	1115.11	1118.12	1133.43
38		1680.94	1661.49	1650.73	1650.58	1619.88	1539.70	2435.96	2441.98	2440.76	2424.30	2374.85	2278.90
39	PLASTICS	2994.59	2962.08	2944.94	2946.52	2943.87	2994.80	4236.39	4249.93	4251.53	4227.15	4299.01	4283.54
40		2178.97	2155.06	2142.29	2143.06	2150.99	2235.31	3048.15	3058.00	3059.30	3041.96	2911.15	2834.88
41	LEATHER GOODS	76.54	73.28	70.31	67.65	66.80	64.54	477.94	435.41	394.72	354.82	349.00	340.28
42		16.02	15.07	14.21	13.43	12.79	12.19	79.63	73.82	68.05	62.16	60.23	57.85
43		1.10	1.08	1.07	1.06	1.01	0.99	0.33	0.33	0.33	0.33	0.34	0.35
44	WOOD PRODUCTS	419.84	410.34	402.90	397.94	379.19	363.00	695.27	697.51	697.30	692.37	682.40	669.44
45		18.79	18.35	17.99	17.74	17.45	16.86	27.09	27.19	27.20	27.02	26.39	26.24
46		19.78	19.26	18.85	18.55	17.88	17.67	40.59	40.70	40.66	40.33	39.96	38.85
47	PAPER	184.38	181.58	179.67	178.93	172.23	168.77	128.53	129.31	129.65	129.11	125.36	121.16
48		2707.44	2666.30	2638.27	2627.28	2626.49	2564.24	1887.25	1898.78	1903.70	1895.75	1795.28	1780.74
49		77.39	76.21	75.41	75.09	73.28	73.23	53.94	54.27	54.41	54.19	54.93	55.22

**Table 7.40 Estimated Maritime Trade between EU-27 and U.S.
(cont'd)**

HS-2	SECTION	IMPORT (million USD)						EXPORT (million USD)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	1.98	1.89	1.81	1.74	1.66	1.60	5.04	4.87	4.68	4.45	4.33	4.28
51		22.94	21.92	21.01	20.20	19.49	19.28	57.66	55.69	53.49	50.90	48.91	47.81
52		112.97	108.09	103.72	99.92	98.24	94.40	291.83	281.91	270.84	257.79	252.17	250.78
53		29.29	28.55	27.89	27.31	26.63	26.62	37.35	36.14	34.79	33.20	33.19	31.75
54		84.27	80.54	77.20	74.29	71.30	67.84	224.24	216.61	208.09	198.05	188.60	183.62
55		140.97	134.73	129.14	124.28	123.77	119.98	375.13	362.36	348.11	331.31	314.98	300.05
56		35.23	33.67	32.27	31.06	30.96	30.05	93.74	90.55	86.99	82.79	81.17	79.03
57		24.64	23.55	22.57	21.72	20.88	19.93	65.56	63.33	60.84	57.90	56.70	56.14
58		17.99	17.20	16.48	15.86	15.60	15.02	47.88	46.25	44.43	42.29	41.45	40.25
59		103.26	100.47	98.18	96.51	94.61	92.40	182.32	178.37	173.77	168.00	161.40	157.98
60		35.26	33.70	32.30	31.08	31.05	31.05	93.82	90.63	87.06	82.86	80.83	80.60
61		39.49	37.45	35.59	33.96	32.60	32.04	252.67	243.23	232.87	220.77	220.37	216.45
62		18.93	17.90	16.97	16.15	15.64	15.02	142.77	137.38	131.48	124.60	119.74	119.48
63	73.39	70.56	68.09	66.07	65.28	64.56	171.51	166.80	161.34	154.64	153.46	150.73	
64	FOOTWEAR	14.55	13.59	12.71	11.92	11.91	11.72	162.42	147.63	133.48	119.63	114.23	109.82
65		30.51	30.00	29.66	29.49	29.31	29.02	67.77	66.75	65.51	63.83	60.74	58.00
66		59.33	55.95	52.85	50.09	48.24	46.38	135.48	128.62	121.18	112.86	107.77	105.49
67		32.41	30.56	28.87	27.36	26.26	25.31	74.00	70.26	66.19	61.65	60.45	59.50
68	STONE & GLASS	358.54	353.65	350.62	349.92	348.42	333.02	993.93	990.90	984.36	971.39	958.08	921.48
69		169.93	167.61	166.17	165.84	159.67	158.08	471.07	469.63	466.53	460.38	445.37	428.98
70		304.89	300.64	297.97	297.27	293.74	279.81	844.86	842.04	836.22	824.94	803.08	791.75
71	PRECIOUS STONES	74.89	73.09	71.68	70.72	67.37	66.52	140.14	138.07	135.73	132.78	128.43	128.16
72	BASE METALS	1208.14	1197.43	1193.49	1197.99	1175.58	1147.49	4994.45	4996.45	4991.73	4968.67	4854.89	4725.75
73		1266.36	1235.64	1212.25	1197.99	1183.13	1134.39	3024.04	3003.50	2972.45	2922.75	2841.79	2759.38
74		2587.59	2561.06	2547.25	2550.21	2507.88	2501.86	9777.80	9938.44	10074.54	10157.54	10594.32	11119.80
75		227.88	225.70	224.89	225.78	238.78	241.98	454.69	459.78	464.70	468.32	488.03	496.04
76		484.94	478.06	474.06	473.62	462.49	460.37	972.60	977.87	981.86	982.01	999.39	1042.26
77		---	---	---	---	---	---	---	---	---	---	---	---
78		157.44	155.97	155.44	156.09	160.99	167.69	314.07	317.67	321.17	323.77	325.98	327.31
79		167.60	166.03	165.47	166.16	158.60	149.29	334.32	338.15	341.88	344.66	351.41	363.82
80		119.87	118.69	118.23	118.67	111.78	110.59	239.25	241.85	244.35	246.13	249.43	250.26
81		615.36	610.58	609.54	613.10	593.91	582.81	1225.28	1241.82	1258.39	1271.93	1304.87	1368.42
82		324.79	315.56	308.16	303.06	290.30	289.28	661.80	653.83	643.03	627.51	621.61	620.80
83		294.38	286.01	279.30	274.67	274.26	269.96	599.82	592.59	582.80	568.74	541.61	529.75
84	MACHINE	12238.51	11885.26	11605.08	11415.05	11104.56	10710.35	20543.86	20422.97	20197.75	19806.58	18843.98	17937.59
85		3428.60	3299.13	3190.18	3105.24	3078.84	3000.95	4445.93	4379.41	4291.25	4167.61	4004.66	3962.61
86	VEHICLES	4951.94	4833.25	4738.69	4675.52	4632.03	4410.62	4619.14	4648.01	4658.33	4636.81	4368.80	4249.10
87		12983.57	12761.25	12599.60	12518.81	11954.21	11746.21	36758.91	37316.25	37759.45	37979.33	38165.43	39268.41
88		346.64	338.24	331.53	327.02	319.76	303.99	299.06	300.58	300.87	299.06	303.33	295.17
89		5143.32	5018.70	4919.17	4852.29	4758.64	4595.89	4434.65	4457.34	4461.71	4435.04	4220.39	4130.91
90	CLOCKS & MUSICAL INST.	760.47	739.05	722.32	711.40	683.30	650.84	1311.36	1300.38	1282.10	1252.59	1218.40	1206.33
91		190.29	184.94	180.77	178.04	175.69	173.37	328.81	326.01	321.39	313.96	302.75	299.63
92		141.24	133.18	125.82	119.25	118.37	118.32	322.52	306.19	288.47	268.67	255.74	251.29
93	ARMS	287.86	279.77	273.45	269.33	256.59	247.25	497.59	493.45	486.54	475.39	474.30	460.73
94	MISC. ART.	509.29	488.71	470.94	456.56	455.01	440.31	1010.98	980.53	945.26	902.57	879.64	843.84
95		380.31	358.61	338.79	321.09	320.80	320.70	868.41	824.45	776.74	723.41	702.87	668.85
96		433.92	409.15	386.53	366.33	351.68	351.22	997.07	946.28	891.25	829.84	813.41	774.77
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

Table 7.41 Estimated Maritime Trade between EU-27 and ASEAN

HS-2	SECTION	IMPORT (million USD)						EXPORT (million USD)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.05
02		526.38	567.03	605.18	649.64	672.57	677.75	114.66	109.31	103.75	97.85	94.23	93.50
03		538.15	548.72	558.12	569.43	591.81	594.94	177.00	175.84	174.16	172.38	168.33	163.99
04		42.92	43.77	44.52	45.42	47.08	47.75	609.53	613.22	614.75	615.34	642.47	657.44
05		11.62	11.85	12.05	12.29	12.87	13.16	3.28	3.26	3.23	3.20	3.05	2.94
06	VEGETABLE PRODUCTS	436.28	457.62	476.92	499.07	521.78	526.58	9.78	9.41	9.04	8.66	8.32	8.01
07		356.52	363.34	368.54	374.74	390.66	403.48	68.97	68.23	67.32	66.40	66.27	65.20
08		469.97	478.82	484.98	492.28	498.24	508.65	50.58	49.67	48.71	47.76	46.59	46.02
09		1033.86	1093.56	1147.82	1209.55	1219.47	1278.37	54.53	53.10	51.62	50.10	48.99	47.70
10		365.73	390.24	410.72	432.36	450.43	470.66	0.98	0.95	0.91	0.87	0.85	0.81
11		315.75	321.93	327.38	333.95	336.16	352.29	194.94	195.00	194.43	193.84	185.23	181.49
12		774.05	819.29	860.74	908.03	951.98	993.01	25.93	25.08	24.23	23.35	22.89	21.94
13		275.81	282.75	288.90	296.25	299.07	307.41	32.12	31.91	31.61	31.28	31.27	31.05
14		758.21	781.81	803.06	828.24	861.04	887.99	7.50	7.46	7.41	7.34	7.20	6.98
15	FATS & OILS	3443.22	3639.36	3825.43	4040.64	4199.44	4331.72	62.46	61.27	59.95	58.50	56.67	55.36
16	PREPARED FOODSTUFFS	293.77	307.68	320.57	335.68	346.49	355.05	76.84	75.14	73.23	71.22	70.70	69.12
17		6.96	7.24	7.49	7.78	8.06	8.09	70.18	70.59	70.76	70.82	72.61	74.16
18		140.21	144.39	148.14	152.52	155.00	159.06	39.39	39.09	38.68	38.24	37.59	35.78
19		223.76	228.19	232.10	236.80	246.49	257.75	81.17	80.63	79.84	79.02	78.37	75.89
20		630.11	642.58	653.59	666.82	693.83	718.04	228.57	227.05	224.84	222.51	212.21	207.31
21		148.28	151.22	153.81	156.93	158.42	161.93	82.51	82.33	81.89	81.38	80.70	77.68
22		72.27	72.77	73.23	73.88	75.04	78.01	1126.96	1138.03	1145.04	1152.72	1159.75	1198.83
23		1024.23	1079.39	1131.57	1192.01	1216.68	1251.48	22.02	21.70	21.34	20.95	20.68	20.44
24		88.85	93.30	97.35	101.98	103.69	105.90	314.46	317.45	319.32	321.38	324.14	333.32
25	MINERAL PRODUCTS	970.54	979.86	990.04	1002.99	1030.68	1050.16	375.90	390.85	403.98	418.46	428.29	428.93
26		386.68	390.28	394.29	399.41	407.12	418.39	146.19	152.56	158.22	164.44	167.95	175.15
27		2635.74	2733.46	2829.47	2939.07	2982.57	2990.92	1784.30	1887.46	1991.77	2110.64	2151.37	2217.42
28	CHEMICAL PRODUCTS	2973.19	3078.12	3176.02	3288.40	3449.21	3453.69	1779.50	1797.72	1806.62	1813.93	1825.90	1855.66
29		1866.27	1932.16	1993.43	2063.72	2104.38	2166.46	1067.26	1074.79	1076.31	1076.24	1057.08	1023.89
30		245.63	254.10	261.92	270.91	273.97	284.55	137.42	138.31	138.44	138.35	146.27	153.85
31		347.61	359.51	370.60	383.35	401.71	420.35	196.09	197.68	198.17	198.40	203.76	212.71
32		482.39	499.44	515.30	533.49	539.73	543.88	276.12	278.07	278.47	278.45	265.56	261.29
33		358.89	371.57	383.37	396.90	403.85	418.59	205.42	206.88	207.17	207.16	199.75	197.41
34		288.53	297.76	306.15	315.84	328.92	342.86	157.74	158.72	158.80	158.63	156.10	153.57
35		120.24	124.12	127.69	131.82	136.28	140.98	87.22	87.70	87.76	87.70	92.15	91.27
36		51.91	52.50	52.81	53.24	53.44	54.01	20.22	20.18	20.02	19.82	19.17	18.73
37		330.75	342.44	353.31	365.78	374.67	388.35	189.32	190.66	190.93	190.92	188.27	181.62
38		699.80	724.16	746.75	772.72	804.01	805.54	421.06	423.10	422.70	421.65	414.27	413.60
39	PLASTICS	1253.80	1298.12	1339.33	1386.61	1394.24	1461.30	717.67	722.74	723.78	723.74	738.36	756.01
40		1264.71	1306.54	1345.00	1389.54	1435.53	1502.43	518.08	521.70	522.42	522.36	544.20	532.77
41	LEATHER GOODS	1455.03	1432.11	1398.25	1364.24	1321.13	1289.68	92.77	88.07	82.98	77.88	75.93	74.91
42		180.09	177.58	173.72	169.86	166.47	160.34	13.43	12.82	12.14	11.45	11.37	11.37
43		0.27	0.28	0.28	0.28	0.28	0.29	0.27	0.27	0.27	0.26	0.25	0.24
44	WOOD PRODUCTS	1440.97	1470.06	1494.90	1525.40	1546.76	1600.59	71.72	70.91	69.81	68.58	66.01	65.10
45		100.52	102.83	104.83	107.26	110.77	112.71	2.82	2.78	2.73	2.67	2.67	2.66
46		40.27	40.63	40.88	41.23	42.70	44.43	3.38	3.32	3.24	3.16	3.13	2.98
47	PAPER	39.87	40.95	41.92	43.07	44.52	45.33	49.06	49.42	49.51	49.54	51.03	53.10
48		585.49	601.23	615.55	632.50	644.83	658.95	720.33	725.72	727.04	727.43	748.30	750.25
49		16.73	17.18	17.59	18.08	18.45	19.34	20.59	20.74	20.78	20.79	21.40	21.96

**Table 7.41 Estimated Maritime Trade between EU-27 and ASEAN
(cont'd)**

HS-2	SECTION	IMPORT (million USD)						EXPORT (million USD)						
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020	
50	TEXTILES AND TEXTILE ARTICLES	6.76	6.81	6.82	6.84	7.01	7.07	1.14	1.08	1.02	0.95	0.91	0.88	
51		77.26	77.86	77.98	78.15	80.87	81.93	13.01	12.35	11.62	10.87	10.52	10.15	
52		392.10	395.13	395.75	396.64	404.34	418.57	66.43	63.11	59.42	55.68	55.33	53.94	
53		48.92	49.30	49.38	49.49	50.54	52.76	11.10	10.79	10.41	10.04	9.65	9.42	
54		301.51	303.83	304.31	304.99	308.50	319.85	50.60	48.03	45.18	42.28	41.51	39.44	
55		504.38	508.28	509.08	510.22	527.21	540.50	84.65	80.35	75.57	70.74	68.40	65.99	
56		126.04	127.02	127.22	127.50	132.21	134.48	21.15	20.08	18.89	17.68	16.83	16.44	
57		88.15	88.83	88.97	89.17	90.15	92.93	14.79	14.04	13.21	12.36	11.99	11.52	
58		64.38	64.88	64.98	65.12	67.29	68.42	10.81	10.26	9.65	9.03	8.75	8.64	
59		122.70	123.52	123.62	123.87	126.73	131.40	34.04	33.48	32.71	31.87	30.86	30.36	
60		126.15	127.12	127.32	127.61	129.14	130.40	21.17	20.10	18.90	17.69	16.95	16.62	
61		483.81	483.82	480.92	478.36	467.07	443.81	27.38	25.93	24.37	22.81	22.71	22.30	
62		282.17	282.01	280.17	278.51	270.30	260.27	13.66	12.93	12.15	11.37	10.93	10.74	
63		178.36	179.87	180.29	180.87	181.50	182.86	40.43	38.74	36.80	34.81	33.79	32.39	
64	FOOTWEAR	502.35	494.36	482.57	470.72	455.56	448.00	29.30	27.67	25.92	24.16	23.16	22.65	
65		70.95	71.31	71.29	71.35	70.83	73.67	9.25	9.14	8.98	8.82	8.44	8.29	
66		104.44	103.31	101.38	99.43	95.71	95.29	23.17	22.66	21.96	21.18	20.21	19.62	
67		57.05	56.43	55.38	54.31	51.87	51.74	12.66	12.38	12.00	11.57	11.49	11.42	
68	STONE & GLASS	234.25	239.45	243.94	249.30	260.15	267.12	137.43	136.40	134.68	132.82	126.54	120.49	
69		111.02	113.49	115.61	118.15	121.33	123.65	65.14	64.65	63.83	62.95	59.90	59.59	
70		208.12	212.59	216.38	220.92	223.35	226.70	117.53	116.57	115.02	113.35	112.72	109.01	
71	PRECIOUS STONES	62.71	62.64	62.16	61.73	60.38	57.99	26.95	27.00	26.85	26.66	25.88	24.90	
72	BASE METALS	745.00	760.38	774.04	790.52	813.28	842.24	1604.48	1630.30	1645.87	1662.72	1693.15	1720.41	
73		532.67	542.81	550.87	560.71	585.38	605.87	920.56	917.91	909.53	900.63	874.96	849.76	
74		558.63	574.00	588.12	604.92	633.35	634.80	819.76	826.40	827.43	827.59	834.96	870.27	
75		59.24	61.18	62.81	64.66	65.23	65.50	93.90	94.87	95.18	95.35	98.04	101.21	
76		146.06	149.97	153.11	156.75	160.74	163.02	225.45	226.07	225.21	224.07	217.35	208.44	
77		---	---	---	---	---	---	---	---	---	---	---	---	
78		40.63	41.98	43.11	44.39	46.58	48.11	64.50	65.19	65.42	65.57	66.39	66.87	
79		43.25	44.69	45.88	47.25	48.79	49.79	68.66	69.39	69.64	69.79	72.86	74.64	
80		31.45	32.47	33.32	34.29	34.38	35.26	49.77	50.26	50.40	50.47	51.28	52.16	
81		149.91	155.28	159.83	164.97	171.47	173.36	240.69	244.04	245.62	246.86	253.25	258.47	
82		139.25	141.41	142.87	144.69	145.92	147.06	204.10	201.51	197.81	193.91	190.71	184.61	
83		126.21	128.16	129.49	131.14	135.86	140.26	184.98	182.64	179.29	175.75	175.43	175.36	
84		MACHINE	4761.81	4838.04	4894.90	4969.21	4990.08	5057.95	5362.43	5267.27	5129.84	4978.92	4746.90	4742.15
85			3541.13	3556.43	3555.47	3563.48	3725.26	3756.18	1614.55	1588.66	1550.29	1507.15	1487.25	1465.84
86	VEHICLES	547.55	570.75	591.16	614.31	620.39	638.32	1293.09	1273.79	1242.81	1207.27	1181.19	1178.48	
87		2136.93	2199.26	2256.88	2325.22	2390.79	2421.87	3608.35	3595.08	3554.23	3506.09	3383.37	3356.31	
88		38.05	39.68	41.10	42.72	43.37	44.75	90.40	89.01	86.79	84.26	83.85	82.79	
89		559.32	583.40	604.54	628.48	640.42	657.58	1340.82	1320.20	1287.39	1249.77	1216.78	1184.77	
90	CLOCKS & MUSICAL INST.	198.56	203.87	208.45	213.98	220.61	225.27	347.41	340.69	331.21	320.89	311.36	298.63	
91		52.32	53.61	54.69	56.01	58.53	61.18	87.11	85.42	83.04	80.44	79.24	75.89	
92		248.62	245.95	241.34	236.70	235.14	229.40	55.16	53.94	52.28	50.42	48.61	46.96	
93	ARMS	75.05	77.07	78.83	80.93	82.05	82.94	132.40	129.86	126.27	122.37	116.99	115.70	
94	MISC. ART.	491.60	489.42	483.77	478.46	465.87	452.41	214.21	209.97	204.07	197.57	187.97	181.75	
95		669.45	662.23	649.82	637.35	632.44	610.75	148.54	145.24	140.77	135.77	130.33	128.51	
96		786.92	778.32	763.60	748.83	736.10	719.61	170.62	166.79	161.60	155.83	154.83	148.99	
97		ARTS	---	---	---	---	---	---	---	---	---	---	---	---

7.4 Module III – Commodity Value-Weight-Container Conversion Process

After determining the seaborne trade value from Module II, the traded commodity value is converted to the number of container flow. International trade is conventionally expressed in terms of monetary value but this measure could not represent the physical nature of transportation. As such, there is a need to relate the monetary nature of international trade to the physical nature of international freight transportation. A conversion process which is capable of estimating commodity weight as well as number of containers represented from commodity value had earlier been developed and described in Chapter 6.

The conversion model is divided mainly into two stage: (1) value-to-weight transformation, and (2) weight-to-container conversion. In the first stage, ARMA models are employed to predict value-weight ratio trends of various commodities transported by sea mode between different country pairs. In the second stage, estimates of the weight-container conversion factors are derived using historical data and inputs from industrial expertise.

7.4.1 Commodity Value-to-Weight Conversion

As discussed in Chapter 6, ARMAX model is used to predict the commodity value-weight ratio for goods transported by sea. Models were developed using the commodity trade data from the USA Trade Online®. However, it should be noted that this database provides detailed commodity trade data with either end of the trade leg in the U.S. For the other trade routes not bounded by U.S., the commodity value-weight ratios were assumed to be the same as those of the U.S. trade routes to estimate the total cargo weight along those trade routes beyond U.S.

All commodity groups traded along all the routes under all case scenarios were studied. Selected routes (i.e. between U.S. and her trading partners) were discussed in detail in this section.

7.4.1.1 Commodity Weight Transported between U.S. and her Trading

Partners

Predicted commodity value-weight ratios between the U.S. and her trading partners are presented in Tables 7.42 to 7.47.

It can be observed from the tables that within the same commodity type, trade flow direction and transport mode, the value-weight ratio appeared to have a wide range of value. It was also noted that commodity value-weight ratio is dependent on trade flow direction between same country pair. Such observation can be made because of spatial effect (i.e. trading partners), trade direction (i.e. imports and exports), and transport mean (i.e. by which type of transport) consideration in the developed model.

It was found from the results presented in Tables 7.42 to 7.47 that commodity value-weight ratio are mostly increasing steadily per annum. This result is reflective of that fact that goods have an increasing unit value over time and it could be due to a steady forecast on import price and export price indices. Recognising that parameters such as consumer price indices and producer price indices, purchasing managers index could also affect the ratio, they should be incorporated in future models.

With the predicted commodity value-weight ratios, commodity weight along each trade routes can be calculated via dividing the resultant commodity value from Section 7.3 by the corresponding commodity value-weight ratios (as listed in Tables 7.42 to 7.47). Results are presented in Tables 7.48 to 7.52.

Table 7.42 Predicted Commodity Value-Weight Ratios between U.S. and Australia

HS-2	SECTION	IMPORT (USD/ton)						EXPORT (USD/ton)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	---	---	---	---	---	---	30.25	33.58	36.91	40.24	43.57	46.90
02		6.07	6.40	6.72	7.04	7.37	7.69	3.35	3.49	3.62	3.76	3.89	4.03
03		23.34	21.75	20.15	18.55	16.95	15.35	3.72	4.05	4.39	4.72	5.06	5.39
04		5.09	5.39	5.69	5.99	6.29	6.59	3.92	4.11	4.30	4.48	4.67	4.85
05		2.11	2.19	2.26	2.33	2.40	2.47	7.94	8.67	9.40	10.13	10.86	11.59
06	VEGETABLE PRODUCTS	8.38	9.29	10.20	11.11	12.02	12.94	4.21	4.27	4.33	4.39	4.44	4.50
07		1.01	1.01	1.01	1.01	1.00	1.00	1.28	1.29	1.30	1.31	1.32	1.33
08		1.85	1.91	1.97	2.03	2.09	2.15	3.07	3.23	3.39	3.55	3.70	3.86
09		11.51	12.57	13.62	14.68	15.74	16.80	3.92	3.94	3.95	3.96	3.98	3.99
10		0.53	0.49	0.46	0.42	0.39	0.35	1.19	1.26	1.32	1.39	1.45	1.52
11		1.73	1.76	1.79	1.82	1.84	1.87	1.26	1.30	1.33	1.36	1.40	1.43
12		0.13	0.45	0.76	1.08	1.39	1.71	1.57	1.61	1.65	1.69	1.73	1.77
13		67.82	72.36	76.90	81.44	85.98	90.52	11.73	11.78	11.82	11.87	11.91	11.96
14		2.25	2.61	2.97	3.33	3.69	4.05	1.03	1.02	1.02	1.02	1.02	1.02
15	FATS & OILS	0.83	1.30	1.22	1.18	1.13	1.41	2.38	2.52	2.65	2.79	2.93	3.06
16	PREPARED FOODSTUFFS	7.51	7.72	7.94	8.16	8.37	8.59	4.73	5.07	5.41	5.75	6.09	6.44
17		0.37	0.37	0.36	0.36	0.35	0.35	1.64	1.70	1.76	1.81	1.87	1.93
18		8.31	8.30	8.28	8.27	8.26	8.25	5.40	5.71	6.03	6.35	6.66	6.98
19		4.51	4.53	4.56	4.58	4.61	4.64	2.53	2.66	2.79	2.92	3.05	3.17
20		4.01	4.23	4.45	4.68	4.90	5.12	1.66	1.73	1.80	1.87	1.93	2.00
21		5.08	5.07	5.05	5.04	5.02	5.01	4.48	4.63	4.78	4.93	5.08	5.23
22		1.71	1.66	1.61	1.57	1.52	1.48	2.16	2.16	2.16	2.16	2.16	2.16
23		1.36	1.44	1.52	1.60	1.68	1.76	1.60	1.71	1.82	1.94	2.05	2.16
24		---	---	---	---	---	---	13.08	14.22	15.36	16.50	17.64	18.78
25	MINERAL PRODUCTS	0.19	0.18	0.18	0.18	0.17	0.17	0.50	0.53	0.56	0.60	0.63	0.66
26		1.11	1.16	1.22	1.28	1.34	1.40	17.41	24.88	32.35	39.82	47.29	54.76
27		0.84	0.89	0.95	1.00	1.05	1.10	0.58	0.61	0.63	0.65	0.68	0.70
28	CHEMICAL PRODUCTS	0.34	0.33	0.31	0.29	0.28	0.26	0.24	0.22	0.20	0.17	0.15	0.13
29		124.84	142.94	161.04	179.14	197.24	215.34	1.32	1.17	1.01	0.86	0.71	0.55
30		158.47	173.67	188.88	204.09	219.30	234.51	51.96	55.92	59.88	63.84	67.79	71.75
31		0.06	0.04	0.14	0.23	0.33	0.42	0.53	0.55	0.58	0.60	0.62	0.65
32		4.08	4.09	4.09	4.09	4.10	4.10	4.53	4.68	4.83	4.98	5.13	5.28
33		23.07	24.10	25.14	26.17	27.20	28.23	16.02	16.66	17.31	17.95	18.59	19.24
34		3.85	3.95	4.05	4.14	4.24	4.34	3.17	3.17	3.17	3.17	3.18	3.18
35		6.38	6.51	6.64	6.77	6.90	7.03	3.20	3.38	3.55	3.73	3.91	4.09
36		20.51	21.24	21.98	22.71	23.44	24.17	7.03	4.29	1.55	1.19	3.93	6.66
37		34.62	33.40	32.18	30.96	29.74	28.52	9.19	8.21	7.23	6.25	5.27	4.29
38		6.05	6.59	7.12	7.66	8.20	8.74	4.44	4.68	4.92	5.16	5.40	5.64
39	PLASTICS	4.66	5.06	5.46	5.85	6.25	6.64	5.16	5.38	5.60	5.82	6.05	6.27
40		1.14	1.72	1.73	1.66	1.56	1.69	8.53	8.91	9.29	9.67	10.04	10.42
41	LEATHER GOODS	30.31	20.37	13.01	22.14	31.27	40.40	17.37	18.67	19.98	21.28	22.59	23.89
42		8.11	6.49	4.88	3.27	9.22	8.28	16.51	17.23	17.95	18.68	19.40	20.12
43		2.47	4.71	6.94	9.18	11.41	13.65	31.61	32.95	34.29	35.63	36.97	38.30
44	WOOD PRODUCTS	0.73	0.73	0.74	0.75	0.75	0.76	0.68	0.67	0.66	0.64	0.63	0.62
45		0.50	0.98	1.46	1.93	2.41	2.89	11.08	11.64	12.20	12.76	13.31	13.87
46		7.57	7.88	8.20	8.51	8.83	9.14	9.94	10.05	10.16	10.27	10.38	10.49
47	PAPER	0.70	0.78	0.86	0.94	1.02	1.11	0.80	0.86	0.91	0.97	1.02	1.08
48		0.72	0.74	0.77	0.79	0.82	0.84	1.36	1.38	1.39	1.41	1.43	1.44
49		16.78	17.72	18.66	19.60	20.55	21.49	11.63	11.95	12.27	12.59	12.91	13.23

Table 7.42 Predicted Commodity Value-Weight Ratios between U.S. and Australia (cont'd)

HS-2	SECTION	IMPORT (USD/ton)						EXPORT (USD/ton)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	65.90	74.14	82.38	90.62	98.86	107.10	24.10	22.28	20.46	18.64	16.82	15.00
51		9.25	9.62	9.99	10.36	10.73	11.10	37.21	41.08	44.95	48.82	52.69	56.57
52		20.41	21.45	22.50	23.54	24.59	25.63	12.75	13.05	13.35	13.65	13.95	14.24
53		1.54	2.67	3.79	4.92	6.04	7.16	12.27	11.80	11.32	10.85	10.38	9.91
54		11.76	12.59	13.42	14.25	15.08	15.91	4.45	4.36	4.26	4.17	4.07	3.98
55		3.20	3.12	3.05	2.97	2.90	2.83	6.84	7.09	7.33	7.58	7.83	8.08
56		3.42	3.47	3.52	3.57	3.63	3.68	6.13	6.30	6.48	6.65	6.82	7.00
57		9.09	9.54	9.99	10.44	10.89	11.34	4.95	4.96	4.97	4.98	4.99	5.00
58		10.56	10.54	10.53	10.52	10.50	10.49	8.83	8.37	7.92	7.46	7.00	6.54
59		9.88	9.58	9.28	8.99	8.69	8.39	14.13	14.44	14.75	15.07	15.38	15.70
60		17.02	17.70	18.37	19.05	19.73	20.41	14.44	14.58	14.72	14.86	15.00	15.14
61		57.51	62.27	67.03	71.80	76.56	81.33	18.21	18.79	19.37	19.94	20.52	21.10
62		49.74	54.12	58.50	62.88	67.26	71.64	25.85	27.26	28.66	30.06	31.46	32.86
63	4.24	4.29	4.67	2.15	3.38	4.61	8.62	8.89	9.16	9.43	9.71	9.98	
64	FOOTWEAR	34.34	34.74	35.14	35.55	35.95	36.36	24.64	25.47	26.29	27.12	27.94	28.77
65		47.49	50.91	54.33	57.75	61.17	64.59	43.30	45.38	47.46	49.54	51.62	53.70
66		23.53	24.71	25.89	27.07	28.25	29.43	9.64	9.96	10.27	10.59	10.90	11.21
67		21.15	20.38	19.61	18.84	18.07	17.30	22.95	24.08	25.21	26.34	27.47	28.60
68	STONE & GLASS	4.33	4.67	5.01	5.35	5.69	6.03	2.14	2.15	2.15	2.15	2.16	2.16
69		7.30	8.30	9.30	10.31	11.31	12.31	4.01	4.20	4.39	4.58	4.77	4.96
70		15.31	15.97	16.64	17.30	17.97	18.63	2.63	2.75	2.86	2.97	3.09	3.20
71	PRECIOUS STONES	88.70	88.44	88.18	87.93	87.67	87.41	356.69	374.86	393.02	411.19	429.36	447.53
72	BASE METALS	0.74	0.76	0.77	0.78	0.79	0.81	1.75	1.76	1.78	1.79	1.81	1.82
73		3.71	3.93	4.15	4.37	4.59	4.80	6.95	7.32	7.70	8.07	8.45	8.83
74		13.05	12.35	11.65	10.96	10.26	9.57	16.15	17.06	17.97	18.87	19.78	20.69
75		12.53	10.63	8.73	6.83	4.93	3.03	6.47	6.16	5.85	5.53	5.22	4.91
76		2.40	2.36	2.31	2.27	2.22	2.18	8.36	8.65	8.94	9.23	9.52	9.80
77		---	---	---	---	---	---	---	---	---	---	---	---
78		7.24	11.86	16.48	21.10	25.72	30.34	7.84	8.29	8.74	9.19	9.65	10.10
79		1.60	1.41	1.23	1.05	0.87	0.68	4.84	4.96	5.07	5.19	5.30	5.42
80		10.82	11.82	12.81	13.81	14.81	15.81	5.37	5.18	5.00	4.82	4.63	4.45
81		11.08	7.01	2.95	1.12	5.19	9.25	18.57	17.11	15.65	14.20	12.74	11.28
82		10.87	11.37	11.88	12.38	12.89	13.39	19.97	20.51	21.05	21.59	22.13	22.67
83		19.00	19.50	20.01	20.52	21.03	21.54	7.18	7.03	6.88	6.73	6.58	6.43
84	MACHINE	14.21	14.47	14.74	15.00	15.27	15.53	16.83	17.58	18.33	19.09	19.84	20.59
85		33.83	35.47	37.10	38.73	40.37	42.00	24.64	25.79	26.94	28.09	29.24	30.39
86	VEHICLES	7.39	6.24	5.10	3.95	2.80	1.65	18.40	19.37	20.33	21.30	22.26	23.23
87		13.78	13.96	14.15	14.34	14.53	14.71	15.17	15.67	16.18	16.68	17.19	17.70
88		675.56	750.65	825.74	900.83	975.92	1051.01	190.73	191.68	192.62	193.56	194.50	195.44
89		15.66	14.31	12.96	11.61	10.26	8.91	15.33	15.46	15.60	15.73	15.87	16.00
90	CLOCKS & MUSICAL INST.	155.53	166.05	176.57	187.10	197.62	208.15	48.47	50.85	53.23	55.61	57.99	60.37
91		149.44	145.05	140.67	136.28	131.89	127.50	77.58	87.31	97.04	106.76	116.49	126.22
92		1.16	3.14	7.44	11.74	16.03	20.33	43.87	45.23	46.60	47.96	49.33	50.69
93	ARMS	11.60	12.24	12.87	13.51	14.14	14.78	48.99	51.27	53.55	55.83	58.12	60.40
94	MISC. ART.	9.74	9.89	10.04	10.19	10.33	10.48	13.10	13.82	14.53	15.24	15.95	16.67
95		24.02	24.89	25.76	26.63	27.50	28.37	13.57	13.74	13.92	14.09	14.27	14.44
96		14.42	14.92	15.42	15.92	16.42	16.92	9.80	9.36	8.91	8.46	8.01	7.57
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

Table 7.43 Predicted Commodity Value-Weight Ratios between U.S. and China

HS-2	SECTION	IMPORT (USD/ton)						EXPORT (USD/ton)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	7.58	8.71	9.84	10.98	12.11	13.25	31.09	35.57	40.05	44.53	49.01	53.49
02		4.05	4.10	4.15	4.19	4.24	4.29	1.85	1.97	2.09	2.21	2.34	2.46
03		4.30	4.41	4.52	4.63	4.75	4.86	2.20	2.22	2.25	2.28	2.31	2.34
04		6.17	6.83	7.49	8.15	8.80	9.46	1.97	2.07	2.18	2.29	2.39	2.50
05		8.11	8.42	8.73	9.04	9.35	9.66	3.44	3.35	3.26	3.16	3.07	2.98
06	VEGETABLE PRODUCTS	2.74	2.84	2.95	3.05	3.15	3.25	2.92	2.95	2.98	3.00	3.03	3.06
07		1.65	1.75	1.84	1.94	2.04	2.13	0.51	0.48	0.46	0.44	0.42	0.39
08		4.57	4.73	4.89	5.05	5.21	5.37	3.40	3.64	3.88	4.13	4.37	4.61
09		2.82	2.98	3.15	3.32	3.49	3.65	7.49	7.66	7.83	7.99	8.16	8.33
10		1.18	1.27	1.36	1.45	1.54	1.63	0.25	0.24	0.23	0.23	0.22	0.21
11		0.69	0.68	0.67	0.67	0.66	0.65	0.80	0.81	0.83	0.85	0.87	0.88
12		2.77	2.89	3.00	3.12	3.24	3.35	0.56	0.59	0.61	0.63	0.65	0.67
13		12.88	13.44	14.01	14.57	15.13	15.69	13.62	14.44	15.26	16.08	16.90	17.72
14		1.13	1.14	1.16	1.17	1.19	1.20	0.90	0.90	0.90	0.90	0.90	0.89
15	FATS & OILS	6.66	7.13	7.60	8.08	8.55	9.02	1.19	1.23	1.27	1.31	1.35	1.39
16	PREPARED FOODSTUFFS	5.63	5.81	5.98	6.16	6.34	6.52	2.49	2.33	2.17	2.01	1.85	1.69
17		2.88	2.99	3.11	3.22	3.34	3.45	1.63	1.73	1.82	1.92	2.02	2.12
18		4.87	4.89	4.92	4.94	4.97	4.99	4.90	5.15	5.39	5.64	5.88	6.12
19		2.01	2.10	2.18	2.26	2.34	2.42	3.35	3.52	3.70	3.88	4.06	4.23
20		1.43	1.49	1.56	1.63	1.69	1.76	1.17	1.21	1.25	1.30	1.34	1.38
21		2.28	2.41	2.53	2.65	2.77	2.89	6.59	6.85	7.11	7.37	7.64	7.90
22		1.26	1.33	1.40	1.47	1.55	1.62	2.13	2.14	2.15	2.16	2.17	2.18
23		2.48	2.30	2.13	1.96	1.78	1.61	0.23	0.19	0.15	0.12	0.08	0.04
24		11.54	12.65	13.75	14.85	15.96	17.06	8.43	8.64	8.85	9.06	9.27	9.48
25	MINERAL PRODUCTS	0.23	0.25	0.27	0.29	0.31	0.33	0.32	0.33	0.35	0.36	0.38	0.39
26		0.43	0.45	0.46	0.48	0.50	0.52	0.43	0.39	0.34	0.30	0.25	0.21
27		0.83	0.87	0.91	0.95	0.99	1.04	0.16	0.14	0.13	0.11	0.10	0.08
28	CHEMICAL PRODUCTS	1.29	1.35	1.41	1.47	1.53	1.58	1.79	1.84	1.90	1.96	2.01	2.07
29		5.42	5.58	5.75	5.91	6.08	6.24	1.65	1.70	1.75	1.80	1.85	1.90
30		11.42	11.67	11.93	12.18	12.43	12.69	41.55	45.33	49.11	52.89	56.66	60.44
31		0.40	0.41	0.42	0.43	0.43	0.44	0.45	0.47	0.49	0.51	0.53	0.55
32		5.59	5.78	5.97	6.15	6.34	6.52	4.21	4.45	4.68	4.92	5.15	5.39
33		5.67	5.88	6.10	6.31	6.52	6.73	12.36	12.56	12.75	12.95	13.14	13.34
34		2.13	2.11	2.10	2.09	2.07	2.06	3.31	3.42	3.53	3.64	3.75	3.87
35		3.95	4.13	4.31	4.49	4.67	4.85	3.14	3.18	3.22	3.26	3.30	3.34
36		2.63	2.72	2.82	2.92	3.01	3.11	30.29	32.77	35.25	37.73	40.22	42.70
37		4.96	4.48	4.01	3.54	3.06	2.59	18.06	19.34	20.63	21.91	23.20	24.49
38		4.41	4.70	4.99	5.29	5.58	5.87	5.23	5.43	5.63	5.83	6.03	6.23
39	PLASTICS	3.83	3.99	4.14	4.29	4.45	4.60	1.71	1.74	1.77	1.80	1.83	1.87
40		3.76	3.89	4.03	4.16	4.30	4.43	3.80	3.96	4.12	4.29	4.45	4.61
41	LEATHER GOODS	24.41	25.52	26.62	27.73	28.84	29.94	3.69	3.89	4.08	4.27	4.46	4.65
42		10.29	10.74	11.20	11.66	12.12	12.58	11.86	12.29	12.72	13.15	13.58	14.01
43		26.21	28.10	29.99	31.88	33.76	35.65	14.46	15.65	16.85	18.05	19.24	20.44
44	WOOD PRODUCTS	1.61	1.63	1.65	1.68	1.70	1.72	0.23	0.20	0.16	0.13	0.10	0.06
45		3.50	3.66	3.82	3.98	4.14	4.30	5.84	6.17	6.50	6.82	7.15	7.48
46		4.17	4.32	4.47	4.63	4.78	4.93	3.10	2.90	2.69	2.49	2.28	2.08
47	PAPER	0.70	0.71	0.71	0.72	0.73	0.73	0.25	0.26	0.27	0.28	0.29	0.30
48		2.81	2.92	3.04	3.15	3.27	3.38	1.08	1.11	1.13	1.16	1.19	1.22
49		4.21	4.30	4.39	4.47	4.56	4.64	14.17	15.34	16.51	17.68	18.85	20.02

Table 7.43 Predicted Commodity Value-Weight Ratios between U.S. and China (cont'd)

HS-2	SECTION	IMPORT (USD/ton)						EXPORT (USD/ton)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	71.09	75.18	79.27	83.36	87.45	91.55	0.78	1.18	3.14	5.09	7.05	9.01
51		13.56	14.03	14.50	14.97	15.45	15.92	2.96	2.94	2.92	2.90	2.88	2.86
52		6.73	7.13	7.52	7.92	8.32	8.72	2.60	2.74	2.88	3.03	3.17	3.31
53		7.79	8.27	8.74	9.21	9.68	10.15	7.59	8.54	9.50	10.45	11.41	12.36
54		3.02	3.00	2.98	2.96	2.94	2.92	4.85	5.16	5.47	5.78	6.09	6.40
55		2.02	2.05	2.07	2.10	2.12	2.14	5.56	5.74	5.92	6.11	6.29	6.47
56		3.79	3.85	3.90	3.96	4.01	4.07	6.70	7.01	7.31	7.61	7.92	8.22
57		4.53	4.60	4.67	4.73	4.80	4.86	2.20	1.87	1.54	1.20	0.87	0.53
58		7.37	7.45	7.53	7.61	7.70	7.78	12.15	13.38	14.61	15.85	17.08	18.31
59		4.60	4.67	4.73	4.79	4.85	4.92	12.38	12.37	12.37	12.36	12.36	12.35
60		2.86	2.76	2.66	2.56	2.45	2.35	15.65	16.32	17.00	17.67	18.35	19.03
61		14.40	14.58	14.76	14.94	15.12	15.29	14.54	15.23	15.92	16.61	17.30	17.99
62		15.46	15.81	16.15	16.49	16.83	17.18	15.31	16.11	16.90	17.70	18.50	19.30
63	6.20	6.35	6.49	6.64	6.79	6.93	5.26	5.28	5.30	5.32	5.34	5.36	
64	FOOTWEAR	12.90	13.38	13.87	14.36	14.84	15.33	25.63	27.43	29.22	31.02	32.81	34.61
65		15.79	16.33	16.87	17.42	17.96	18.50	20.67	21.51	22.35	23.18	24.02	24.86
66		4.52	4.63	4.73	4.83	4.94	5.04	3.82	3.43	3.04	2.65	2.25	1.86
67		14.90	15.71	16.52	17.33	18.14	18.95	21.63	23.97	26.31	28.65	30.99	33.33
68	STONE & GLASS	1.05	1.07	1.09	1.11	1.12	1.14	6.05	6.51	6.98	7.44	7.90	8.36
69		0.85	0.83	0.82	0.80	0.78	0.76	6.02	6.41	6.79	7.17	7.55	7.94
70		1.43	1.43	1.43	1.43	1.43	1.43	5.81	6.25	6.69	7.13	7.58	8.02
71	PRECIOUS STONES	16.34	17.12	17.89	18.66	19.43	20.20	339.06	336.06	333.06	330.06	327.07	324.07
72	BASE METALS	0.99	0.95	0.90	0.86	0.82	0.78	0.86	0.88	0.91	0.94	0.97	0.99
73		2.87	3.03	3.18	3.33	3.48	3.63	5.87	6.00	6.13	6.25	6.38	6.51
74		10.58	11.00	11.42	11.84	12.26	12.68	3.81	3.93	4.05	4.17	4.29	4.41
75		15.26	16.38	17.50	18.61	19.73	20.85	26.15	24.96	23.77	22.58	21.39	20.20
76		3.81	3.84	3.87	3.90	3.92	3.95	1.82	1.80	1.79	1.77	1.75	1.73
77		---	---	---	---	---	---	---	---	---	---	---	---
78		3.34	3.21	3.09	2.96	2.84	2.71	1.39	1.48	1.57	1.66	1.75	1.84
79		8.42	8.76	9.11	9.46	9.80	10.15	1.51	1.56	1.60	1.65	1.70	1.74
80		11.06	11.73	12.41	13.08	13.76	14.43	15.00	16.59	18.19	19.79	21.38	22.98
81		10.07	10.34	10.61	10.88	11.15	11.43	13.50	8.37	3.24	1.90	7.03	12.16
82		6.70	6.94	7.19	7.44	7.68	7.93	16.14	16.08	16.02	15.96	15.90	15.84
83		4.27	4.37	4.46	4.56	4.65	4.74	8.02	8.27	8.53	8.78	9.03	9.28
84	MACHINE	9.84	10.07	10.30	10.53	10.76	10.99	23.12	24.15	25.18	26.21	27.24	28.27
85		11.68	11.87	12.06	12.25	12.44	12.64	19.53	20.17	20.81	21.45	22.10	22.74
86	VEHICLES	2.54	2.68	2.81	2.94	3.07	3.21	8.19	7.20	6.21	5.23	4.24	3.25
87		3.92	4.08	4.23	4.39	4.54	4.70	15.26	15.74	16.22	16.70	17.17	17.65
88		138.18	147.39	156.60	165.81	175.02	184.23	168.31	175.33	182.36	189.39	196.42	203.44
89		7.38	7.06	6.74	6.42	6.09	5.77	4.85	2.84	0.82	1.19	3.20	5.22
90	CLOCKS & MUSICAL INST.	16.84	17.47	18.10	18.73	19.36	19.99	48.54	49.79	51.03	52.28	53.52	54.76
91		12.35	12.82	13.30	13.77	14.25	14.72	23.20	23.91	24.63	25.34	26.06	26.77
92		12.09	12.49	12.89	13.30	13.70	14.10	21.51	22.77	24.03	25.29	26.55	27.81
93	ARMS	6.87	7.01	7.15	7.29	7.43	7.57	3.24	2.05	0.86	0.33	1.52	2.71
94	MISC. ART.	3.87	4.01	4.16	4.30	4.44	4.59	10.25	10.76	11.28	11.79	12.31	12.83
95		7.42	7.38	7.34	7.30	7.26	7.22	11.47	11.54	11.61	11.69	11.76	11.84
96		6.58	6.76	6.94	7.12	7.30	7.49	6.37	5.74	5.11	4.48	3.86	3.23
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

Table 7.44 Predicted Commodity Value-Weight Ratios between U.S. and Japan

HS-2	SECTION	IMPORT (USD/ton)						EXPORT (USD/ton)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	---	---	---	---	---	---	5.53	6.02	6.51	7.00	7.49	7.98
02		44.81	47.43	50.04	52.66	55.28	57.90	5.17	5.43	5.70	5.96	6.23	6.50
03		16.36	17.10	17.83	18.57	19.31	20.04	3.38	3.42	3.45	3.49	3.53	3.57
04		5.39	5.56	5.74	5.92	6.10	6.28	3.97	4.21	4.45	4.70	4.94	5.18
05		17.76	19.14	20.53	21.91	23.30	24.68	1.29	1.28	1.27	1.26	1.24	1.23
06	VEGETABLE PRODUCTS	4.65	3.71	4.95	5.37	5.02	5.25	1.93	1.60	1.27	0.94	0.61	0.28
07		3.25	3.39	3.54	3.68	3.82	3.97	0.95	0.96	0.96	0.97	0.97	0.98
08		4.84	5.13	5.43	5.72	6.02	6.31	2.60	2.78	2.96	3.15	3.33	3.51
09		15.65	16.13	16.60	17.08	17.56	18.03	7.51	7.82	8.13	8.44	8.75	9.07
10		4.18	4.41	4.64	4.88	5.11	5.35	0.31	0.32	0.33	0.34	0.34	0.35
11		2.19	2.36	2.54	2.72	2.89	3.07	1.00	1.02	1.05	1.07	1.09	1.12
12		12.31	12.86	13.42	13.97	14.53	15.08	0.50	0.52	0.54	0.57	0.59	0.61
13		45.94	47.90	49.86	51.82	53.78	55.74	10.59	11.28	11.98	12.68	13.38	14.08
14		0.89	1.91	2.93	3.94	4.96	5.98	0.74	0.70	0.66	0.62	0.58	0.54
15	FATS & OILS	6.26	6.57	6.88	7.19	7.50	7.81	1.54	1.62	1.70	1.79	1.87	1.95
16	PREPARED FOODSTUFFS	8.59	8.74	8.90	9.05	9.21	9.36	4.20	4.42	4.64	4.86	5.08	5.31
17		7.58	7.76	7.94	8.11	8.29	8.47	1.49	1.55	1.61	1.67	1.73	1.79
18		10.94	11.41	11.88	12.35	12.81	13.28	5.15	5.37	5.59	5.81	6.03	6.25
19		4.62	4.72	4.83	4.93	5.03	5.13	1.91	1.97	2.04	2.10	2.17	2.23
20		4.26	4.33	4.40	4.47	4.53	4.60	1.38	1.42	1.47	1.52	1.56	1.61
21		5.87	5.97	6.08	6.19	6.29	6.40	3.48	3.48	3.49	3.49	3.50	3.50
22		2.20	2.25	2.30	2.35	2.40	2.45	0.85	0.87	0.88	0.90	0.91	0.93
23		13.18	13.53	13.88	14.24	14.59	14.94	0.64	0.66	0.67	0.69	0.71	0.72
24		28.19	28.52	28.85	29.18	29.51	29.85	11.53	11.98	12.43	12.88	13.33	13.78
25	MINERAL PRODUCTS	1.11	1.19	1.27	1.34	1.42	1.50	0.22	0.24	0.26	0.28	0.30	0.31
26		0.02	0.03	0.04	0.05	0.07	0.08	1.50	1.50	1.51	1.51	1.51	1.51
27		1.19	1.28	1.36	1.44	1.52	1.60	0.28	0.29	0.31	0.32	0.34	0.35
28	CHEMICAL PRODUCTS	2.00	2.10	2.19	2.29	2.39	2.49	3.46	3.36	3.26	3.16	3.06	2.96
29		2.37	1.81	1.24	2.04	2.39	2.09	1.49	1.39	1.29	1.19	1.09	0.99
30		33.20	34.31	35.42	36.53	37.64	38.75	22.58	23.04	23.50	23.97	24.43	24.89
31		1.08	1.07	1.06	1.04	1.03	1.01	0.55	0.58	0.61	0.64	0.67	0.70
32		10.66	10.74	10.81	10.89	10.97	11.05	5.03	5.20	5.37	5.54	5.71	5.88
33		15.62	15.30	14.97	14.65	14.33	14.00	10.44	10.56	10.68	10.80	10.92	11.04
34		5.90	6.04	6.17	6.31	6.45	6.58	2.96	2.98	3.00	3.02	3.03	3.05
35		19.13	20.41	21.69	22.97	24.24	25.52	1.86	1.91	1.96	2.01	2.06	2.11
36		26.67	29.36	32.06	34.75	37.45	40.14	15.85	15.55	15.25	14.95	14.65	14.35
37		36.82	39.32	41.83	44.34	46.85	49.36	14.78	14.69	14.60	14.51	14.42	14.33
38		13.28	13.40	13.52	13.64	13.76	13.88	3.36	3.34	3.31	3.29	3.27	3.25
39	PLASTICS	6.92	7.15	7.38	7.62	7.85	8.08	5.18	5.32	5.46	5.61	5.75	5.89
40		7.18	7.56	7.94	8.33	8.71	9.09	3.66	3.73	3.80	3.87	3.94	4.01
41	LEATHER GOODS	39.34	42.85	46.35	49.86	53.37	56.88	3.82	3.71	3.61	3.51	3.40	3.30
42		25.88	24.19	22.51	20.82	19.14	17.45	43.41	46.64	49.87	53.10	56.34	59.57
43		---	---	---	---	---	---	22.04	20.42	18.79	17.17	15.55	13.93
44	WOOD PRODUCTS	3.76	3.63	3.50	3.37	3.24	3.11	0.22	0.23	0.23	0.24	0.25	0.25
45		47.54	42.65	37.75	32.86	27.97	23.07	5.87	5.88	5.89	5.90	5.92	5.93
46		5.06	4.74	4.41	4.09	3.77	3.44	7.70	8.56	9.42	10.28	11.15	12.01
47	PAPER	0.96	0.96	0.96	0.96	0.96	0.96	0.96	1.00	1.04	1.08	1.11	1.15
48		2.43	2.47	2.50	2.54	2.58	2.61	1.21	1.25	1.29	1.32	1.36	1.40
49		15.50	15.63	15.77	15.90	16.04	16.17	12.10	12.30	12.51	12.72	12.92	13.13

Table 7.44 Predicted Commodity Value-Weight Ratios between U.S. and Japan (cont'd)

HS-2	SECTION	IMPORT (USD/ton)						EXPORT (USD/ton)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	116.66	123.33	130.01	136.69	143.36	150.04	29.92	29.92	29.92	29.92	29.92	29.92
51		29.39	28.85	28.31	27.77	27.22	26.68	43.13	48.75	54.36	59.98	65.60	71.21
52		17.88	18.59	19.31	20.02	20.74	21.46	2.71	2.85	2.98	3.12	3.25	3.39
53		41.70	44.72	47.74	50.77	53.79	56.81	0.04	0.68	1.33	1.97	2.62	3.26
54		10.00	10.43	10.85	11.28	11.71	12.13	5.86	5.98	6.10	6.23	6.35	6.48
55		5.13	5.30	5.47	5.64	5.81	5.99	8.02	8.31	8.60	8.89	9.17	9.46
56		11.40	11.66	11.93	12.19	12.45	12.72	10.12	10.61	11.10	11.59	12.07	12.56
57		15.86	15.63	15.40	15.17	14.94	14.70	7.36	7.64	7.92	8.20	8.48	8.75
58		13.27	13.23	13.19	13.14	13.10	13.06	12.76	12.84	12.92	13.00	13.08	13.17
59		22.02	22.87	23.71	24.55	25.40	26.24	26.31	27.45	28.60	29.74	30.88	32.02
60		13.93	14.09	14.24	14.40	14.55	14.71	13.17	13.72	14.26	14.81	15.36	15.90
61		31.80	32.40	33.00	33.61	34.21	34.81	30.14	31.23	32.32	33.41	34.49	35.58
62		27.98	23.89	19.80	15.71	11.61	7.52	38.38	38.91	39.44	39.98	40.51	41.04
63	17.02	17.58	18.15	18.71	19.27	19.84	5.90	5.42	4.94	4.47	3.99	3.51	
64	FOOTWEAR	22.49	22.86	23.23	23.60	23.97	24.34	39.49	40.55	41.61	42.66	43.72	44.78
65		153.08	157.42	161.76	166.10	170.43	174.77	52.29	54.62	56.95	59.27	61.60	63.93
66		19.52	20.99	22.45	23.92	25.38	26.84	21.87	23.33	24.79	26.25	27.71	29.17
67		4.90	11.41	17.93	24.45	30.96	37.48	8.81	8.36	7.91	7.46	7.01	6.56
68	STONE & GLASS	9.90	9.83	9.75	9.68	9.61	9.54	8.18	8.92	9.65	10.39	11.12	11.86
69		7.10	7.67	8.23	8.80	9.36	9.93	3.98	4.03	4.08	4.14	4.19	4.24
70		7.94	8.33	8.72	9.12	9.51	9.90	6.50	6.98	7.45	7.93	8.40	8.88
71	PRECIOUS STONES	69.92	65.30	60.68	56.07	51.45	46.84	14.26	39.26	92.77	146.29	199.81	253.32
72	BASE METALS	0.95	0.94	0.93	0.92	0.91	0.89	1.37	1.40	1.42	1.45	1.48	1.51
73		2.91	2.94	2.98	3.01	3.04	3.08	3.99	3.89	3.79	3.70	3.60	3.51
74		15.66	16.55	17.45	18.34	19.24	20.13	5.60	5.38	5.17	4.95	4.74	4.53
75		15.33	14.05	12.78	11.50	10.22	8.94	21.70	23.41	25.12	26.83	28.55	30.26
76		15.60	16.74	17.89	19.03	20.17	21.32	8.32	8.92	9.51	10.10	10.69	11.28
77		---	---	---	---	---	---	---	---	---	---	---	---
78		2.47	0.90	0.66	2.23	3.79	5.36	12.00	13.20	14.40	15.61	16.81	18.01
79		6.28	6.73	7.17	7.61	8.05	8.50	1.44	1.39	1.34	1.30	1.25	1.20
80		12.88	11.87	10.86	9.85	8.84	7.83	7.35	7.64	7.92	8.21	8.49	8.78
81		10.87	10.45	10.04	9.63	9.22	8.81	24.22	23.24	22.26	21.28	20.30	19.33
82		20.41	20.99	21.57	22.16	22.74	23.32	24.36	24.58	24.79	25.01	25.22	25.44
83		9.82	10.07	10.32	10.57	10.82	11.07	13.96	13.53	13.09	12.66	12.22	11.79
84	MACHINE	16.65	16.93	17.22	17.50	17.78	18.06	15.67	15.48	15.29	15.10	14.90	14.71
85		26.95	27.63	28.32	29.00	29.69	30.37	23.51	23.89	24.28	24.66	25.05	25.43
86	VEHICLES	5.30	5.28	5.27	5.25	5.23	5.21	5.45	5.25	5.04	4.84	4.63	4.43
87		13.49	13.69	13.88	14.08	14.28	14.47	12.27	12.25	12.22	12.19	12.16	12.14
88		324.30	342.13	359.97	377.80	395.64	413.47	134.83	115.41	95.98	76.55	57.13	37.70
89		20.18	20.99	21.79	22.59	23.40	24.20	20.15	20.68	21.22	21.76	22.30	22.84
90	CLOCKS & MUSICAL INST.	61.01	62.64	64.27	65.90	67.53	69.16	68.62	72.55	76.49	80.42	84.35	88.28
91		35.01	36.61	38.20	39.79	41.39	42.98	77.94	75.81	73.68	71.55	69.42	67.29
92		33.73	34.57	35.41	36.25	37.09	37.93	58.39	61.38	64.37	67.37	70.36	73.36
93	ARMS	35.78	35.60	35.42	35.24	35.06	34.88	117.90	117.80	117.70	117.61	117.51	117.41
94	MISC. ART.	12.69	13.25	13.80	14.36	14.91	15.47	19.44	21.30	23.16	25.01	26.87	28.73
95		21.73	21.97	22.21	22.44	22.68	22.92	18.11	18.58	19.05	19.52	20.00	20.47
96		36.33	37.21	38.09	38.97	39.85	40.73	10.12	7.44	4.75	2.06	0.63	3.32
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

Table 7.45 Predicted Commodity Value-Weight Ratios between U.S. and South Korea

HS-2	SECTION	IMPORT (USD/ton)						EXPORT (USD/ton)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	---	---	---	---	---	---	33.51	37.40	41.28	45.16	49.05	52.93
02		1.16	1.35	1.54	1.74	1.93	2.12	4.02	4.26	4.50	4.73	4.97	5.21
03		6.87	7.15	7.44	7.73	8.01	8.30	3.08	3.12	3.16	3.21	3.25	3.29
04		12.42	13.90	15.38	16.87	18.35	19.83	3.81	4.04	4.27	4.51	4.74	4.98
05		1.61	1.64	1.67	1.71	1.74	1.77	2.77	2.86	2.96	3.06	3.16	3.25
06	VEGETABLE PRODUCTS	7.57	7.36	7.15	6.94	6.73	6.52	1.90	1.71	1.52	1.33	1.14	0.94
07		0.98	0.98	0.98	0.97	0.97	0.97	0.67	0.69	0.72	0.74	0.77	0.80
08		2.52	2.57	2.61	2.65	2.70	2.74	2.68	2.86	3.04	3.21	3.39	3.57
09		3.74	3.78	3.82	3.87	3.91	3.96	8.87	9.35	9.83	10.32	10.80	11.28
10		2.03	2.00	1.97	1.94	1.91	1.88	0.31	0.32	0.33	0.34	0.35	0.36
11		1.06	1.10	1.14	1.18	1.22	1.26	1.03	1.12	1.22	1.31	1.40	1.50
12		8.90	9.31	9.71	10.11	10.52	10.92	0.45	0.47	0.49	0.51	0.54	0.56
13		24.44	26.89	29.34	31.79	34.24	36.69	13.84	15.07	16.30	17.54	18.77	20.01
14		35.00	38.89	42.78	46.66	50.55	54.43	0.45	0.41	0.38	0.35	0.32	0.29
15	FATS & OILS	3.03	2.98	2.93	2.88	2.83	2.78	1.17	1.23	1.28	1.34	1.39	1.45
16	PREPARED FOODSTUFFS	4.84	5.06	5.28	5.50	5.72	5.93	3.44	3.56	3.68	3.80	3.92	4.04
17		2.06	2.04	2.02	1.99	1.97	1.95	1.59	1.64	1.70	1.76	1.81	1.87
18		4.91	5.14	5.36	5.59	5.82	6.04	4.37	4.40	4.44	4.48	4.51	4.55
19		2.67	2.71	2.76	2.80	2.84	2.88	2.18	2.24	2.31	2.37	2.43	2.49
20		6.56	7.19	7.83	8.46	9.09	9.73	1.35	1.37	1.40	1.42	1.45	1.47
21		2.88	2.89	2.90	2.91	2.92	2.93	6.36	6.72	7.08	7.44	7.80	8.17
22		0.78	0.76	0.75	0.73	0.72	0.71	1.12	1.15	1.19	1.22	1.26	1.29
23		3.58	3.81	4.04	4.27	4.50	4.73	0.39	0.40	0.41	0.42	0.43	0.44
24		12.34	11.86	11.37	10.89	10.40	9.91	7.03	7.12	7.20	7.29	7.37	7.46
25	MINERAL PRODUCTS	0.05	0.05	0.05	0.05	0.05	0.05	0.35	0.36	0.38	0.39	0.41	0.42
26		0.50	0.51	0.53	0.55	0.57	0.58	1.50	1.57	1.64	1.71	1.78	1.85
27		1.08	1.11	1.15	1.18	1.22	1.25	0.20	0.18	0.16	0.14	0.12	0.11
28	CHEMICAL PRODUCTS	0.70	0.74	0.79	0.84	0.89	0.94	1.46	1.38	1.30	1.22	1.13	1.05
29		1.43	1.48	1.54	1.59	1.65	1.70	1.81	1.90	1.99	2.08	2.18	2.27
30		11.42	11.81	12.20	12.59	12.98	13.37	33.03	35.93	38.83	41.73	44.64	47.54
31		1.12	1.21	1.30	1.38	1.47	1.56	0.51	0.54	0.57	0.60	0.64	0.67
32		6.10	6.22	6.33	6.45	6.57	6.68	3.52	3.65	3.77	3.89	4.02	4.14
33		11.08	11.44	11.80	12.16	12.52	12.88	12.72	13.18	13.64	14.10	14.57	15.03
34		3.12	3.19	3.26	3.32	3.39	3.46	4.07	4.19	4.31	4.43	4.56	4.68
35		8.25	8.73	9.20	9.68	10.16	10.64	4.31	4.30	4.29	4.27	4.26	4.25
36		2.91	3.12	3.32	3.52	3.73	3.93	13.62	13.71	13.80	13.90	13.99	14.08
37		9.95	10.28	10.61	10.94	11.27	11.60	8.74	8.79	8.85	8.90	8.95	9.00
38		2.17	1.45	0.74	1.80	1.79	1.39	4.98	5.23	5.49	5.74	6.00	6.26
39	PLASTICS	3.62	3.74	3.87	4.00	4.13	4.26	3.48	3.56	3.64	3.73	3.81	3.90
40		4.74	4.90	5.06	5.22	5.37	5.53	2.88	2.84	2.80	2.76	2.72	2.68
41	LEATHER GOODS	27.70	29.00	30.30	31.60	32.90	34.20	3.66	3.87	4.08	4.29	4.51	4.72
42		23.79	25.21	26.63	28.05	29.46	30.88	36.46	39.23	42.01	44.79	47.56	50.34
43		152.69	162.26	171.82	181.39	190.96	200.52	93.41	101.40	109.39	117.38	125.37	133.36
44	WOOD PRODUCTS	2.74	2.95	3.16	3.37	3.58	3.79	0.30	0.32	0.34	0.36	0.38	0.39
45		31.07	34.41	37.74	41.08	44.41	47.75	9.47	9.60	9.73	9.85	9.98	10.11
46		3.96	4.20	4.44	4.69	4.93	5.17	1.64	4.50	7.37	10.23	13.09	15.96
47	PAPER	1.38	1.52	1.66	1.79	1.93	2.07	0.29	0.29	0.29	0.29	0.29	0.29
48		1.09	1.11	1.14	1.17	1.20	1.23	1.17	1.20	1.22	1.24	1.26	1.28
49		4.06	4.11	4.15	4.20	4.24	4.29	15.32	15.97	16.62	17.27	17.92	18.57

Table 7.45 Predicted Commodity Value-Weight Ratios between U.S. and South Korea (cont'd)

HS-2	SECTION	IMPORT (USD/ton)						EXPORT (USD/ton)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	121.91	129.63	137.36	145.08	152.80	160.52	20.77	19.06	17.35	15.64	13.93	12.23
51		17.17	14.53	11.88	9.24	6.60	3.95	21.75	24.01	26.26	28.51	30.76	33.01
52		9.05	9.39	9.72	10.06	10.39	10.72	2.65	2.78	2.90	3.03	3.16	3.29
53		11.65	12.25	12.85	13.45	14.06	14.66	8.44	8.98	9.53	10.07	10.61	11.15
54		3.93	4.05	4.17	4.28	4.40	4.52	6.19	6.27	6.35	6.42	6.50	6.58
55		1.89	1.96	2.04	2.12	2.20	2.27	4.74	4.95	5.16	5.37	5.59	5.80
56		6.14	6.53	6.93	7.32	7.71	8.11	9.74	10.09	10.43	10.78	11.13	11.48
57		9.80	10.29	10.79	11.28	11.77	12.27	5.23	5.22	5.21	5.20	5.18	5.17
58		5.80	5.96	6.12	6.27	6.43	6.59	8.88	8.83	8.78	8.72	8.67	8.61
59		5.92	6.22	6.52	6.82	7.12	7.42	11.69	11.78	11.87	11.97	12.06	12.15
60		5.33	5.48	5.64	5.79	5.95	6.10	20.31	21.40	22.49	23.58	24.67	25.76
61		21.15	21.84	22.52	23.21	23.90	24.58	26.99	29.14	31.29	33.43	35.58	37.73
62		23.06	23.76	24.46	25.16	25.86	26.57	41.39	44.37	47.35	50.33	53.31	56.29
63	9.46	9.90	10.34	10.78	11.22	11.66	9.43	10.06	10.70	11.33	11.97	12.60	
64	FOOTWEAR	19.18	19.81	20.44	21.07	21.70	22.33	35.42	37.58	39.74	41.91	44.07	46.23
65		39.65	39.89	40.13	40.37	40.60	40.84	55.96	59.78	63.59	67.40	71.21	75.03
66		11.19	9.50	7.82	6.13	4.45	2.76	15.11	15.48	15.85	16.22	16.58	16.95
67		19.92	19.83	19.73	19.64	19.54	19.45	8.07	7.53	6.99	6.45	5.91	5.37
68	STONE & GLASS	4.15	4.28	4.41	4.53	4.66	4.79	3.69	3.91	4.14	4.37	4.59	4.82
69		5.01	5.27	5.53	5.79	6.05	6.31	10.41	11.08	11.76	12.44	13.12	13.80
70		3.74	3.99	4.23	4.48	4.72	4.97	4.59	4.92	5.25	5.58	5.91	6.24
71	PRECIOUS STONES	48.87	48.74	48.60	48.46	48.33	48.19	1433.40	1593.75	1754.10	1914.44	2074.79	2235.14
72	BASE METALS	0.83	0.82	0.81	0.79	0.78	0.77	0.43	0.43	0.43	0.43	0.43	0.43
73		1.16	1.11	1.06	1.00	0.95	0.90	8.54	9.16	9.78	10.40	11.02	11.63
74		7.57	7.61	7.65	7.69	7.73	7.77	6.81	6.99	7.18	7.37	7.56	7.75
75		12.72	11.58	10.44	9.30	8.16	7.02	48.44	51.88	55.32	58.77	62.21	65.65
76		3.44	3.32	3.20	3.08	2.95	2.83	2.34	2.38	2.42	2.46	2.50	2.53
77		---	---	---	---	---	---	---	---	---	---	---	---
78		2.24	1.86	1.81	1.18	1.76	2.34	1.85	1.97	2.08	2.20	2.31	2.42
79		2.71	1.53	2.43	2.43	2.01	3.18	1.98	1.53	1.08	0.64	0.19	0.26
80		26.08	29.19	32.30	35.41	38.52	41.63	22.23	23.24	24.24	25.24	26.24	27.25
81		19.35	20.16	20.97	21.79	22.60	23.42	26.46	24.47	22.47	20.47	18.47	16.48
82		15.96	16.78	17.61	18.44	19.27	20.10	20.89	21.70	22.52	23.33	24.15	24.96
83	6.31	6.51	6.71	6.90	7.10	7.30	11.13	11.20	11.27	11.34	11.40	11.47	
84	MACHINE	8.80	9.00	9.21	9.41	9.62	9.82	23.97	24.88	25.80	26.71	27.63	28.54
85		16.42	17.25	18.09	18.93	19.76	20.60	21.05	21.96	22.87	23.79	24.70	25.61
86	VEHICLES	7.66	8.25	8.84	9.42	10.01	10.60	12.84	12.51	12.18	11.85	11.52	11.20
87		10.05	10.42	10.79	11.16	11.54	11.91	11.52	11.38	11.24	11.10	10.96	10.82
88		278.36	276.58	274.80	273.02	271.24	269.46	151.83	126.87	101.90	76.94	51.98	27.01
89		9.26	9.56	9.86	10.16	10.46	10.76	13.57	13.25	12.92	12.59	12.26	11.93
90	CLOCKS & MUSICAL INST.	27.73	27.46	27.18	26.91	26.64	26.36	49.20	50.91	52.63	54.34	56.06	57.78
91		25.46	27.42	29.37	31.33	33.28	35.23	71.88	77.19	82.50	87.80	93.11	98.42
92		34.87	36.25	37.62	38.99	40.37	41.74	41.54	42.76	43.99	45.21	46.43	47.66
93	ARMS	14.82	15.32	15.82	16.32	16.83	17.33	90.95	71.84	52.73	33.62	14.52	4.59
94	MISC. ART.	6.12	6.33	6.53	6.74	6.94	7.15	12.72	13.25	13.79	14.32	14.85	15.39
95		27.46	28.47	29.48	30.49	31.51	32.52	9.78	9.08	8.38	7.68	6.97	6.27
96		16.67	17.28	17.89	18.50	19.11	19.72	4.89	3.83	2.77	1.71	0.66	0.40
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

Table 7.46 Predicted Commodity Value-Weight Ratios between U.S. and ASEAN

HS-2	SECTION	IMPORT (USD/ton)						EXPORT (USD/ton)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.12	0.17	0.22	0.27	0.31	0.36	18.21	20.71	23.22	25.72	28.23	30.73
02		4.11	4.16	4.21	4.26	4.31	4.36	1.80	1.84	1.88	1.92	1.95	1.99
03		7.68	7.96	8.24	8.52	8.80	9.08	2.68	2.83	2.98	3.13	3.27	3.42
04		2.75	2.91	3.08	3.24	3.40	3.56	3.14	3.27	3.39	3.52	3.65	3.78
05		4.34	4.57	4.80	5.04	5.27	5.51	1.05	1.09	1.13	1.17	1.20	1.24
06	VEGETABLE PRODUCTS	4.22	4.44	4.66	4.88	5.10	5.32	1.96	2.04	2.12	2.20	2.28	2.36
07		1.01	0.98	0.95	0.92	0.89	0.86	0.76	0.78	0.80	0.81	0.83	0.85
08		4.50	4.74	4.98	5.22	5.46	5.70	2.29	2.42	2.56	2.70	2.83	2.97
09		3.60	3.81	4.02	4.23	4.44	4.65	4.97	4.83	4.69	4.55	4.41	4.27
10		1.17	1.23	1.29	1.35	1.41	1.47	0.32	0.32	0.32	0.33	0.33	0.33
11		0.78	0.81	0.85	0.88	0.91	0.94	0.69	0.68	0.67	0.66	0.65	0.64
12		4.59	4.96	5.33	5.70	6.07	6.44	0.60	0.62	0.65	0.68	0.71	0.73
13		9.09	9.64	10.19	10.74	11.30	11.85	9.66	9.96	10.27	10.58	10.88	11.19
14		1.32	1.37	1.43	1.49	1.55	1.60	0.61	1.12	0.80	0.80	0.60	0.91
15	FATS & OILS	1.14	1.18	1.21	1.25	1.28	1.32	1.71	1.80	1.89	1.98	2.07	2.17
16	PREPARED FOODSTUFFS	6.81	7.15	7.50	7.84	8.18	8.52	2.12	2.03	1.94	1.85	1.76	1.67
17		0.80	0.84	0.87	0.90	0.94	0.97	0.80	0.79	0.79	0.79	0.78	0.78
18		4.94	5.20	5.46	5.73	5.99	6.25	5.05	5.20	5.34	5.49	5.64	5.79
19		2.66	2.76	2.87	2.97	3.07	3.17	2.57	2.67	2.77	2.86	2.96	3.06
20		1.16	1.20	1.25	1.30	1.34	1.39	1.35	1.38	1.41	1.44	1.47	1.49
21		1.88	1.96	2.04	2.13	2.21	2.29	6.51	6.87	7.24	7.61	7.98	8.35
22		1.00	1.03	1.07	1.10	1.14	1.17	1.48	1.40	1.33	1.25	1.18	1.10
23		2.35	2.47	2.59	2.72	2.84	2.96	0.53	0.55	0.58	0.60	0.63	0.65
24		3.56	3.65	3.73	3.82	3.90	3.99	6.33	6.33	6.34	6.35	6.36	6.37
25	MINERAL PRODUCTS	0.13	0.14	0.15	0.16	0.17	0.17	0.34	0.35	0.36	0.37	0.38	0.39
26		1.60	1.57	1.55	1.53	1.50	1.48	4.50	4.99	5.47	5.95	6.44	6.92
27		0.74	0.79	0.84	0.89	0.94	0.99	0.67	0.70	0.74	0.78	0.81	0.85
28	CHEMICAL PRODUCTS	2.21	2.41	2.60	2.80	3.00	3.19	0.46	0.47	0.48	0.49	0.49	0.50
29		1.66	1.62	1.59	1.55	1.51	1.47	2.25	2.28	2.31	2.34	2.37	2.40
30		6.66	1.85	2.96	7.77	12.58	17.39	9.98	10.13	10.28	10.42	10.57	10.72
31		0.38	0.37	0.36	0.34	0.33	0.32	0.76	0.83	0.90	0.96	1.03	1.10
32		11.96	12.29	12.63	12.96	13.29	13.62	5.02	5.25	5.49	5.73	5.97	6.21
33		12.83	13.45	14.07	14.69	15.31	15.94	12.09	12.59	13.08	13.58	14.08	14.57
34		2.76	2.81	2.86	2.92	2.97	3.02	3.83	3.99	4.14	4.30	4.45	4.61
35		1.63	1.69	1.75	1.81	1.87	1.93	2.73	2.83	2.92	3.02	3.11	3.21
36		21.93	24.82	27.71	30.59	33.48	36.37	20.90	22.42	23.94	25.46	26.99	28.51
37		7.53	7.74	7.96	8.18	8.39	8.61	6.99	6.11	5.22	4.34	3.46	2.58
38		1.46	1.51	1.56	1.61	1.67	1.72	3.78	3.89	4.01	4.12	4.23	4.35
39	PLASTICS	2.85	2.95	3.05	3.14	3.24	3.34	2.91	3.00	3.09	3.18	3.27	3.36
40		4.05	4.21	4.37	4.53	4.69	4.86	2.37	2.35	2.33	2.30	2.28	2.26
41	LEATHER GOODS	25.53	26.83	28.14	29.45	30.75	32.06	4.05	4.26	4.46	4.67	4.88	5.08
42		18.74	19.56	20.38	21.20	22.03	22.85	16.68	17.39	18.10	18.81	19.52	20.23
43		26.61	28.37	30.12	31.87	33.62	35.37	9.05	2.79	3.46	9.72	15.97	22.23
44	WOOD PRODUCTS	1.70	1.73	1.77	1.81	1.85	1.89	0.68	0.69	0.70	0.71	0.73	0.74
45		2.43	2.47	2.51	2.55	2.59	2.63	10.85	11.99	13.14	14.28	15.43	16.57
46		3.44	3.44	3.43	3.42	3.41	3.40	10.21	10.86	11.51	12.17	12.82	13.48
47	PAPER	1.61	1.76	1.91	2.06	2.20	2.35	0.45	0.47	0.50	0.52	0.54	0.56
48		1.38	1.40	1.42	1.44	1.45	1.47	0.88	0.89	0.91	0.92	0.94	0.95
49		4.85	5.04	5.24	5.43	5.63	5.82	5.27	5.29	5.31	5.33	5.35	5.37

Table 7.46 Predicted Commodity Value-Weight Ratios between U.S. and ASEAN (cont'd)

HS-2	SECTION	IMPORT (USD/ton)						EXPORT (USD/ton)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	41.50	39.48	37.47	35.45	33.43	31.42	6.52	1.08	4.37	9.81	15.26	20.70
51		4.97	4.50	4.03	3.57	3.10	2.63	11.94	12.22	12.50	12.78	13.06	13.34
52		6.49	6.86	7.23	7.60	7.98	8.35	2.43	2.54	2.65	2.77	2.88	2.99
53		1.26	1.22	1.18	1.14	1.11	1.07	3.10	2.49	1.89	1.28	0.68	0.07
54		2.96	3.01	3.06	3.11	3.16	3.21	5.80	5.95	6.10	6.25	6.40	6.54
55		2.35	2.41	2.46	2.52	2.57	2.63	6.69	7.04	7.38	7.73	8.07	8.42
56		3.51	3.60	3.68	3.76	3.84	3.93	5.60	5.65	5.70	5.75	5.80	5.85
57		5.19	5.31	5.43	5.55	5.68	5.80	5.98	6.20	6.43	6.65	6.87	7.10
58		6.77	6.84	6.92	6.99	7.07	7.14	13.60	13.67	13.74	13.81	13.88	13.95
59		3.88	3.98	4.08	4.18	4.28	4.38	14.65	15.12	15.59	16.07	16.54	17.01
60		5.63	5.89	6.15	6.42	6.68	6.94	16.42	16.88	17.33	17.78	18.23	18.69
61		16.73	17.14	17.56	17.97	18.38	18.79	19.65	20.11	20.57	21.03	21.50	21.96
62		21.21	21.98	22.74	23.51	24.27	25.04	15.91	15.74	15.56	15.38	15.20	15.02
63	4.97	5.02	5.08	5.13	5.19	5.25	0.87	0.87	0.86	0.85	0.84	0.83	
64	FOOTWEAR	15.64	16.12	16.59	17.06	17.53	18.01	23.90	25.63	27.37	29.10	30.84	32.57
65		18.36	18.95	19.54	20.14	20.73	21.33	15.37	15.90	16.44	16.97	17.50	18.04
66		3.86	3.77	3.68	3.59	3.49	3.40	7.71	7.87	8.03	8.18	8.34	8.50
67		21.55	22.49	23.43	24.37	25.30	26.24	8.69	7.88	7.06	6.24	5.43	4.61
68	STONE & GLASS	1.64	1.72	1.79	1.86	1.93	2.00	3.01	3.19	3.37	3.55	3.73	3.91
69		1.78	1.90	2.02	2.14	2.26	2.38	3.11	3.09	3.07	3.05	3.03	3.01
70		1.52	1.55	1.58	1.60	1.63	1.65	1.68	1.61	1.54	1.46	1.39	1.32
71	PRECIOUS STONES	36.45	38.92	41.38	43.85	46.31	48.78	203.58	215.36	227.13	238.91	250.69	262.46
72	BASE METALS	2.07	2.21	2.35	2.49	2.63	2.77	0.45	0.46	0.47	0.47	0.48	0.48
73		1.45	1.35	1.26	1.17	1.07	0.98	6.11	6.40	6.68	6.97	7.26	7.55
74		9.16	9.33	9.49	9.66	9.83	10.00	7.51	7.64	7.76	7.89	8.02	8.14
75		14.08	14.62	15.17	15.71	16.26	16.80	33.62	33.87	34.12	34.37	34.63	34.88
76		3.72	3.65	3.58	3.52	3.45	3.38	3.93	4.15	4.36	4.58	4.80	5.01
77		---	---	---	---	---	---	---	---	---	---	---	---
78		1.48	0.35	0.78	1.91	3.03	4.16	2.54	2.73	2.93	3.12	3.31	3.51
79		4.71	4.83	4.94	5.06	5.17	5.29	1.97	1.96	1.96	1.95	1.95	1.95
80		23.76	25.25	26.74	28.24	29.73	31.22	3.65	3.76	3.88	3.99	4.11	4.23
81		25.32	27.53	29.75	31.96	34.18	36.39	10.90	9.48	8.05	6.63	5.21	3.78
82		10.20	10.75	11.30	11.84	12.39	12.94	21.03	22.59	24.15	25.71	27.27	28.84
83		7.83	8.10	8.37	8.65	8.92	9.20	6.90	6.95	6.99	7.04	7.08	7.13
84	MACHINE	16.54	16.99	17.44	17.90	18.35	18.80	15.26	15.53	15.80	16.07	16.34	16.61
85		13.93	14.14	14.34	14.55	14.75	14.96	18.23	18.79	19.35	19.91	20.47	21.03
86	VEHICLES	9.14	10.16	11.18	12.20	13.22	14.24	4.73	3.60	2.48	1.36	0.24	0.89
87		9.91	10.19	10.47	10.76	11.04	11.32	8.61	8.86	9.11	9.35	9.60	9.85
88		239.53	265.21	290.89	316.57	342.25	367.93	121.50	124.31	127.12	129.93	132.74	135.55
89		10.17	7.58	5.00	2.41	0.17	2.76	2.16	0.25	1.66	3.57	5.49	7.40
90	CLOCKS & MUSICAL INST.	36.64	38.96	41.29	43.61	45.93	48.26	32.13	32.55	32.96	33.38	33.79	34.21
91		41.04	42.14	43.25	44.35	45.45	46.55	44.84	48.12	51.40	54.67	57.95	61.23
92		14.78	15.32	15.87	16.42	16.96	17.51	37.92	40.35	42.77	45.20	47.63	50.06
93	ARMS	13.15	13.57	14.00	14.43	14.86	15.28	108.27	119.36	130.45	141.54	152.62	163.71
94	MISC. ART.	2.95	3.02	3.10	3.17	3.25	3.32	5.95	5.94	5.94	5.94	5.93	5.93
95		13.85	14.67	15.50	16.32	17.15	17.97	11.41	11.17	10.93	10.69	10.45	10.21
96		5.73	5.81	5.90	5.98	6.06	6.14	5.39	8.63	7.87	7.81	7.70	7.48
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

Table 7.47 Predicted Commodity Value-Weight Ratios between U.S. and EU-27

HS-2	SECTION	IMPORT (ton)						EXPORT (ton)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	6.74	6.72	6.70	6.68	6.66	6.64	8.75	9.28	9.81	10.34	10.86	11.39
02		5.75	5.87	5.99	6.11	6.23	6.35	3.99	4.37	4.76	5.15	5.53	5.92
03		10.70	11.17	11.64	12.11	12.58	13.05	3.17	3.19	3.22	3.24	3.26	3.28
04		6.79	6.94	7.09	7.24	7.39	7.54	3.75	3.88	4.01	4.14	4.27	4.40
05		6.45	6.25	6.05	5.86	5.66	5.47	3.49	3.73	3.97	4.21	4.45	4.69
06	VEGETABLE PRODUCTS	3.05	2.99	2.93	2.87	2.81	2.75	2.19	2.11	2.03	1.95	1.87	1.79
07		1.06	0.99	0.92	0.84	0.77	0.70	0.99	1.00	1.00	1.00	1.01	1.01
08		2.03	2.12	2.21	2.29	2.38	2.47	5.62	6.02	6.41	6.81	7.20	7.60
09		5.31	5.49	5.66	5.84	6.02	6.20	5.25	5.54	5.82	6.11	6.39	6.68
10		0.27	0.25	0.24	0.22	0.20	0.18	0.34	0.35	0.35	0.36	0.36	0.36
11		1.11	1.10	1.08	1.07	1.06	1.05	1.17	1.28	1.38	1.49	1.60	1.70
12		3.58	3.51	3.44	3.37	3.30	3.24	0.68	0.71	0.74	0.77	0.80	0.83
13		10.46	10.72	10.98	11.24	11.50	11.76	14.38	15.06	15.74	16.43	17.11	17.79
14		1.50	2.61	3.71	4.82	5.93	7.04	0.86	0.86	0.87	0.88	0.88	0.89
15	FATS & OILS	3.10	3.09	3.09	3.08	3.08	3.07	1.49	1.57	1.64	1.72	1.79	1.86
16	PREPARED FOODSTUFFS	5.35	5.49	5.63	5.76	5.90	6.04	4.51	4.57	4.62	4.68	4.74	4.79
17		2.25	2.28	2.31	2.35	2.38	2.41	0.59	0.63	0.67	0.71	0.75	0.79
18		5.02	5.22	5.42	5.63	5.83	6.03	3.53	3.62	3.71	3.81	3.90	3.99
19		2.69	2.74	2.79	2.85	2.90	2.95	2.67	2.79	2.91	3.02	3.14	3.25
20		1.70	1.71	1.72	1.73	1.74	1.75	1.20	1.18	1.16	1.14	1.12	1.10
21		2.97	3.10	3.24	3.37	3.50	3.63	5.72	6.05	6.38	6.71	7.05	7.38
22		2.77	2.87	2.96	3.06	3.15	3.25	2.25	2.30	2.35	2.40	2.45	2.51
23		2.55	2.40	2.26	2.12	1.97	1.83	0.46	0.49	0.51	0.54	0.57	0.59
24		7.69	8.17	8.65	9.13	9.60	10.08	6.68	6.80	6.92	7.04	7.17	7.29
25	MINERAL PRODUCTS	0.08	0.08	0.08	0.08	0.08	0.08	0.35	0.37	0.39	0.41	0.43	0.45
26		0.11	0.10	0.09	0.07	0.06	0.05	1.45	1.47	1.49	1.51	1.53	1.55
27		1.00	1.04	1.09	1.13	1.18	1.22	0.39	0.41	0.43	0.46	0.48	0.50
28	CHEMICAL PRODUCTS	0.78	1.30	1.22	1.09	1.07	1.09	1.14	1.06	0.97	0.88	0.80	0.71
29		3.00	3.03	3.07	3.10	3.14	3.17	2.37	2.45	2.53	2.61	2.69	2.77
30		163.22	165.55	167.89	170.22	172.56	174.89	137.77	148.72	159.68	170.64	181.59	192.55
31		0.34	0.35	0.35	0.36	0.36	0.37	0.47	0.50	0.53	0.56	0.59	0.62
32		6.33	6.48	6.63	6.78	6.93	7.08	4.02	4.14	4.25	4.37	4.49	4.60
33		27.69	28.09	28.49	28.90	29.30	29.70	13.59	14.08	14.58	15.08	15.58	16.08
34		4.02	4.10	4.17	4.24	4.32	4.39	4.29	4.42	4.54	4.66	4.79	4.91
35		6.11	6.28	6.46	6.63	6.80	6.98	3.95	4.10	4.25	4.41	4.56	4.71
36		16.18	17.49	18.80	20.10	21.41	22.72	21.81	23.55	25.28	27.02	28.75	30.49
37		11.07	11.22	11.37	11.52	11.66	11.81	15.82	16.46	17.11	17.76	18.41	19.06
38		3.97	4.00	4.03	4.06	4.09	4.12	4.20	4.50	4.79	5.08	5.38	5.67
39	PLASTICS	4.75	4.88	5.00	5.12	5.24	5.37	4.25	4.37	4.48	4.60	4.71	4.83
40		5.75	6.01	6.27	6.52	6.78	7.04	3.90	3.99	4.08	4.17	4.27	4.36
41	LEATHER GOODS	28.80	29.88	30.95	32.03	33.11	34.19	5.68	5.95	6.23	6.50	6.78	7.06
42		60.25	64.31	68.37	72.43	76.49	80.55	16.33	16.83	17.32	17.82	18.32	18.82
43		22.19	22.02	21.85	21.68	21.50	21.33	16.46	18.33	20.20	22.07	23.94	25.81
44	WOOD PRODUCTS	1.21	1.26	1.31	1.36	1.40	1.45	0.13	0.03	0.06	0.16	0.25	0.35
45		7.23	6.86	6.49	6.11	5.74	5.37	17.86	18.90	19.95	20.99	22.03	23.08
46		7.80	8.00	8.19	8.38	8.58	8.77	5.50	5.70	5.89	6.08	6.28	6.47
47	PAPER	0.90	0.93	0.97	1.00	1.03	1.07	0.69	0.70	0.71	0.72	0.73	0.74
48		1.36	1.38	1.40	1.42	1.43	1.45	0.98	0.99	1.01	1.02	1.03	1.04
49		8.28	8.32	8.35	8.38	8.41	8.45	13.52	14.10	14.69	15.27	15.86	16.44

Table 7.47 Predicted Commodity Value-Weight Ratios between U.S. and EU-27 (cont'd)

HS-2	SECTION	IMPORT (ton)						EXPORT (ton)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	136.87	142.98	149.10	155.21	161.32	167.44	13.46	14.39	15.31	16.23	17.16	18.08
51		13.63	13.95	14.27	14.59	14.91	15.23	5.17	5.41	5.65	5.89	6.12	6.36
52		13.36	13.90	14.43	14.97	15.51	16.04	4.42	4.73	5.04	5.35	5.67	5.98
53		2.63	2.48	2.32	2.16	2.01	1.85	1.60	1.45	1.31	1.16	1.01	0.86
54		6.06	5.99	5.93	5.87	5.80	5.74	6.37	6.47	6.57	6.67	6.76	6.86
55		4.58	4.71	4.83	4.96	5.09	5.22	4.72	4.89	5.07	5.24	5.41	5.59
56		5.71	5.77	5.82	5.88	5.93	5.99	9.14	9.70	10.26	10.83	11.39	11.95
57		5.39	5.34	5.29	5.25	5.20	5.15	6.43	6.57	6.72	6.86	7.01	7.16
58		16.25	16.80	17.35	17.90	18.44	18.99	10.58	11.05	11.52	11.99	12.46	12.93
59		8.97	9.16	9.35	9.55	9.74	9.93	11.65	12.26	12.87	13.48	14.09	14.69
60		6.91	6.96	7.01	7.06	7.11	7.17	15.10	15.42	15.74	16.06	16.39	16.71
62		80.75	84.75	88.76	92.76	96.77	100.77	27.90	28.56	29.22	29.87	30.53	31.19
63		13.90	14.35	14.81	15.27	15.72	16.18	4.07	3.95	3.84	3.72	3.60	3.49
64	FOOTWEAR	36.32	37.26	38.20	39.14	40.08	41.02	21.07	22.18	23.29	24.39	25.50	26.61
65		59.06	60.09	61.13	62.16	63.19	64.23	33.41	34.44	35.48	36.52	37.55	38.59
66		6.91	6.92	6.93	6.95	6.96	6.98	9.80	10.17	10.53	10.90	11.26	11.63
67		18.43	18.62	18.81	19.01	19.20	19.39	22.80	24.34	25.87	27.41	28.95	30.48
68	STONE & GLASS	2.11	2.22	2.32	2.43	2.53	2.64	4.61	4.94	5.26	5.59	5.92	6.25
69		1.24	1.27	1.30	1.34	1.37	1.40	7.92	8.40	8.88	9.36	9.84	10.32
70		3.39	3.42	3.46	3.50	3.54	3.58	3.96	4.21	4.46	4.71	4.96	5.22
71	PRECIOUS STONES	82.25	77.13	72.00	66.88	61.76	56.63	266.92	274.12	281.32	288.52	295.72	302.91
72	BASE METALS	1.20	1.18	1.15	1.13	1.10	1.08	2.18	2.31	2.45	2.59	2.72	2.86
73		2.67	2.68	2.69	2.70	2.72	2.73	5.41	5.77	6.14	6.50	6.86	7.22
74		10.43	10.60	10.77	10.93	11.10	11.26	6.12	6.22	6.31	6.41	6.50	6.60
75		16.87	15.89	14.91	13.93	12.96	11.98	21.31	20.62	19.93	19.24	18.55	17.86
76		4.67	4.61	4.54	4.48	4.42	4.36	6.94	7.15	7.36	7.57	7.78	7.99
77		---	---	---	---	---	---	---	---	---	---	---	---
78		2.87	2.86	2.85	2.84	2.83	2.82	0.91	0.86	0.81	0.76	0.71	0.67
79		3.00	2.93	2.86	2.79	2.72	2.66	2.12	2.08	2.03	1.99	1.95	1.90
80		19.61	20.60	21.58	22.57	23.55	24.54	3.66	3.58	3.49	3.41	3.32	3.24
81		13.38	13.22	13.06	12.90	12.74	12.58	28.15	28.26	28.38	28.50	28.62	28.74
82		19.48	20.08	20.68	21.27	21.87	22.46	19.07	19.66	20.24	20.82	21.40	21.98
83		8.48	8.59	8.71	8.82	8.93	9.05	7.36	7.27	7.17	7.08	6.99	6.90
84	MACHINE	15.33	15.63	15.93	16.23	16.53	16.83	15.73	16.14	16.54	16.94	17.34	17.75
85		16.57	17.02	17.48	17.93	18.39	18.85	17.24	17.42	17.60	17.78	17.96	18.14
86	VEHICLES	13.63	14.72	15.81	16.91	18.00	19.09	14.79	15.68	16.58	17.48	18.37	19.27
87		16.09	16.28	16.46	16.64	16.83	17.01	14.90	15.35	15.81	16.27	16.72	17.18
88		148.46	151.85	155.25	158.65	162.05	165.45	102.38	104.54	106.71	108.88	111.04	113.21
89		28.41	29.24	30.06	30.89	31.71	32.54	21.39	22.57	23.76	24.95	26.13	27.32
90	CLOCKS & MUSICAL INST.	48.18	50.19	52.20	54.21	56.22	58.22	37.39	38.33	39.26	40.20	41.13	42.07
91		51.63	55.02	58.41	61.80	65.20	68.59	75.83	83.97	92.10	100.23	108.36	116.49
92		40.67	40.89	41.12	41.35	41.58	41.80	37.00	37.60	38.20	38.79	39.39	39.99
93	ARMS	19.85	20.51	21.17	21.83	22.49	23.15	45.05	47.40	49.74	52.09	54.43	56.78
94	MISC. ART.	3.84	3.74	3.64	3.54	3.44	3.33	7.36	7.41	7.46	7.51	7.56	7.61
95		14.27	14.80	15.34	15.87	16.41	16.94	12.92	13.20	13.48	13.76	14.04	14.32
96		11.50	11.10	10.71	10.31	9.91	9.52	8.54	7.81	7.09	6.37	5.65	4.92
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

Table 7.48 Estimated Commodity Weight Traded between U.S. and Australia

HS-2	SECTION	IMPORT (ton)						EXPORT (ton)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	---	---	---	---	---	---	7	6	6	5	5	5
02		214,090	209,759	206,277	202,767	196,166	189,855	16,804	15,965	15,228	14,586	14,158	13,778
03		2,298	2,500	2,734	3,000	3,297	3,659	20,943	18,980	17,367	16,014	14,955	13,996
04		18,460	17,896	17,414	16,937	16,256	15,630	8,001	7,608	7,272	6,984	6,735	6,487
05		1,780	1,722	1,663	1,596	1,535	1,474	353	324	300	281	264	249
06	VEGETABLE PRODUCTS	4	4	4	3	3	3	699	687	676	664	654	645
07		34,378	34,503	34,670	34,794	34,859	34,860	53,228	52,039	50,963	49,926	49,363	48,732
08		22,414	21,702	21,068	20,470	19,884	19,298	20,314	19,038	17,908	16,879	16,054	15,334
09		504	463	430	400	372	347	4,993	4,943	4,900	4,849	4,812	4,777
10		101	106	113	120	129	140	12,141	11,374	10,709	10,106	9,555	9,050
11		49,612	49,471	49,314	48,989	48,310	47,595	37,430	36,097	34,927	33,879	33,135	32,368
12		98,083	29,388	17,453	12,488	9,697	7,952	10,208	9,932	9,679	9,424	9,190	9,009
13		25	24	23	21	20	19	711	700	691	683	679	678
14		488	424	376	338	305	279	1,150	1,146	1,147	1,151	1,151	1,154
15	FATS & OILS	246,769	161,811	178,557	189,677	200,720	163,756	6,357	5,924	5,557	5,233	4,961	4,723
16	PREPARED FOODSTUFFS	2,080	2,047	2,015	1,976	1,920	1,871	7,338	6,759	6,271	5,854	5,537	5,262
17		203,641	211,313	219,507	227,434	232,355	237,899	1,707	1,645	1,593	1,548	1,512	1,482
18		718	725	733	737	735	731	2,050	1,913	1,796	1,693	1,611	1,533
19		3,540	3,550	3,560	3,554	3,519	3,493	8,652	8,132	7,683	7,287	6,976	6,674
20		10,654	10,182	9,755	9,330	8,852	8,395	37,258	35,365	33,711	32,238	31,069	29,904
21		3,103	3,155	3,208	3,249	3,256	3,268	3,941	3,770	3,620	3,485	3,386	3,299
22		357,671	373,073	389,159	404,884	421,334	438,762	44,900	44,973	45,138	45,384	45,929	46,463
23		3,297	3,141	3,005	2,872	2,723	2,582	5,519	5,090	4,730	4,416	4,170	3,938
24		---	---	---	---	---	---	1,889	1,741	1,618	1,514	1,428	1,354
25	MINERAL PRODUCTS	1,297,196	1,340,000	1,386,861	1,435,588	1,473,296	1,514,170	37,233	34,468	32,130	30,110	28,238	26,565
26		88,930	85,576	82,678	80,038	77,268	74,641	371	258	197	160	133	114
27		432,550	429,342	426,921	426,561	421,149	417,488	532,567	541,616	556,276	575,848	581,505	587,365
28	CHEMICAL PRODUCTS	409,765	444,247	483,946	527,921	564,244	604,277	2,743,599	2,980,267	3,283,791	3,676,420	4,191,005	4,880,666
29		281	253	232	215	196	180	594,282	662,669	754,914	883,145	1,070,291	1,357,534
30		14	14	13	12	11	11	659	603	557	518	487	457
31		206,282	299,603	90,139	54,194	38,474	29,851	119,355	112,597	106,834	101,874	97,769	93,863
32		4,474	4,603	4,747	4,887	4,914	4,954	21,606	20,611	19,759	19,024	18,386	17,748
33		500	493	488	483	468	455	4,169	3,950	3,762	3,600	3,451	3,314
34		2,722	2,718	2,722	2,723	2,661	2,608	17,994	17,689	17,457	17,287	17,189	17,067
35		1,897	1,905	1,915	1,922	1,897	1,872	8,149	7,613	7,159	6,771	6,430	6,129
36		251	240	230	219	207	196	1,827	2,902	7,811	9,973	2,964	1,721
37		311	332	356	381	400	421	8,168	9,010	10,124	11,627	13,769	16,930
38	3,484	3,287	3,128	2,988	2,800	2,636	34,043	31,776	29,857	28,217	26,751	25,366	
39	PLASTICS	10,368	9,845	9,427	9,059	8,558	8,127	53,890	50,907	48,361	46,169	44,167	42,198
40		26,411	18,000	18,511	19,817	21,271	19,756	22,059	20,810	19,746	18,829	18,009	17,266
41	LEATHER GOODS	82	118	178	101	68	49	285	239	202	172	149	129
42		150	179	227	320	107	112	233	206	183	163	148	134
43		41	21	15	11	9	7	1	1	0	0	0	0
44	WOOD PRODUCTS	13,341	13,371	13,388	13,345	13,183	13,050	43,719	43,510	43,493	43,630	44,022	44,441
45		808	415	280	211	168	139	85	79	74	69	65	62
46		125	121	117	113	108	104	192	185	179	174	169	165
47	PAPER	3,183	2,906	2,680	2,483	2,286	2,118	38,338	35,158	32,487	30,222	28,304	26,609
48		65,312	64,093	62,957	61,655	59,645	57,906	360,086	348,742	338,962	330,520	324,324	318,827
49		105	101	97	94	89	85	1,378	1,315	1,259	1,210	1,177	1,144

Table 7.48 Estimated Commodity Weight Traded between U.S. and Australia (cont'd)

HS-2	SECTION	IMPORT (ton)						EXPORT (ton)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	28	24	21	18	15	14	24	24	25	25	27	28
51		1,009	934	853	763	709	660	58	49	42	36	31	28
52		253	237	222	208	194	181	1,039	932	839	756	693	636
53		406	232	160	121	96	78	188	183	178	175	173	172
54		175	161	149	137	126	116	2,338	2,193	2,062	1,942	1,854	1,776
55		1,672	1,687	1,701	1,705	1,695	1,686	2,008	1,779	1,581	1,409	1,271	1,146
56		470	456	443	427	408	390	668	597	534	479	435	395
57		120	112	106	99	92	85	652	597	548	504	470	439
58		57	56	56	54	53	51	371	360	350	342	340	339
59		467	474	481	486	486	489	804	754	709	670	637	605
60		67	63	60	56	53	49	339	308	281	256	236	218
61		9	8	7	6	6	5	410	363	322	286	259	234
62		4	3	3	3	2	2	168	145	126	110	97	87
63	425	415	378	808	499	356	1,358	1,238	1,135	1,045	972	905	
64	FOOTWEAR	28	26	23	21	19	17	114	99	87	76	67	60
65		8	7	7	7	6	6	77	72	68	64	60	57
66		143	131	119	108	98	89	997	901	815	740	687	638
67		172	171	170	168	167	165	269	239	213	191	174	159
68	STONE & GLASS	2,187	2,048	1,929	1,818	1,699	1,590	14,870	14,492	14,177	13,916	13,782	13,673
69		540	480	433	393	356	325	2,947	2,746	2,574	2,425	2,304	2,198
70		1,484	1,437	1,393	1,348	1,292	1,238	13,132	12,278	11,543	10,906	10,379	9,900
71	PRECIOUS STONES	25	25	25	24	24	23	12	11	10	9	8	8
72	BASE METALS	466,300	463,902	462,457	460,557	450,309	441,477	31,716	31,244	30,950	30,830	30,647	30,455
73		32,162	30,649	29,326	28,073	26,497	25,099	22,146	20,361	18,852	17,574	16,497	15,534
74		15,691	16,520	17,459	18,449	19,344	20,362	17,818	16,722	15,801	15,025	14,467	13,983
75		6,178	7,231	8,747	11,065	14,986	23,881	1,288	1,329	1,387	1,460	1,534	1,618
76		48,564	49,152	49,792	50,266	50,215	50,176	3,271	3,080	2,922	2,791	2,668	2,551
77		---	---	---	---	---	---	---	---	---	---	---	---
78		5,933	3,596	2,571	1,988	1,600	1,334	660	613	576	546	516	489
79		27,849	31,223	35,621	41,394	49,218	61,136	1,218	1,169	1,132	1,103	1,067	1,034
80		3,087	2,807	2,571	2,361	2,158	1,978	488	496	509	526	542	559
81		25,737	40,375	95,488	248,435	52,587	28,857	529	567	617	682	753	842
82		1,348	1,286	1,228	1,169	1,102	1,038	2,252	2,112	1,991	1,886	1,802	1,723
83		385	375	364	352	336	322	4,313	4,244	4,196	4,168	4,178	4,201
84	MACHINE	28,905	28,532	28,125	27,572	27,011	26,452	183,885	170,327	158,748	148,807	140,346	133,489
85		1,922	1,831	1,745	1,657	1,574	1,494	28,352	25,889	23,787	21,978	20,541	19,238
86	VEHICLES	9,316	11,277	14,126	18,577	26,222	44,503	25,403	23,417	21,721	20,255	19,098	17,992
87		11,149	11,257	11,364	11,432	11,495	11,544	113,391	108,161	103,676	99,830	96,484	93,547
88		40	37	34	32	29	27	161	155	150	146	144	142
89		3,854	4,312	4,867	5,535	6,263	7,191	23,348	22,428	21,626	20,917	20,439	20,031
90		CLOCKS & MUSICAL INST.	401	377	356	335	312	291	3,052	2,820	2,623	2,455	2,324
91	82	85	88	90	92	94	761	656	574	510	461	418	
92	514	183	74	44	31	23	539	488	442	402	373	347	
93	ARMS	244	233	222	211	199	189	1,817	1,683	1,569	1,471	1,396	1,329
94	MISC. ART.	2,590	2,486	2,380	2,262	2,137	2,016	6,353	5,752	5,239	4,799	4,461	4,159
95		1,177	1,092	1,010	927	850	777	4,186	3,856	3,556	3,284	3,104	2,932
96		424	394	365	335	308	284	6,568	6,419	6,295	6,195	6,240	6,295
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

Table 7.49 Estimated Commodity Weight Traded between U.S. and China

HS-2	SECTION	IMPORT (ton)						EXPORT (ton)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	21	19	17	16	15	14	45	40	36	33	31	29
02		17,502	21,174	25,569	30,723	36,888	44,227	212,588	189,496	170,023	153,550	139,453	127,251
03		404,574	422,567	441,052	458,580	477,924	499,279	110,073	108,265	106,700	105,388	104,688	104,089
04		19,565	19,317	19,259	19,306	19,414	19,641	70,896	65,613	60,989	56,951	53,634	50,461
05		10,664	12,145	13,774	15,449	17,394	19,554	2,064	2,122	2,187	2,258	2,342	2,429
06	VEGETABLE PRODUCTS	35,092	37,584	40,433	43,585	46,861	50,324	16,470	16,690	16,936	17,171	17,489	17,861
07		459,460	464,161	470,058	475,918	483,231	491,405	238,354	247,274	257,676	269,365	283,987	299,680
08		98,814	101,826	105,076	108,405	112,259	116,302	23,786	21,936	20,372	18,985	17,895	16,877
09		135,287	140,145	145,886	152,167	159,080	166,307	11,000	10,926	10,867	10,790	10,746	10,724
10		65,510	64,189	63,547	63,199	63,280	63,467	76,294	79,210	82,322	85,637	89,171	92,952
11		1,177,904	1,276,759	1,382,023	1,489,285	1,609,233	1,742,798	147,202	143,349	139,932	136,956	135,065	133,279
12		92,160	97,368	103,302	109,781	116,177	123,100	12,518,86	12,856,25	13,244,04	13,677,88	14,172,76	14,719,871
13		14,031	14,414	14,813	15,179	15,613	16,078	4,231	4,025	3,850	3,701	3,564	3,445
14		15,502	16,217	16,996	17,810	18,505	19,244	88,485	90,650	93,107	95,792	98,376	101,227
15	FATS & OILS	27,307	28,051	28,938	29,865	30,910	32,032	154,068	144,218	135,615	127,793	120,709	114,238
16	PREPARED FOODSTUFFS	72,878	76,323	79,963	83,554	87,397	91,635	55,955	57,227	58,973	61,296	64,019	67,278
17		2,175	2,388	2,628	2,891	3,158	3,453	5,982	5,419	4,931	4,510	4,150	3,835
18		49,770	53,176	56,744	60,293	64,027	67,816	6,989	6,633	6,322	6,048	5,824	5,621
19		244,595	252,087	259,819	266,934	275,283	283,923	17,517	16,543	15,694	14,955	14,331	13,752
20		934,177	957,356	981,591	1,003,637	1,031,423	1,059,622	161,112	154,533	148,701	143,573	139,118	134,953
21		159,723	162,652	165,823	168,682	172,050	175,502	7,346	7,007	6,706	6,442	6,227	6,030
22		54,835	54,505	54,280	54,001	53,790	53,676	13,956	14,154	14,365	14,601	14,947	15,312
23		37,759	43,908	51,341	60,227	70,937	84,552	248,653	289,843	352,858	457,936	667,137	1,274,393
24		1,996	1,972	1,968	1,978	1,987	2,009	1,495	1,491	1,488	1,486	1,492	1,502
25	MINERAL PRODUCTS	4,063,763	3,946,732	3,854,906	3,774,793	3,687,737	3,610,152	4,095,274	4,219,776	4,362,627	4,527,744	4,704,382	4,895,162
26		413,744	408,977	405,716	403,153	396,747	390,043	1,262,362	1,517,862	1,851,978	2,303,004	2,938,088	3,862,820
27		1,466,355	1,503,894	1,548,316	1,596,440	1,621,189	1,645,784	4,119,334	5,016,773	6,219,047	7,870,249	9,922,437	12,812,160
28	CHEMICAL PRODUCTS	5,666,879	5,932,666	6,217,660	6,504,757	6,796,669	7,094,648	1,122,406	1,122,876	1,128,980	1,141,137	1,154,378	1,169,725
29		1,692,463	1,797,411	1,908,979	2,021,993	2,130,977	2,246,578	2,147,932	2,150,485	2,163,281	2,187,133	2,208,378	2,234,467
30		183,921	196,633	210,088	223,701	238,002	253,971	3,451	3,260	3,113	3,004	2,912	2,839
31		1,772,344	1,902,935	2,042,282	2,184,943	2,321,336	2,462,979	600,698	595,217	593,125	594,504	595,580	595,862
32		207,652	219,949	233,025	246,248	259,783	274,295	62,476	60,997	59,954	59,331	58,627	58,013
33		167,329	176,530	186,327	196,213	206,459	217,984	21,555	21,878	22,299	22,829	23,307	23,827
34		507,872	554,564	604,195	654,984	712,079	773,412	66,188	65,997	66,135	66,622	67,266	68,161
35		93,427	97,426	101,703	105,969	110,256	115,027	26,106	26,419	26,846	27,402	27,877	28,298
36		586,739	607,758	627,617	644,194	667,074	690,473	1,319	1,251	1,199	1,160	1,126	1,094
37		184,697	223,494	273,265	337,645	423,374	542,556	17,894	17,221	16,713	16,353	16,014	15,746
38		595,853	610,428	626,962	643,576	661,579	683,169	121,146	120,032	119,564	119,771	120,157	120,951
39	PLASTICS	868,798	914,304	962,832	1,011,749	1,057,034	1,108,506	655,374	663,556	674,691	689,146	703,712	719,925
40		562,577	594,323	628,109	662,227	694,149	727,576	203,955	201,532	200,242	200,091	199,478	198,659
41	LEATHER GOODS	481,127	475,114	468,451	459,792	455,713	451,196	156,301	147,410	139,641	132,870	127,489	122,568
42		495,334	496,217	496,312	494,056	496,635	500,717	2,640	2,485	2,349	2,229	2,134	2,039
43		174	167	162	157	152	149	142	133	125	119	114	111
44	WOOD PRODUCTS	2,643,296	2,750,568	2,853,725	2,943,607	3,058,613	3,173,259	769,974	912,384	1,116,138	1,428,474	1,964,105	3,078,586
45		55,936	56,401	56,799	56,957	57,440	58,149	2,044	1,966	1,900	1,844	1,793	1,751
46		114,330	116,321	118,112	119,342	121,468	123,920	1,993	2,107	2,241	2,398	2,606	2,845
47	PAPER	634,501	684,664	737,511	790,960	849,034	913,731	350,270	341,857	334,753	329,016	324,300	320,343
48		2,605,526	2,729,922	2,859,382	2,985,801	3,113,001	3,244,523	1,285,762	1,263,116	1,244,520	1,230,338	1,221,252	1,209,402
49		95,940	102,536	109,426	116,301	123,578	131,679	585	545	512	485	464	445

Table 7.49 Estimated Commodity Weight Traded between U.S. and China (cont'd)

HS-2	SECTION	IMPORT (ton)						EXPORT (ton)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	2,057	2,147	2,241	2,330	2,436	2,556	7,502	4,914	1,842	1,134	823	646
51		78,908	84,668	90,700	96,574	103,060	110,134	15,095	15,130	15,199	15,312	15,474	15,659
52		753,362	767,901	782,373	794,043	817,206	843,190	172,909	169,896	167,850	166,671	165,353	163,919
53		123,767	126,001	128,238	130,026	133,532	137,817	205,060	193,185	184,522	178,193	173,433	169,672
54		1,058,510	1,150,419	1,245,919	1,340,449	1,456,525	1,580,080	17,754	16,535	15,499	14,625	13,923	13,321
55		2,248,201	2,398,305	2,549,690	2,693,000	2,868,697	3,062,428	25,046	24,028	23,139	22,383	21,795	21,195
56		349,693	372,125	394,668	415,879	442,397	470,479	5,929	5,618	5,349	5,120	4,938	4,775
57		197,824	210,504	223,245	235,233	250,091	265,996	11,480	13,407	16,221	20,679	28,682	46,735
58		183,988	196,424	208,980	220,889	235,944	251,994	2,657	2,390	2,174	1,998	1,858	1,733
59		451,296	478,764	505,912	530,901	561,182	594,729	3,358	3,397	3,449	3,516	3,574	3,643
60		601,564	673,601	752,626	836,590	942,288	1,061,090	2,567	2,437	2,325	2,229	2,150	2,077
61		1,044,416	1,108,245	1,172,159	1,231,157	1,304,391	1,380,186	1,315	1,240	1,176	1,121	1,075	1,031
62		1,018,684	1,070,290	1,121,230	1,166,764	1,222,704	1,281,247	277	258	242	228	216	205
63	368,587	388,974	409,226	427,878	452,241	479,098	9,381	9,258	9,164	9,107	9,092	9,068	
64	FOOTWEAR	551,651	548,785	544,779	538,082	537,380	538,625	1,322	1,204	1,104	1,020	950	889
65		87,022	90,410	93,727	96,590	100,313	104,353	608	601	598	598	597	598
66		708,257	741,840	773,764	801,250	838,058	877,357	2,541	2,790	3,113	3,548	4,150	5,008
67		224,195	227,840	231,073	233,114	238,872	245,627	595	529	477	435	402	375
68	STONE & GLASS	2,911,686	3,066,557	3,223,467	3,373,000	3,537,750	3,709,824	19,458	18,216	17,197	16,376	15,693	15,074
69		1,580,969	1,729,157	1,887,988	2,052,510	2,240,330	2,440,198	7,768	7,359	7,020	6,747	6,535	6,343
70		2,100,741	2,249,785	2,403,982	2,556,173	2,729,185	2,920,466	18,091	16,933	15,982	15,215	14,583	14,017
71	PRECIOUS STONES	138,005	141,494	144,740	147,267	151,619	156,574	104	109	115	121	127	133
72	BASE METALS	5,965,990	6,577,986	7,250,600	7,974,411	8,862,352	9,898,347	756,358	760,496	769,663	785,006	796,098	808,226
73		3,794,397	3,877,400	3,956,212	4,019,188	4,120,340	4,224,145	78,657	77,725	77,217	77,229	77,211	77,287
74		282,129	297,963	314,776	331,888	349,029	366,704	233,278	228,534	224,956	222,779	221,353	220,424
75		33,336	34,201	35,215	36,296	37,587	39,051	3,784	4,067	4,405	4,812	5,248	5,728
76		556,931	600,856	646,436	691,919	744,880	804,033	131,788	136,096	141,277	147,588	153,984	160,372
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78		92,879	106,362	121,876	139,472	159,763	183,298	48,524	46,731	45,411	44,556	43,703	42,891
79		35,384	37,462	39,689	41,986	44,422	46,969	49,281	49,036	49,092	49,501	49,762	50,176
80		24,431	25,319	26,295	27,300	28,379	29,523	3,383	3,136	2,950	2,814	2,687	2,574
81		105,941	115,163	125,330	136,282	147,485	159,462	25,056	41,528	110,908	196,637	55,048	33,033
82		1,075,236	1,117,054	1,156,880	1,191,137	1,237,970	1,286,241	5,399	5,420	5,462	5,534	5,626	5,725
83	903,622	952,353	999,787	1,042,700	1,097,104	1,154,564	8,774	8,508	8,289	8,127	7,998	7,894	
84	MACHINE	5,417,731	5,701,710	5,981,324	6,236,502	6,484,039	6,736,865	284,915	271,373	259,947	250,544	242,313	235,084
85		5,456,970	5,698,538	5,933,430	6,141,291	6,349,371	6,557,313	84,577	82,245	80,341	78,789	78,229	77,853
86	VEHICLES	542,171	574,879	609,307	644,004	682,973	724,516	212,896	236,511	268,708	314,736	385,640	500,961
87		2,057,637	2,161,394	2,268,131	2,371,980	2,474,561	2,573,836	221,959	212,386	204,031	197,050	191,489	186,825
88		5,263	5,508	5,769	6,034	6,342	6,668	178	167	157	149	142	136
89		139,230	162,733	190,028	221,271	259,478	305,668	306,882	512,471	1,731,228	1,178,160	434,077	264,273
90	CLOCKS & MUSICAL INST.	496,479	522,340	547,703	570,787	601,079	635,198	7,367	7,114	6,903	6,737	6,611	6,475
91		303,461	318,380	332,988	346,210	364,793	384,444	8,702	8,361	8,073	7,843	7,671	7,520
92		840,912	872,245	901,426	925,316	963,593	1,002,810	1,061	988	925	873	831	792
93	ARMS	311,228	332,848	354,461	374,866	399,623	426,333	49,350	77,301	183,593	473,294	103,954	58,751
94	MISC. ART.	3,141,668	3,251,972	3,354,788	3,438,619	3,574,240	3,714,006	15,235	14,386	13,669	13,082	12,628	12,193
95		2,571,582	2,770,168	2,970,175	3,160,237	3,349,331	3,536,372	3,127	3,062	3,008	2,967	2,946	2,923
96		3,124,027	3,256,183	3,380,555	3,485,200	3,643,587	3,813,003	7,983	8,722	9,676	10,943	12,671	15,036
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	

Table 7.50 Estimated Commodity Weight Traded between U.S. and Japan

HS-2	SECTION	IMPORT (ton)						EXPORT (ton)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	---	---	---	---	---	---	3	2	2	2	2	2
02		39	37	36	35	33	32	134,847	118,267	103,746	91,073	81,771	73,332
03		6,519	6,277	6,049	5,811	5,576	5,353	114,377	109,051	104,091	99,482	95,665	92,235
04		753	730	708	684	662	643	39,150	36,100	33,454	31,172	29,260	27,496
05		132	123	116	109	103	97	4,850	4,737	4,632	4,534	4,456	4,388
06	VEGETABLE PRODUCTS	372	464	346	316	335	319	30,303	35,314	42,997	56,067	83,979	178,905
07		9,290	8,918	8,563	8,194	7,848	7,545	306,409	292,539	279,489	267,090	257,503	248,709
08		2,525	2,385	2,257	2,133	2,027	1,931	104,002	93,154	83,846	75,751	69,177	63,300
09		1,089	1,055	1,022	986	956	925	22,813	21,052	19,440	17,926	16,678	15,553
10		113	104	97	90	84	79	11,028,284	10,496,226	9,997,542	9,531,645	9,096,149	8,689,035
11		22,681	21,050	19,616	18,275	17,131	16,147	249,910	236,304	223,759	212,247	202,072	192,019
12		438	418	400	382	366	351	2,157,337	2,016,636	1,888,137	1,768,182	1,659,308	1,559,165
13		78	75	72	69	67	64	6,492	5,891	5,376	4,929	4,533	4,171
14		486	225	146	107	84	69	126,733	130,491	135,142	140,697	146,744	154,092
15	FATS & OILS	5,148	4,848	4,571	4,295	4,041	3,815	132,096	117,262	104,318	92,874	84,249	76,421
16	PREPARED FOODSTUFFS	2,536	2,497	2,456	2,403	2,348	2,296	55,924	49,128	43,200	38,024	34,296	31,047
17		4	4	4	4	3	3	11,326	10,644	10,042	9,512	9,022	8,582
18		1,171	1,125	1,081	1,035	994	958	9,914	9,150	8,465	7,849	7,336	6,853
19		5,810	5,698	5,582	5,442	5,299	5,160	59,206	55,105	51,393	48,032	45,278	42,702
20		17,229	17,000	16,751	16,423	16,114	15,816	223,826	208,259	194,173	181,427	170,372	160,358
21		3,025	2,978	2,929	2,866	2,799	2,728	21,332	20,525	19,770	19,066	18,451	17,848
22		20,542	20,329	20,105	19,817	19,545	19,277	760,809	736,457	713,302	691,821	674,552	656,782
23		636	617	600	580	561	544	112,501	103,700	95,707	88,322	82,227	76,652
24		431	431	430	428	425	422	16,180	15,334	14,556	13,847	13,202	12,578
25	MINERAL PRODUCTS	49,035	45,593	42,513	39,609	36,883	34,528	1,969,473	1,812,696	1,679,227	1,564,651	1,462,943	1,371,904
26		839,981	452,457	308,594	232,744	185,737	153,680	121,188	120,441	119,822	119,332	118,796	117,928
27		1,299,459	1,287,999	1,298,421	1,336,992	1,314,604	1,296,706	4,672,972	4,551,493	4,463,793	4,402,099	4,272,275	4,147,803
28	CHEMICAL PRODUCTS	994,158	936,531	881,688	826,471	776,961	729,578	465,914	468,708	473,480	480,374	487,163	495,709
29		608,308	787,023	1,125,402	668,375	558,336	627,143	1,150,628	1,202,042	1,266,283	1,346,516	1,441,092	1,552,323
30		3,261	3,108	2,955	2,794	2,659	2,528	911	869	832	800	768	739
31		180,684	180,367	179,493	177,423	176,714	176,288	283,251	261,656	243,094	227,118	212,653	199,747
32		25,550	24,988	24,358	23,582	22,959	22,328	39,109	36,851	34,867	33,128	31,356	29,769
33		12,503	12,577	12,616	12,573	12,628	12,723	14,518	13,977	13,499	13,082	12,619	12,203
34		28,751	27,636	26,489	25,226	24,169	23,152	44,272	42,781	41,468	40,328	39,182	38,089
35		2,924	2,703	2,499	2,304	2,141	1,994	35,903	34,009	32,319	30,819	29,313	27,895
36		1,770	1,558	1,379	1,219	1,095	989	2,081	2,028	1,984	1,948	1,916	1,886
37		4,916	4,534	4,185	3,850	3,570	3,323	8,426	8,256	8,116	8,003	7,865	7,752
38		24,524	23,952	23,319	22,547	21,855	21,181	85,074	83,237	81,695	80,448	79,044	77,847
39	PLASTICS	116,300	110,826	105,374	99,599	94,854	90,346	112,733	106,823	101,607	97,024	92,640	88,423
40		82,739	77,396	72,344	67,310	63,217	59,534	126,876	121,239	116,243	111,832	107,452	103,332
41	LEATHER GOODS	15	12	10	9	7	6	11,095	10,261	9,505	8,827	8,260	7,736
42		349	350	351	350	357	367	140	119	101	87	76	66
43		---	---	---	---	---	---	1	1	1	1	1	1
44	WOOD PRODUCTS	4,982	5,117	5,246	5,349	5,469	5,595	728,127	687,521	651,186	618,222	588,998	560,496
45		5	6	7	8	9	11	1,100	1,069	1,041	1,016	992	970
46		162	173	185	198	213	231	331	286	250	220	196	176
47	PAPER	16,369	16,381	16,362	16,250	16,068	15,876	41,211	38,478	36,025	33,846	31,856	30,066
48		99,060	97,724	96,239	94,258	92,378	90,796	525,426	495,057	467,450	442,696	422,123	403,697
49		586	582	577	568	558	548	201	192	183	176	169	163

Table 7.50 Estimated Commodity Weight Traded between U.S. and Japan (cont'd)

HS-2	SECTION	IMPORT (ton)						EXPORT (ton)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	20	18	17	15	14	13	5	5	4	4	3	3
51		429	425	419	411	405	400	23	18	15	12	10	8
52		4,443	4,154	3,875	3,590	3,370	3,169	13,148	11,414	9,954	8,721	7,641	6,685
53		208	189	171	155	142	130	698,142	38,137	18,995	12,371	9,030	7,013
54		5,066	4,726	4,398	4,066	3,804	3,573	2,550	2,214	1,924	1,675	1,471	1,297
55		16,932	15,932	14,949	13,925	13,112	12,348	1,947	1,666	1,429	1,228	1,067	929
56		2,064	1,962	1,859	1,747	1,657	1,569	610	516	438	373	321	277
57		882	870	856	835	824	813	536	457	392	336	291	252
58		1,373	1,340	1,302	1,255	1,217	1,183	415	365	322	284	253	224
59		2,204	2,051	1,904	1,756	1,635	1,525	890	807	734	672	616	567
60		1,552	1,493	1,430	1,360	1,307	1,255	525	447	381	326	283	245
61		329	314	299	282	267	253	353	306	267	233	205	182
62		150	170	199	241	315	470	203	180	160	143	129	116
63	2,385	2,258	2,132	2,000	1,893	1,793	1,857	1,833	1,828	1,846	1,896	1,974	
64	FOOTWEAR	43	39	34	30	27	24	223	194	170	148	131	116
65		109	104	100	95	90	86	89	82	75	70	65	60
66		1,433	1,251	1,090	943	831	734	528	457	397	347	309	277
67		8,534	3,434	2,038	1,378	1,020	789	1,188	1,156	1,128	1,107	1,105	1,109
68	STONE & GLASS	16,448	16,415	16,346	16,183	16,076	16,013	11,057	9,750	8,679	7,798	7,067	6,417
69		6,414	5,886	5,419	4,984	4,594	4,258	6,528	6,191	5,887	5,619	5,379	5,166
70		19,107	18,033	17,017	15,997	15,039	14,144	14,922	13,356	12,043	10,940	9,976	9,106
71	PRECIOUS STONES	412	423	435	446	464	487	3,971	1,383	564	346	244	186
72	BASE METALS	1,144,750	1,136,472	1,125,910	1,110,190	1,101,955	1,095,633	56,470	54,686	53,224	52,107	50,488	49,053
73		436,251	422,982	408,977	392,907	378,339	365,042	41,597	40,438	39,465	38,712	38,045	37,323
74		601,373	575,122	550,690	526,077	501,459	478,670	106,722	108,231	110,368	113,176	116,327	119,959
75		3,175	3,445	3,766	4,143	4,608	5,217	4,816	4,348	3,968	3,656	3,368	3,121
76		9,388	8,618	7,932	7,293	6,723	6,231	24,450	22,165	20,289	18,732	17,215	15,870
77		---	---	---	---	---	---	---	---	---	---	---	---
78		5,600	15,235	20,668	6,089	3,533	2,467	3,932	3,482	3,126	2,840	2,580	2,350
79		5,096	4,739	4,422	4,128	3,841	3,587	49,903	50,296	51,031	52,082	52,960	53,966
80		1,789	1,929	2,094	2,284	2,513	2,808	6,089	5,709	5,389	5,118	4,846	4,581
81		12,040	12,547	13,095	13,657	14,186	14,755	9,752	9,911	10,146	10,455	10,751	11,080
82		16,370	15,549	14,736	13,879	13,106	12,380	2,345	2,206	2,081	1,973	1,874	1,780
83		30,335	28,899	27,464	25,936	24,643	23,494	3,951	3,871	3,807	3,765	3,729	3,702
84		MACHINE	983,597	958,234	931,210	899,171	867,720	838,179	96,813	92,270	88,168	84,553	81,349
85	130,899		124,345	117,844	110,916	104,521	98,303	20,756	19,209	17,828	16,605	15,629	14,698
86	VEHICLES	375,711	377,273	378,199	377,172	376,307	375,310	241,893	240,066	238,632	237,916	240,516	244,036
87		2,894,417	2,882,796	2,866,893	2,837,484	2,810,112	2,787,691	179,406	173,142	167,261	161,928	157,136	152,911
88		2,113	1,994	1,884	1,774	1,668	1,570	452	504	579	694	902	1,327
89		51,517	49,332	47,224	45,025	42,943	41,038	60,883	56,628	52,709	49,157	46,390	43,923
90	CLOCKS & MUSICAL INST.	25,982	24,974	23,938	22,789	21,726	20,715	1,306	1,159	1,034	928	841	766
91		7,768	7,332	6,911	6,476	6,086	5,714	438	422	408	397	390	384
92		4,183	3,829	3,484	3,137	2,875	2,641	619	543	478	423	380	344
93	ARMS	14,067	13,951	13,789	13,528	13,317	13,110	186	174	164	155	148	141
94	MISC. ART.	30,607	28,390	26,278	24,168	22,345	20,675	8,239	6,994	5,991	5,179	4,545	4,009
95		3,598	3,339	3,079	2,808	2,569	2,347	6,221	5,597	5,041	4,551	4,162	3,806
96		6,398	5,860	5,336	4,808	4,410	4,052	10,817	13,596	19,666	41,948	128,809	22,957
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

Table 7.51 Estimated Commodity Weight Traded between U.S. and South Korea

HS-2	SECTION	IMPORT (ton)						EXPORT (ton)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	---	---	---	---	---	---	2	2	1	1	1	1
02		167	153	143	135	128	123	69,499	63,028	57,368	52,473	48,629	45,263
03		9,823	9,674	9,534	9,371	9,173	8,993	46,348	44,457	42,674	41,021	39,668	38,310
04		560	521	489	462	437	417	21,243	19,698	18,351	17,188	16,226	15,387
05		916	921	926	928	924	921	870	820	775	734	700	670
06	VEGETABLE PRODUCTS	338	397	466	545	629	725	4,602	4,886	5,258	5,752	6,472	7,479
07		38,871	40,781	42,710	44,574	46,343	48,109	159,698	145,781	133,588	122,759	113,364	104,898
08		12,427	12,898	13,362	13,803	14,233	14,678	33,020	29,079	25,784	22,972	20,656	18,681
09		3,690	4,019	4,379	4,757	5,066	5,408	7,523	6,655	5,890	5,208	4,691	4,221
10		726	804	893	989	1,078	1,174	3,262,563	3,070,449	2,889,895	2,721,679	2,560,382	2,407,212
11		30,506	30,114	29,725	29,243	28,744	28,248	69,458	61,890	55,559	50,235	45,861	42,085
12		952	1,015	1,084	1,155	1,215	1,282	439,363	399,544	363,385	330,199	299,753	272,183
13		272	253	238	224	210	199	1,457	1,321	1,208	1,114	1,036	966
14		11	10	9	9	8	8	75,793	82,461	90,489	100,277	111,594	125,126
15	FATS & OILS	2,411	2,411	2,400	2,370	2,369	2,366	91,657	85,221	79,485	74,272	70,028	65,982
16	PREPARED FOODSTUFFS	2,661	2,613	2,566	2,512	2,452	2,399	18,800	17,301	15,934	14,698	13,725	12,793
17		195	207	220	233	244	255	5,482	5,233	5,010	4,814	4,642	4,487
18		1,621	1,597	1,575	1,549	1,519	1,492	4,722	4,523	4,334	4,157	4,031	3,912
19		6,150	6,209	6,260	6,283	6,269	6,265	18,523	17,468	16,495	15,606	14,859	14,184
20		6,845	6,403	6,027	5,683	5,386	5,125	83,198	79,203	75,467	72,021	69,067	66,116
21		4,418	4,519	4,616	4,692	4,764	4,846	4,636	4,262	3,932	3,643	3,415	3,200
22		71,457	74,372	77,364	80,232	83,206	86,228	39,709	38,375	37,121	35,983	35,086	34,190
23		818	789	763	737	712	689	85,492	81,734	78,259	74,933	72,053	69,427
24		1,325	1,417	1,517	1,622	1,727	1,838	2,378	2,304	2,233	2,166	2,117	2,064
25	MINERAL PRODUCTS	523,096	527,586	531,470	533,180	529,870	525,177	1,076,492	1,059,693	1,046,816	1,038,281	1,022,907	1,011,269
26		5,110	4,819	4,524	4,215	3,994	3,788	105,054	103,280	101,910	100,977	99,561	98,207
27		3,776,840	3,792,240	3,817,853	3,844,100	3,824,146	3,804,851	3,184,845	3,662,419	4,273,529	5,075,805	6,050,780	7,387,899
28	CHEMICAL PRODUCTS	1,275,712	1,185,999	1,103,689	1,025,249	958,998	899,909	787,826	841,091	904,877	982,077	1,059,863	1,152,611
29		574,725	536,402	497,473	457,000	431,061	407,595	925,527	886,488	854,572	829,483	801,166	776,080
30		9,179	8,614	8,031	7,416	7,003	6,617	2,177	2,013	1,881	1,777	1,671	1,580
31		50,527	45,483	40,836	36,432	33,350	30,554	242,562	229,597	218,997	210,544	201,400	193,563
32		15,132	14,394	13,592	12,700	12,139	11,624	44,424	43,184	42,201	41,482	40,467	39,499
33		6,246	5,865	5,470	5,052	4,768	4,511	8,952	8,691	8,484	8,330	8,135	7,966
34		16,590	15,751	14,847	13,851	13,227	12,639	24,699	24,118	23,666	23,353	22,939	22,602
35		2,946	2,716	2,495	2,275	2,118	1,972	9,482	9,518	9,591	9,707	9,736	9,783
36		6,152	5,593	5,071	4,569	4,185	3,845	1,175	1,165	1,160	1,160	1,151	1,140
37		3,049	2,862	2,667	2,462	2,324	2,192	5,151	5,153	5,175	5,223	5,227	5,241
38	45,022	65,552	124,693	49,421	48,633	60,969	59,823	57,149	54,949	53,201	51,077	49,266	
39	PLASTICS	73,059	68,404	63,627	58,610	55,450	52,416	142,184	139,702	137,907	136,858	134,492	132,413
40		35,059	32,902	30,671	28,312	26,842	25,536	120,352	122,851	125,932	129,718	132,477	135,188
41	LEATHER GOODS	438	393	353	315	281	251	12,315	10,979	9,827	8,837	8,028	7,310
42		260	240	221	202	186	172	76	65	56	49	44	39
43		0	0	0	0	0	0	0	0	0	0	0	0
44	WOOD PRODUCTS	2,821	2,586	2,371	2,165	2,010	1,872	229,850	217,874	207,774	199,326	190,255	181,988
45		4	3	3	3	3	2	406	404	402	402	400	399
46		21	20	19	18	17	16	495	174	104	73	55	44
47	PAPER	7,258	6,767	6,347	5,961	5,614	5,311	73,232	72,292	71,511	70,921	70,598	70,509
48		154,968	154,849	154,481	153,370	151,479	150,095	286,263	277,660	269,961	263,243	257,919	252,825
49		2,235	2,264	2,289	2,301	2,300	2,304	624	591	562	537	516	495

Table 7.51 Estimated Commodity Weight Traded between U.S. and South Korea (cont'd)

HS-2	SECTION	IMPORT (ton)						EXPORT (ton)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	9	8	8	7	7	6	25	25	25	25	26	28
51		881	1,030	1,239	1,555	2,131	3,472	60	50	42	35	30	26
52		17,522	16,704	15,874	14,979	14,210	13,497	11,607	10,493	9,519	8,665	7,908	7,230
53		2,397	2,253	2,113	1,970	1,847	1,739	3,640	3,379	3,146	2,934	2,742	2,576
54		24,974	23,971	22,926	21,765	20,835	19,921	1,720	1,556	1,408	1,277	1,168	1,070
55		77,946	74,012	70,074	65,899	62,349	59,079	3,252	2,851	2,505	2,209	1,970	1,758
56		6,548	6,081	5,644	5,212	4,849	4,531	416	368	326	290	260	232
57		2,913	2,742	2,574	2,403	2,257	2,125	528	484	445	409	380	355
58		7,284	7,008	6,717	6,390	6,127	5,875	300	276	255	235	219	203
59		5,816	5,444	5,082	4,714	4,401	4,116	826	806	790	779	763	747
60		9,802	9,415	9,011	8,560	8,174	7,811	208	181	158	138	122	108
61		6,307	6,100	5,886	5,642	5,407	5,189	250	212	181	156	137	120
62		4,698	4,565	4,425	4,261	4,105	3,950	96	82	70	61	54	47
63	7,407	7,024	6,647	6,254	5,898	5,558	1,026	906	804	719	650	587	
64	FOOTWEAR	327	297	269	242	217	195	111	96	83	73	64	57
65		376	371	365	355	348	342	87	81	76	72	67	63
66		839	965	1,141	1,402	1,866	2,896	341	316	292	270	254	239
67		423	415	406	393	381	370	709	719	733	752	794	845
68	STONE & GLASS	21,694	21,547	21,397	21,177	20,741	20,294	15,547	14,318	13,258	12,353	11,571	10,883
69		6,036	5,874	5,724	5,567	5,386	5,211	1,943	1,782	1,644	1,528	1,429	1,338
70		25,605	24,566	23,630	22,710	21,715	20,839	11,138	10,149	9,309	8,601	8,013	7,484
71	PRECIOUS STONES	220	219	218	215	213	211	6	5	5	4	4	4
72	BASE METALS	1,054,791	1,092,904	1,132,753	1,171,701	1,198,492	1,228,967	248,304	250,485	253,653	258,190	260,316	262,317
73		634,058	678,680	727,392	778,495	827,842	882,822	16,443	14,902	13,609	12,534	11,596	10,781
74		320,805	331,366	341,854	351,257	357,998	365,693	44,476	43,045	41,806	40,789	39,753	38,659
75		2,410	2,708	3,073	3,520	4,050	4,756	745	695	653	619	583	552
76		30,183	31,991	33,925	35,893	37,652	39,544	37,551	36,653	35,933	35,412	34,692	33,909
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78		7,066	8,692	9,157	14,320	9,677	7,327	16,014	15,055	14,261	13,615	12,949	12,346
79		5,772	10,449	6,751	6,889	8,405	5,326	11,911	15,369	21,774	37,383	126,758	91,684
80		322	294	272	253	235	220	410	391	376	363	350	338
81		3,327	3,268	3,219	3,170	3,094	3,020	4,306	4,658	5,093	5,640	6,272	7,050
82		14,129	13,721	13,339	12,935	12,441	11,959	1,630	1,504	1,393	1,297	1,213	1,134
83	28,720	28,451	28,170	27,785	27,112	26,543	2,262	2,155	2,059	1,975	1,900	1,833	
84	MACHINE	461,201	464,045	466,514	467,007	466,804	466,444	77,456	72,464	68,046	64,196	60,818	57,845
85		44,964	43,347	41,844	40,279	38,888	37,608	16,844	15,633	14,571	13,643	12,845	12,134
86	VEHICLES	41,689	40,477	39,479	38,544	37,355	36,318	56,292	56,084	55,897	55,840	56,859	58,066
87		822,092	823,726	825,356	824,591	823,879	823,066	111,589	110,535	109,572	108,891	108,479	108,197
88		364	385	407	429	443	459	353	410	495	637	932	1,768
89		13,601	13,843	14,105	14,342	14,309	14,285	46,177	45,931	45,699	45,569	46,338	47,240
90	CLOCKS & MUSICAL INST.	19,843	20,682	21,522	22,283	22,747	23,182	2,739	2,572	2,425	2,296	2,186	2,082
91		13,362	12,808	12,319	11,839	11,303	10,816	684	619	564	518	481	448
92		1,220	1,147	1,075	999	935	874	286	263	242	223	210	197
93	ARMS	8,106	8,089	8,067	8,012	7,859	7,705	618	760	1,009	1,548	3,528	10,994
94	MISC. ART.	19,610	19,108	18,592	18,001	17,297	16,669	5,298	4,908	4,562	4,260	4,015	3,788
95		2,941	2,773	2,604	2,427	2,263	2,109	3,219	3,284	3,367	3,477	3,701	3,990
96		5,466	5,155	4,842	4,512	4,218	3,937	7,895	9,539	12,462	19,066	48,116	76,461
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

Table 7.52 Estimated Commodity Weight Traded between U.S. and ASEAN

HS-2	SECTION	IMPORT (ton)						EXPORT (ton)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	410	297	235	195	167	147	6	5	5	4	4	3
02		423	446	467	487	506	525	73,163	67,506	62,326	57,515	54,160	50,983
03		192,647	192,080	190,729	188,905	187,332	186,132	65,959	61,883	58,154	54,878	52,248	49,926
04		28,857	28,200	27,487	26,763	26,086	25,477	153,064	146,662	140,710	135,513	131,258	127,636
05		5,065	4,969	4,863	4,755	4,661	4,565	3,294	3,153	3,017	2,896	2,795	2,696
06	VEGETABLE PRODUCTS	40,748	40,949	40,998	41,168	41,268	41,549	5,418	5,075	4,758	4,454	4,198	3,965
07		588,615	628,887	668,617	709,917	754,297	801,665	200,234	190,401	181,108	172,421	165,034	158,164
08		86,707	85,672	84,354	83,197	82,074	81,250	58,231	53,045	48,479	44,415	41,007	37,893
09		186,985	186,962	186,035	185,575	185,465	186,207	8,505	8,555	8,603	8,643	8,726	8,813
10		254,656	246,688	238,023	229,916	224,958	219,998	2,557,054	2,458,404	2,333,021	2,195,590	2,063,476	1,936,018
11		772,259	766,586	757,847	747,321	738,235	728,888	146,533	147,036	147,388	148,025	148,946	149,757
12		42,358	41,557	40,674	40,003	39,511	39,218	1,189,951	1,134,068	1,082,116	1,033,571	988,376	945,632
13		42,531	41,782	40,999	40,307	39,428	38,557	3,103	2,973	2,849	2,738	2,634	2,533
14		471,048	473,558	475,130	477,923	478,416	479,246	33,100	17,726	24,466	24,134	31,429	20,673
15	FATS & OILS	995,936	1,016,626	1,032,202	1,047,166	1,058,580	1,073,627	113,053	105,483	98,774	92,663	87,220	82,130
16	PREPARED FOODSTUFFS	49,056	48,264	47,325	46,318	45,416	44,534	35,012	35,245	35,534	35,930	36,761	37,650
17		153,412	157,131	160,090	163,065	165,330	168,293	58,237	58,355	58,464	58,715	59,261	59,691
18		43,718	43,011	42,176	41,310	40,656	40,055	5,546	5,330	5,119	4,929	4,783	4,654
19		158,842	157,996	156,486	154,580	153,232	151,805	22,121	21,078	20,088	19,202	18,431	17,752
20		993,219	987,489	977,646	965,362	957,353	951,824	117,073	113,524	109,998	106,810	104,180	101,833
21		172,807	171,250	169,033	166,443	164,392	162,684	8,888	8,346	7,854	7,424	7,081	6,753
22		99,336	98,446	97,346	96,023	94,702	93,440	28,051	29,763	31,583	33,673	36,269	39,249
23		209,045	208,414	207,129	206,032	204,240	202,280	138,676	130,343	122,853	115,952	109,742	103,912
24		17,401	17,838	18,182	18,533	18,845	19,135	2,109	2,113	2,111	2,112	2,116	2,123
25	MINERAL PRODUCTS	434,295	419,368	404,050	389,220	377,414	366,264	346,989	349,348	350,319	352,652	354,617	356,572
26		6,636	7,002	7,352	7,702	8,049	8,395	9,809	9,224	8,709	8,312	7,997	7,730
27		6,628,973	6,882,298	7,120,912	7,403,680	7,545,275	7,693,231	3,167,056	3,197,803	3,232,811	3,293,882	3,307,077	3,326,823
28	CHEMICAL PRODUCTS	1,104,413	1,061,315	1,020,070	982,821	947,341	918,795	3,053,906	3,030,684	3,005,979	2,995,764	2,968,404	2,937,383
29		361,668	386,863	411,269	435,999	461,991	489,737	780,312	773,252	765,504	760,975	756,272	750,267
30		7,314	27,438	17,833	7,012	4,472	3,344	8,696	8,605	8,507	8,445	8,357	8,279
31		564,228	610,145	656,152	704,151	756,742	814,896	186,842	171,972	159,224	148,905	140,216	132,965
32		29,148	29,668	30,018	30,293	30,510	30,830	42,334	40,601	38,973	37,630	36,268	35,078
33		20,645	20,599	20,460	20,294	20,131	20,025	12,873	12,421	11,990	11,637	11,278	10,958
34		80,767	82,284	83,274	84,010	84,617	85,140	32,651	31,503	30,404	29,501	28,707	27,989
35		70,865	71,081	70,948	70,652	70,347	70,150	22,297	21,584	20,897	20,323	19,795	19,264
36		4,771	4,245	3,791	3,404	3,103	2,849	368	342	318	299	283	267
37		27,140	27,600	27,902	28,135	28,266	28,437	16,084	18,492	21,688	26,286	33,292	45,052
38		431,724	436,245	438,315	439,349	439,681	440,584	113,828	110,777	107,770	105,353	103,104	101,001
39	PLASTICS	362,764	366,676	368,580	369,658	371,130	372,875	206,385	201,131	195,958	191,837	188,350	185,245
40		269,569	271,525	272,386	273,172	272,443	271,747	159,918	162,186	164,317	167,144	170,393	173,983
41	LEATHER GOODS	17,910	16,300	14,731	13,274	12,041	10,947	10,815	9,909	9,076	8,345	7,766	7,237
42		23,232	21,902	20,494	19,094	17,942	16,912	235	216	198	182	169	158
43		284	274	264	254	246	238	275	886	711	252	154	111
44	WOOD PRODUCTS	721,064	733,832	744,031	754,094	758,731	765,504	76,891	74,645	72,395	70,314	68,404	66,389
45		41,161	42,263	43,236	44,245	44,932	45,639	209	186	167	151	138	126
46		12,762	13,072	13,309	13,474	13,713	13,959	159	146	135	124	116	110
47	PAPER	20,167	19,239	18,353	17,538	16,839	16,212	77,171	73,860	70,693	68,011	65,620	63,440
48		425,088	436,540	445,268	452,303	460,783	469,428	625,835	616,988	607,251	599,821	595,702	593,178
49		5,247	5,252	5,228	5,189	5,167	5,150	2,196	2,189	2,179	2,176	2,174	2,176

Table 7.52 Estimated Commodity Weight Traded between U.S. and ASEAN (cont'd)

HS-2	SECTION	IMPORT (ton)						EXPORT (ton)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	24	25	27	28	30	32	84	478	110	46	28	20
51		41,946	46,730	52,117	58,531	67,436	79,630	583	535	490	449	416	385
52		125,717	119,997	113,765	107,439	102,999	99,228	55,251	52,677	50,110	47,836	45,603	43,577
53		45,658	47,495	48,974	50,220	52,035	54,045	102,208	130,157	175,028	262,332	504,045	4,786,234
54		176,081	174,714	171,731	167,745	165,415	162,829	3,790	3,475	3,173	2,901	2,678	2,466
55		327,991	323,560	316,264	307,268	302,482	297,759	5,724	5,119	4,568	4,089	3,713	3,368
56		65,933	65,007	63,508	61,671	60,624	59,618	1,896	1,767	1,640	1,523	1,432	1,346
57		27,612	27,232	26,611	25,848	25,456	25,137	1,110	1,006	909	823	754	691
58		25,719	25,676	25,389	24,944	24,717	24,495	511	478	445	415	392	370
59		61,576	60,373	58,641	56,625	55,223	54,011	1,273	1,213	1,154	1,104	1,061	1,019
60		51,727	49,889	47,746	45,479	43,895	42,384	668	611	557	509	469	433
61		296,612	291,896	284,881	276,348	271,211	266,814	357	328	300	275	254	236
62		265,327	258,225	249,400	239,554	232,187	225,266	156	148	140	133	128	123
63	75,994	75,915	75,115	73,853	73,295	72,767	27,682	26,676	25,619	24,669	24,068	23,427	
64	FOOTWEAR	22,544	20,889	19,184	17,538	16,201	14,951	109	96	84	74	67	60
65		24,146	23,615	22,917	22,118	21,543	20,975	461	446	431	419	408	397
66		54,364	55,034	55,061	54,652	55,294	55,854	1,772	1,685	1,596	1,516	1,463	1,415
67		9,306	8,812	8,255	7,681	7,267	6,871	1,817	1,945	2,097	2,296	2,593	3,000
68	STONE & GLASS	148,367	146,433	143,731	140,672	138,366	135,934	16,130	15,085	14,145	13,358	12,700	12,131
69		60,351	58,225	55,993	53,797	52,089	50,465	5,655	5,645	5,631	5,641	5,643	5,655
70		124,273	125,581	125,994	125,855	126,153	126,700	37,748	39,119	40,597	42,404	44,449	46,731
71	PRECIOUS STONES	637	594	549	506	474	444	10	9	9	8	8	7
72	BASE METALS	271,029	262,012	253,102	244,947	237,591	231,188	566,026	570,008	572,706	578,679	583,770	588,335
73		525,854	578,205	633,616	694,980	769,960	858,442	47,595	44,722	42,054	39,820	37,995	36,341
74		29,370	30,284	31,046	31,770	32,462	33,224	31,941	31,522	31,042	30,712	30,646	30,516
75		2,263	2,280	2,283	2,288	2,283	2,276	832	831	829	831	832	832
76		40,488	42,710	44,713	46,685	48,703	50,937	20,759	19,611	18,560	17,708	16,987	16,298
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78		14,025	61,954	29,036	12,307	8,002	6,043	9,919	9,276	8,707	8,255	7,841	7,456
79		6,195	6,333	6,432	6,530	6,600	6,680	12,012	12,116	12,205	12,363	12,511	12,689
80		1,038	1,021	1,001	983	965	949	3,957	3,856	3,757	3,683	3,612	3,552
81		2,553	2,474	2,398	2,336	2,276	2,227	2,929	3,404	4,042	4,981	6,449	9,040
82		29,715	28,848	27,821	26,741	25,906	25,111	3,091	2,816	2,577	2,380	2,210	2,053
83		27,662	27,337	26,799	26,150	25,751	25,337	9,436	9,174	8,914	8,707	8,550	8,403
84	MACHINE	248,128	247,452	244,892	241,290	237,711	234,236	249,655	239,335	228,888	219,742	211,107	203,159
85		390,149	389,375	385,585	379,917	373,050	365,680	26,983	25,607	24,254	23,054	22,252	21,482
86	VEHICLES	12,226	11,707	11,221	10,816	10,506	10,285	289,578	370,748	523,758	933,139	5,364,097	1,419,385
87		71,100	72,476	73,437	74,208	74,690	75,020	239,063	228,418	217,684	208,269	198,883	190,667
88		146	140	135	130	126	123	265	252	240	229	223	218
89		14,590	20,834	33,357	72,729	1,063,520	70,306	576,424	4,879,961	710,993	322,501	209,242	154,514
90	CLOCKS & MUSICAL INST.	10,964	10,719	10,420	10,106	9,857	9,655	5,832	5,606	5,375	5,175	5,051	4,927
91		3,435	3,475	3,486	3,481	3,498	3,509	1,582	1,436	1,305	1,196	1,117	1,047
92		46,728	44,528	41,964	39,257	37,408	35,740	1,107	1,009	920	843	783	728
93	ARMS	12,472	12,563	12,550	12,481	12,474	12,490	809	715	635	571	523	482
94	MISC. ART.	287,435	278,989	267,860	255,372	247,190	239,881	25,762	25,088	24,359	23,726	23,484	23,238
95		90,240	84,151	77,755	71,436	65,644	60,192	6,959	6,896	6,813	6,745	6,789	6,858
96		236,090	229,918	221,208	211,060	204,657	198,173	14,162	8,575	9,090	8,865	8,802	8,862
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

Table 7.53 Estimated Commodity Weight Traded between U.S. and EU-27

HS-2	SECTION	IMPORT (ton)						EXPORT (ton)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	21	21	21	21	21	21	10	10	9	8	8	7
02		41,977	41,886	41,585	40,907	40,792	40,724	16,037	14,363	13,033	11,984	10,923	10,016
03		37,033	35,663	34,345	32,960	31,775	30,746	126,463	124,501	122,885	121,706	119,256	116,626
04		137,285	136,833	136,073	134,605	133,633	132,383	14,026	13,349	12,767	12,284	11,661	11,109
05		2,334	2,424	2,517	2,605	2,696	2,795	2,506	2,327	2,174	2,045	1,907	1,782
06	VEGETABLE PRODUCTS	24,783	25,077	25,403	25,675	25,994	26,402	35,408	36,631	38,002	39,479	40,648	41,976
07		208,087	224,070	242,365	262,887	288,434	318,788	552,138	538,201	524,836	512,001	501,380	490,613
08		118,672	113,969	109,643	105,467	101,516	97,623	163,314	149,041	136,620	125,704	116,221	107,924
09		55,456	53,311	51,307	49,256	47,571	46,103	51,361	48,631	46,224	44,024	41,608	39,499
10		76,003	80,495	85,923	92,205	99,960	109,178	3,187,721	3,113,137	3,043,288	2,976,848	2,914,470	2,855,562
11		831,594	848,203	863,727	875,576	887,621	899,020	137,378	124,422	113,795	105,095	96,534	88,878
12		37,702	38,142	38,622	38,997	39,500	40,102	1,884,224	1,808,106	1,740,901	1,679,484	1,624,176	1,573,658
13		7,702	7,549	7,388	7,197	7,025	6,866	3,941	3,707	3,505	3,333	3,134	2,955
14		23,966	13,839	9,760	7,531	6,118	5,143	71,920	70,069	68,489	67,214	65,376	63,689
15	FATS & OILS	219,850	218,958	218,074	215,996	214,678	213,015	114,089	107,648	102,214	97,644	92,012	86,638
16	PREPARED FOODSTUFFS	48,583	47,747	46,809	45,605	44,680	43,724	13,055	12,708	12,414	12,182	11,825	11,499
17		38,109	38,311	38,418	38,314	38,330	38,383	45,493	42,141	39,340	37,039	34,405	32,044
18		22,375	21,564	20,776	19,936	19,275	18,666	15,068	14,519	14,037	13,624	13,054	12,536
19		84,444	83,128	81,693	79,862	78,243	76,695	34,280	32,425	30,818	29,457	27,877	26,399
20		371,724	370,642	368,806	364,945	362,666	360,810	218,952	219,782	221,350	223,909	224,039	224,491
21		60,547	58,365	56,240	53,980	52,168	50,448	11,437	10,667	10,009	9,456	8,864	8,327
22		2,500,567	2,448,332	2,396,007	2,337,599	2,278,052	2,219,372	324,412	314,726	306,078	298,698	289,452	281,093
23		55,895	58,905	62,310	65,827	70,078	75,167	131,139	122,792	115,695	109,644	102,513	96,266
24		242,144	230,773	220,350	210,184	201,283	192,886	34,257	33,397	32,630	31,975	31,103	30,204
25	MINERAL PRODUCTS	10,590,171	10,666,960	10,743,181	10,797,244	10,847,562	10,883,205	4,290,348	4,076,166	3,893,202	3,738,918	3,556,381	3,388,483
26		2,439,360	2,781,612	3,225,561	3,815,725	4,609,000	5,796,496	431,733	427,849	425,064	423,548	418,865	414,713
27		30,136,519	29,865,745	29,680,586	29,472,471	28,925,299	28,469,546	17,846,494	17,232,206	16,795,554	16,524,462	15,841,001	15,252,930
28	CHEMICAL PRODUCTS	12,268,911	7,462,472	7,998,420	8,937,903	9,117,439	9,041,317	7,285,483	7,820,066	8,496,005	9,365,939	10,228,106	11,328,495
29		1,219,706	1,209,276	1,195,716	1,175,224	1,165,025	1,153,693	2,662,512	2,548,457	2,454,356	2,381,088	2,271,336	2,172,757
30		5,276	5,216	5,144	5,042	4,970	4,900	3,872	3,547	3,285	3,075	2,848	2,642
31		3,306,054	3,267,128	3,220,386	3,155,724	3,102,785	3,051,299	1,753,812	1,629,981	1,528,202	1,446,497	1,350,436	1,266,166
32		255,389	250,287	244,724	237,941	232,577	226,787	288,553	277,443	268,337	261,373	250,742	240,034
33		47,615	47,076	46,421	45,504	44,890	44,264	57,584	54,940	52,753	51,035	48,462	45,937
34		226,678	222,980	218,782	213,405	209,887	205,914	154,561	148,488	143,495	139,653	134,059	129,015
35		66,224	64,674	63,034	61,110	59,573	57,951	56,487	53,811	51,589	49,831	47,526	45,300
36		7,689	7,024	6,429	5,873	5,421	5,016	3,267	2,965	2,718	2,519	2,313	2,133
37		121,036	119,808	118,279	116,073	114,814	113,376	39,986	37,996	36,346	35,040	33,247	31,511
38		610,710	607,585	602,715	594,173	588,621	581,696	401,700	371,220	346,288	326,325	304,154	283,764
39	PLASTICS	853,842	834,920	814,631	790,445	770,962	753,794	733,507	706,442	684,339	667,580	639,305	613,812
40		513,836	493,275	473,081	451,713	435,295	419,018	575,546	556,298	540,715	529,152	510,806	492,333
41	LEATHER GOODS	11,733	10,304	9,016	7,833	6,942	6,156	17,444	15,926	14,602	13,452	12,381	11,438
42		757	658	570	492	434	385	1,400	1,279	1,170	1,075	987	907
43		17	17	17	17	17	17	58	52	46	42	38	35
44	WOOD PRODUCTS	566,812	547,214	527,225	505,210	488,311	473,037	3,248,431	11,943,947	6,657,288	2,560,795	1,550,160	1,096,513
45		3,853	4,077	4,312	4,545	4,844	5,178	1,023	944	878	822	763	707
46		4,378	4,285	4,180	4,052	3,965	3,875	4,166	3,919	3,708	3,535	3,323	3,124
47	PAPER	141,672	137,469	133,094	128,139	124,464	121,047	268,072	260,527	254,435	250,115	247,012	244,573
48		1,406,937	1,396,814	1,382,178	1,358,699	1,345,064	1,331,484	2,722,099	2,645,419	2,583,507	2,539,587	2,460,220	2,378,177
49		6,980	6,994	6,984	6,927	6,926	6,917	5,313	5,015	4,765	4,563	4,306	4,063

Table 7.53 Estimated Commodity Weight Traded between U.S. and EU-27 (cont'd)

HS-2	SECTION	IMPORT (ton)						EXPORT (ton)					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	38	35	32	29	27	25	144	129	116	105	95	87
51		2,763	2,607	2,448	2,278	2,166	2,059	5,978	5,461	5,013	4,625	4,237	3,899
52		15,781	14,655	13,556	12,441	11,602	10,818	32,679	29,209	26,296	23,856	21,518	19,454
53		7,920	8,149	8,374	8,569	8,982	9,483	26,440	28,414	30,928	34,188	38,018	43,327
54		33,983	33,175	32,213	30,992	30,310	29,624	14,315	13,475	12,723	12,064	11,400	10,805
55		74,242	69,772	65,260	60,516	57,333	54,362	32,683	30,132	27,894	25,955	24,079	22,310
56		18,408	17,611	16,758	15,800	15,198	14,661	3,387	3,049	2,762	2,520	2,294	2,097
57		13,869	13,513	13,096	12,574	12,294	12,002	3,299	3,084	2,892	2,724	2,543	2,370
58		2,092	1,955	1,819	1,678	1,582	1,490	2,195	2,009	1,847	1,707	1,573	1,450
59		21,619	20,705	19,755	18,713	17,998	17,370	8,300	7,674	7,146	6,707	6,207	5,773
60		11,867	11,379	10,853	10,256	9,838	9,432	2,630	2,461	2,311	2,179	2,046	1,926
61		4,704	4,458	4,204	3,926	3,723	3,538	2,780	2,564	2,373	2,205	2,042	1,887
62		1,333	1,222	1,117	1,013	937	868	846	781	724	674	623	577
63	13,886	13,076	12,258	11,398	10,775	10,179	15,789	15,625	15,536	15,544	15,390	15,285	
64	2,792	2,474	2,182	1,908	1,697	1,506	950	843	751	672	604	543	
65	FOOTWEAR	1,216	1,177	1,136	1,088	1,053	1,016	858	819	786	759	723	689
66		20,878	19,782	18,600	17,288	16,444	15,628	5,663	5,149	4,696	4,302	3,923	3,588
67		1,544	1,450	1,352	1,247	1,178	1,113	2,297	2,029	1,803	1,613	1,448	1,302
68	STONE & GLASS	617,939	586,355	555,664	524,167	500,124	478,227	53,371	49,162	45,716	42,959	39,698	36,821
69		489,152	475,140	460,170	442,974	429,589	417,842	15,276	14,206	13,323	12,614	11,737	10,951
70		318,652	313,951	308,246	300,662	296,260	292,677	55,552	51,504	48,169	45,491	42,403	39,696
71	PRECIOUS STONES	1,116	1,172	1,235	1,300	1,383	1,481	377	359	343	330	314	299
72	BASE METALS	4,238,284	4,328,246	4,416,068	4,491,085	4,576,227	4,676,082	543,319	506,635	476,749	453,208	424,012	396,921
73		1,430,642	1,414,464	1,393,499	1,364,006	1,348,997	1,332,059	172,576	157,820	145,685	135,938	124,941	115,277
74		893,399	893,821	892,058	885,719	883,240	882,119	442,493	431,247	422,445	416,644	404,572	392,676
75		31,182	33,472	36,050	38,880	42,130	45,897	9,014	9,227	9,513	9,894	10,105	10,316
76		229,625	233,935	238,049	241,332	245,475	249,346	62,782	60,064	57,852	56,187	53,830	51,611
77		---	---	---	---	---	---	---	---	---	---	---	---
78		101,278	102,770	104,241	105,430	106,886	108,486	186,814	195,436	206,342	220,278	231,385	244,596
79		109,244	113,066	117,036	120,866	125,105	129,678	80,696	81,621	83,093	85,271	85,863	86,535
80		11,925	11,477	11,066	10,660	10,290	9,971	33,485	33,935	34,618	35,603	35,958	36,268
81		93,860	96,277	98,756	101,056	103,113	104,934	21,310	21,056	20,932	20,966	20,581	20,251
82		36,093	34,599	33,046	31,343	30,068	28,803	15,962	15,049	14,274	13,645	12,866	12,154
83	80,815	78,784	76,468	73,659	71,971	70,147	34,309	33,756	33,387	33,259	32,718	32,097	
84	MACHINE	1,549,321	1,510,564	1,465,702	1,410,681	1,355,955	1,301,518	656,548	621,712	592,298	568,770	549,791	534,204
85		368,359	353,128	336,993	318,963	301,352	283,888	124,762	118,815	113,720	109,574	104,617	99,992
86	VEHICLES	358,925	334,349	311,929	290,415	274,130	259,447	315,174	290,032	268,978	251,774	234,148	217,861
87		2,359,745	2,368,611	2,370,122	2,357,737	2,333,069	2,304,545	842,637	803,582	770,488	744,052	722,865	706,605
88		2,830	2,780	2,722	2,648	2,607	2,568	2,016	1,926	1,850	1,788	1,713	1,636
89		156,390	152,755	148,709	143,874	140,431	137,297	239,984	221,873	206,622	194,126	180,641	168,278
90	CLOCKS & MUSICAL INST.	27,771	26,437	25,062	23,578	22,599	21,681	19,925	18,891	18,023	17,337	16,407	15,572
91		5,553	5,166	4,797	4,429	4,182	3,959	2,831	2,485	2,214	2,004	1,799	1,620
92		6,971	6,581	6,166	5,711	5,414	5,121	4,280	3,972	3,693	3,446	3,216	2,996
93	ARMS	22,099	21,209	20,260	19,197	18,520	17,843	7,147	6,602	6,149	5,783	5,380	5,020
94	MISC. ART.	292,732	291,570	288,870	283,686	284,730	286,366	61,481	58,606	56,103	54,032	51,445	48,986
95		57,592	52,705	47,927	43,136	39,032	35,390	31,008	28,621	26,478	24,584	22,794	21,097
96		90,523	88,973	86,896	84,012	83,223	82,583	48,604	50,071	52,125	55,010	58,821	64,063
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

7.4.2 Commodity Weight-to-Container Conversion

As discussed in Chapter 6, the second step in Module III is to convert commodity weight into number of containers.

In this Chapter, estimates of the weight-container conversion factors were derived using annual total TEU throughput and tonnages reported in the Containerisation International (CI) database (CI, 2013) over the past five years. Detailed weight-container conversion factors were discussed in Chapter 6 and were listed in Table 6.18. It can be observed from the table that different ports have their own conversion number.

To simplify the conversion procedures for weight-to-container conversion, conversion factor per country or region will be calculated by taking the average value of the conversion factors of the ports where they located in the country or region. Table 7.54 shows the conversion factor per country or region applied in this study.

Table 7.54 Weight-Container Ratio (Tons/TEU)

Country/Region	Weight-Container Ratio (Tons/TEU)
Australia	12
China	10.7
Japan	11.7
Korea	16.4
USA	20.4
ASEAN	9.6
EU27	10.3

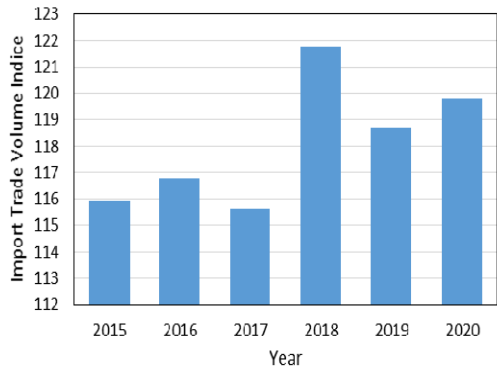
After applying the weight-container conversion factor to the predicted maritime trade flow (from Section 7.4.1), the quantity of container trade flow between countries were forecasted. In this Section, a container trade volume index of 100 represents the country's container volume handled in 2011 and serves as a benchmark for examining the growth in container volume. The

container trade volume index C_t at the year t is calculated using Equation (7.1) as defined below:

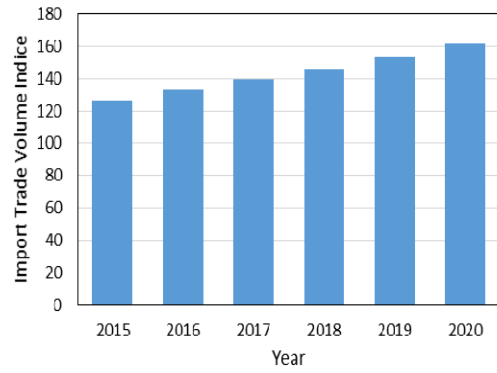
$$C_t = \frac{V_t}{V_{2011}} \times 100 \quad (7.1)$$

where V_t refers to the volume of commodity traded (in tonnage) along a trade route at year t and V_{2011} refers to the volume of commodity traded (in tonnage) along a trade route at 2011.

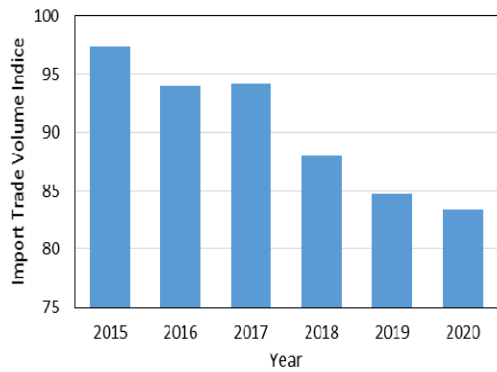
Figure 7.1 and 7.2 show the import and export container trade volume indice between the United States and her trading partners. It could be observed from the figures that the trend in container trade flow is slightly different from that of total trade flow. US imports from China in the form of container trade is not rising as high as observed in total trade. It could also be noticed that the US imports from Australia fluctuates over time, perhaps due to the commodity value-weight ratios which is predicted to fluctuate also, thus leading to this up and down changes in container flow prediction.



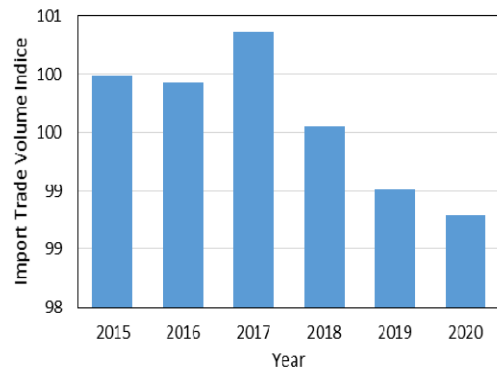
(a) US Import Container Trade from Australia



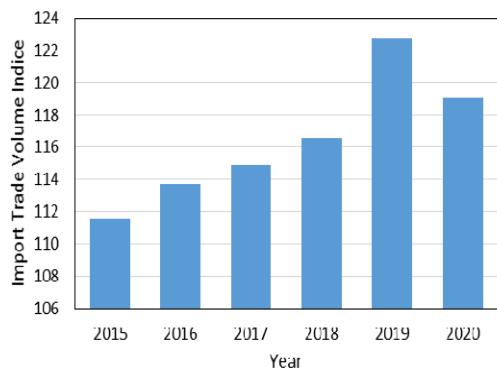
(b) US Import Container Trade from China



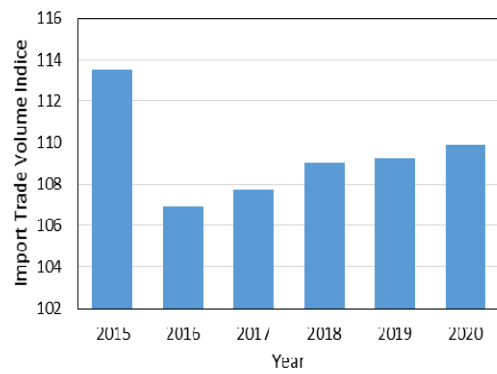
(c) US Import Container Trade from Japan



(d) US Import Container Trade from South Korea

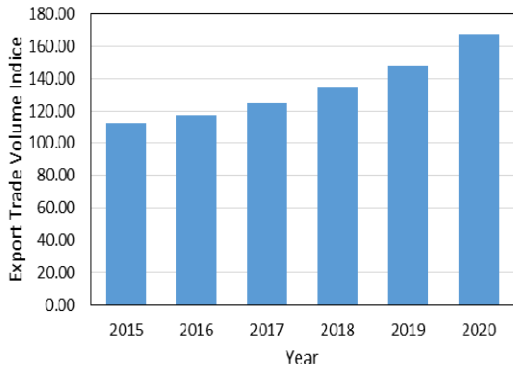


(e) US Import Container Trade from ASEAN

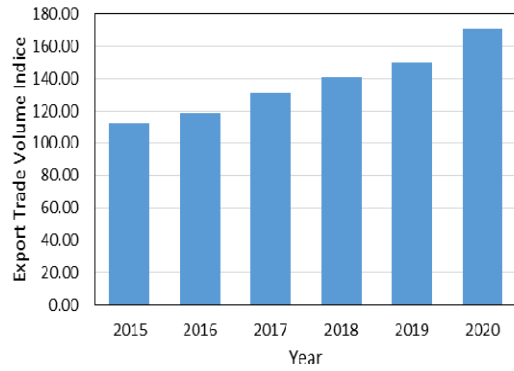


(f) US Import Container Trade from EU-27

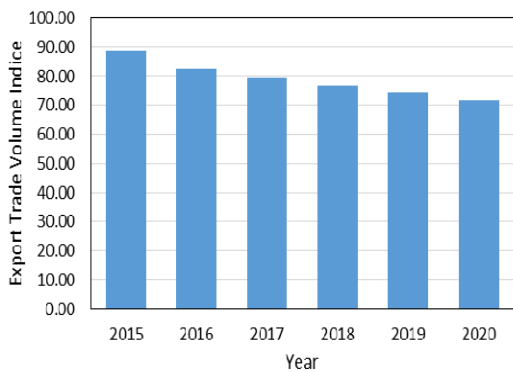
Figure 7.1 U.S. Import Container Trade Volume Index for Each Region



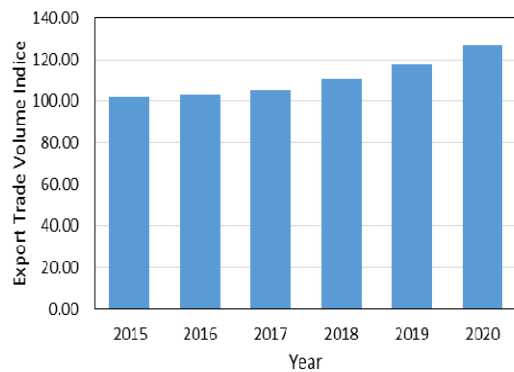
(a) US Export Container Trade to Australia



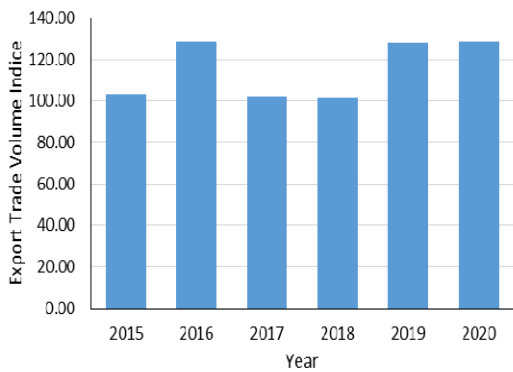
(b) US Export Container Trade to China



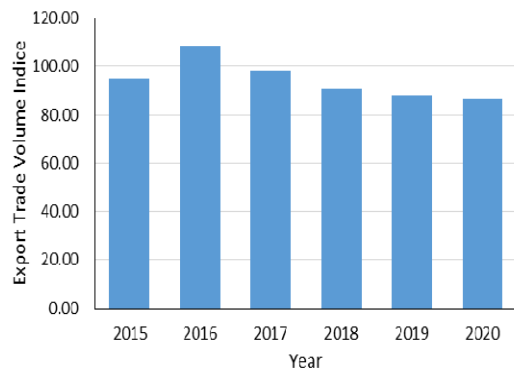
(c) US Export Container Trade to Japan



(d) US Export Container Trade to South Korea



(e) US Export Container Trade to ASEAN



(f) US Export Container Trade to EU-27

Figure 7.2 U.S. Export Container Trade Volume Index for Each Region

7.5 Summary of Findings

In this chapter, an implementation of the entire framework on forecasting container trade demand over major trade routes was presented. The trade forecasting module was used to derive the amount of total trade flow between countries. Then the transport mode choice models developed in the second module is applied to extract the amount of seaborne trade between countries from the first module. Lastly, container trade flow between countries and regions are estimated through the two-step commodity value-weight-container conversion process. In this chapter, all commodity trade between the U.S. and her trading partners are discussed in depth to show the application of the entire framework.

Annual growth rates for each commodity group at HS 2-digit classification and section between US and her trading partners were predicted under different case scenarios in the first module (as described in Chapter 4). It could be observed that within the same broad section, each commodity group has different growth rates. It may be due to the fact that under a broad commodity classification with similar nature in products, commodity differentiation still exists inside the same group. Besides, interesting observations can be spotted that when the import growth rate is negative (i.e. contraction in its imports), the export growth rate is also negative but with steeper rate. It may be explained by assuming the domestic consumption remains unchanged, consumptions of goods shift from imported goods to domestic products and at the same time the amount of exported goods decreases to maintain the domestic consumption. On the other hand, it could also be observed in the predicted results that even the import growth rate is positive (i.e.

an expansion in import), the export growth rate still remains negative or less than the growth rate in imports. It could be explained due to growing in the consumption of that commodity, more imports are required to cover the domestic needs of the country and less products are available to be exported. Furthermore, when comparing same commodity group but across different trading partners, it could be observed that various rate of changes could be observed. It could be explained that for imported commodities, they are origin-specific, meaning that goods from different origins have different competitive advantages, thus resulting in various annual rates of change in imports from these countries.

From the results estimated in the Module II (i.e. freight mode choice module as described in Chapter 5), it can be observed that the probability of commodities carried by sea differentiates across commodity groups. It shows that some commodity groups (usually those of higher values and lighter weights) are carried by other transport mode while commodity groups with lower values and higher weights are usually carried by sea. Besides, the probabilities of shipping for commodity groups within same HS category can vary between trade flows directions (i.e. import and export) for the same country-pair. This may be due to the broad classification of commodity group at HS 2-digit which includes both low-value raw materials (i.e. usually transported in sea) and high-value final products (i.e. transported by other modes). Furthermore, the probabilities of transporting commodity groups within same HS category but between different country pairs also vary, meaning that goods under same category may be carried by different transport means based on their trading routes.

In the last module for commodity value-weight-container conversion, the conversion model is divided into two stages: (1) value-to-weight transformation, and (2) weight-to-container conversion, as described in Chapter 6. In the first stage, ARMAX models are employed to predict value-weight ratio of various commodities transported by sea between different country pairs. As observed, within the same commodity type, same trade flow direction and same transport mode, value-weight ratio appeared to have a wide range of value across regions. Besides, it can be also noted that commodity value-weight ratio is dependent on trade flow direction between same country pair (i.e. import and export). From this observation on the commodity value-weight conversion results, it should be noted that the developed model for value-to-weight conversion has fully taken spatial effects (i.e. trading partners), trade direction (i.e. imports and exports), and transport means (i.e. by which type of transport) into consideration. On the other hand, commodity value-weight ratio are mostly increasing steadily per annum. This results reflects that the goods are increasing their unit value over time. In the second stage, i.e. weight-to-container conversion, the estimates of the weight-container conversion factors are derived using historical data. After applying this conversion factor to the predicted maritime trade flow (in terms of tonnages), the quantity of container trade flow between countries can be forecasted. It could be observed that the trend of container trade flow is slightly different from the trend of total trade flow.

CHAPTER 8 CONCLUSION AND RECOMMENDATIONS

This chapter presents the major conclusions drawn from the thesis and provides recommendations for future research.

8.1 Summary of Findings

A modelling framework for global maritime container demand forecasting is developed using both economic and transportation theories. With the trade demand model developed for predicting monetary trade between countries in the economy-wide context, trade flow between countries could be simulated under various scenarios such as GDP growth, population growth and labour force growth. Discrete choice models were employed to determine the share of seaborne trade flow carried by container. Lastly, a transfer process to convert trade value to volume of container was derived. Summary of major findings are presented in the following.

8.1.1 Global Trade Demand Modelling

A trade forecasting model based on the GTAP model had been developed and was validated in this study. The proposed model takes into account the economic relationships among various parties within an economy as well as the inter-relationships among various economy bodies to simulate the impact of commodity production and consumption under the changes in socio-economic environment. There are in total seven major countries and regions considered in this studies, aiming to cover all the major international trade routes in the globe.

A data conversion algorithm was developed to match the GTAP-format trade data to the comprehensive UN Comtrade data in HS classification, with the capability to match international trade data provided by international trade organisations. After calibrating the international trade data in the GTAP

database, the GTAP model was calibrated and validated using published socio-economic data and trade data from 2007 to 2014. The simulated trade value from the model was compared against actual reported trade value from UN Comtrade (United Nations, 2015) and was deemed to be capable in providing a reliable forecast in trade growth. Three case scenarios have been analysed for the prediction horizon from 2015 to 2020 (a median growth case with central estimate for various factors, a high growth case with high projection for various factors, and a low growth case with low projection for various factors). These three scenarios provide the upper and lower bound for trade prediction among the studied regions. It was shown from the study that China remains as the dominant pillar in international trade while the ASEAN region has a growing share in international trade. Due to unfavourable forecast in the socio-economic factors, U.S. and EU-27 may have a risk of deteriorating market share in international trade.

8.1.2 Freight Mode Choice Modelling

In the second module of the entire framework, discrete choice models were employed to determine the amount of commodities carried by maritime transport from the total trade flow (as predicted in Module I) between countries and regions.

Before developing appropriate freight mode choice models, an analysis was first made to understand the impact on mode choice model development under various levels of commodity data classification and their corresponding model effectivenesses. Eighteen mode choice models were developed for six trading routes at three levels of commodity data classification. It was found that commodity of higher value has a higher tendency to be transported by air. It was

also observed from the developed models that there is no significant improvement when using models developed from data of finer commodity classification (for example, HS 6-digit level) instead of that developed from data of broader commodity classification (for example, HS 2-digit level).

Two types of discrete choice models, i.e. the binary probit model, and the binary logit model, were developed to investigate mode choice of inter-continental trade in terms of sea or air transport. The developed models were applied to examine the transport mode share between sea and air for bilateral trade between the United States and other trading partners. Twelve models were developed and it was again found that the higher the commodity value, the higher the tendency to be transported by air. The models demonstrated a good fit to actual data and upon comparing model effectivenesses, the binary probit model was adopted to determine the mode choice behaviour of commodity in this study.

8.1.3 Commodity Value-to-Weight-to-Container Conversion Process

The conversion process consists of two stages: (1) value-to-weight transformation, and (2) weight-to-container conversion. Before developing the conversion model, a comprehensive study on the commodity value-weight characteristics using U.S. trade data was first performed and it was revealed that the international commodity trade between U.S. and her foreign trading partners were growing annually with the exception in the year after the global financial crisis. Besides, the share of the commodity value over the total trade does not necessarily be the same as that of the commodity weight, implying that both monetary value and physical quantity of traded commodity group are of same importance to fully represent the international trade flow. By analysing the

value-weight ratios in USA imports and exports by various transports, several interesting facts could be observed: (1) within the same commodity type, trade flow direction and transport mode, value-weight ratio appeared to have a wide range of value across regions, thus meaning that spatial effects has to be taken into account as different regions may have a unique ratio for conversion; (2) commodity value-weight ratio is dependent on trade flow direction (i.e. import and export), meaning that commodity value-weight ratio is also trade-direction specific; (3) commodity value-weight ratio is dependent on the transport mode, thus this ratio is also transport-mode specific.

After analysing the commodity value-weight characteristics, the first stage of the conversion mechanism, i.e. the value-to-weight conversion model, was developed. ARMAX models were employed to predict value-weight ratio trends of various commodities transported by sea mode between different country pairs. Two price indices related to international trade (the export price index and the import price index) were included in the export and import models respectively. The models were calibrated using data from 2008 to 2011 and validated using data in 2012 and 2013. The models was found to be effective in predicting value-weight ratio.

For the second stage of the conversion procedure, the weight-to-container ratio was estimated through historical data and inputs from industrial experts. A study based on the weight and container port throughput data explained that the conversion factors might be greatly affected by origin and destination information. Estimates of the weight-container conversion factors were derived using annual total TEU throughput and tonnages of major ports reported in the Containerisation International (CI) database from 2007 to 2011.

The conversion factor was found to be rather stable. In this study, the conversion factor per country or region is calculated from the average value of weight-to-container ratios from the ports where they located in the country or region.

8.1.4 Practical Implementation of Suggested Framework

A practical application of the entire framework on forecasting container trade demand over major trade routes is presented. The trade forecasting module is used to derive the amount of total trade flow between countries. Then the model choice models developed in the second module is applied to extract the amount of seaborne trade between countries from the first module. Lastly, container trade flow between countries and regions are estimated through the two-step commodity value-weight-container conversion procedure.

In the first module, the annual growth rate for each commodity group (at HS 2-digit classification) traded among the studied regions were predicted under various scenarios. It was found from the results that China was expected to be the dominant importer and exporter among the study regions.

From the second module, the amount of maritime trade (in value) between countries/regions can be determined from the total trade between countries/regions predicted in the first module. It can be observed that same commodity group may not be transported using same transport mode in import and export for the same country-pair. This may be due to the broad classification of commodity group at HS 2-digit which includes both low-value raw materials (i.e. usually transported in sea) and high-value final products (i.e. transported by other modes).

In the last module for commodity value-weight-container conversion, the conversion model is divided into two steps: the value-to-weight

transformation, and the weight-to-container conversion. After applying this conversion process, the quantity of container trade flow between countries can be forecasted. It could be observed that the trend of container trade flow is slightly different from the trend of total trade flow.

8.2 Recommendations for Future Research

Several limitations could be identified in the formulations and applications of the proposed forecasting framework. Based on the current work, the following areas are recommended for future research.

8.2.1 Improvement to Trade Demand Forecasting Model

In this study, it is assumed that the trade forecast is solely affected under global socio-economic changes, i.e. changes in global economic environment, changes in population as well as changes in labour force. However, international trade are also greatly affected by various trade policy between countries, such free trade agreements, trade barriers, etc. In future, such impact analysis on free trade zone establishment can be included into the forecasting model to make this model more effective in prediction. This could be modelled by altering the import tariffs and also the export subsidies inside the GTAP model.

8.2.2 Improvement to Freight Mode Choice Model

In the freight mode choice module, commodity data grouped by transport mode is only obtained from the USA Trade Online® which only provides detailed commodity trade data with either end of trade leg bounded in U.S. However, due to lack of such detailed commodity trade data available in global context, for the other trade routes not bounded by U.S., it is assumed that the probability of modal split are estimated by taking the mean of the probability of modal share between U.S. imports from origin country and U.S. exports to destination

country. In fact, as noted from the mode choice model development, spatial effects should be taken into consideration when developing such models. Therefore, in future, other commercial trade database, such as the IHS Global Insight, can be explored so as to develop freight mode choice model in a global context. With improvements on data, additional transportation mode (such as land mode) could be included in future study so as to relax the assumption that only sea and air transport modes are available for international freight transportation. Multinomial logit model could be used to estimate the probability of mode share of commodities along trade routes.

8.2.3 Improvement to Value-to-Weight-to-Container Conversion

In the value-to-weight-to-container conversion process, several assumptions were made. Commodity value and weight information was obtained from the USA Trade Online® and the commodity value and weight trend for trading pairs which neither end is in the U.S. were estimated from the average of commodity value-weight ratios between U.S. imports from origin country and U.S. exports to destination country. Besides, in the weight-to-container conversion, container data from publicly available database obscure as only the total number of container and corresponding total weight are listed. Therefore, in this study, only the total amount of traded containers can be estimated rather providing detailed investigations at commodity level. Similar to the mode choice model, more trade database as well as customs data should be explored so as to improve the conversion process to commodity level. On the other hand, volume of cargo (i.e. measuring in commodity size) or density of cargo is also another important attribute in developing such conversion. It should be incorporated in developing the value-to-container conversion in future.

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**APPENDIX I - GTAP Sector to CPC Ver 1.0 & ISIC Rev. 3 Concordance
Tables**

GTAP Sector	CPC Code	Description
1	113	Rice, not husked
1	114	Husked rice
2	111	Wheat and meslin
3	112	Maize (corn)
3	115	Barley
3	116	Rye, oats
3	119	Other cereals
4	12	Vegetables
4	13	Fruit and nuts
5	14	Oil seeds and oleaginous fruit
6	18	Plants used for sugar manufacturing
7	192	Raw vegetable materials used in textiles
8	15	Live plants; cut flowers and flower buds; flower seeds and fruit seeds; vegetable seeds
8	16	Beverage and spice crops
8	17	Unmanufactured tobacco
8	191	Cereal straw and husks, unprepared, whether or not chopped, ground, pressed or in the form of pellets; swedes, mangolds, fodder roots, hay, lucerne (alfalfa), clover, sainfoin, forage kale, lupines, vetches and similar forage products, whether or not in the form of pellets
8	193	Plants and parts of plants used primarily in perfumery, in pharmacy, or for insecticidal, fungicidal or similar purposes
8	194	Sugar beet seed and seeds of forage plants
8	199	Other raw vegetable materials
9	211	Bovine cattle, sheep and goats, horses, asses, mules, and hinnies, live
9	299	Bovine semen
10	212	Swine, poultry and other animals, live
10	292	Eggs, in shell, fresh, preserved or cooked
10	293	Natural honey
10	294	Snails, live, fresh, chilled, frozen, dried, salted or in brine, except sea snails; frogs' legs, fresh, chilled or frozen
10	295	Edible products of animal origin n.e.c.
10	297	Hides, skins and furskins, raw
10	298	Insect waxes and spermaceti, whether or not refined or coloured
11	291	Raw milk
12	296	Raw animal materials used in textile
13	3	Forestry, logging and related service activities
19	21111	Meat of bovine animals, fresh or chilled
19	21112	Meat of bovine animals, frozen
19	21115	Meat of sheep, fresh or chilled
19	21116	Meat of sheep, frozen
19	21117	Meat of goats, fresh, chilled or frozen
19	21118	Meat of horses, asses, mules or hinnies, fresh, chilled or frozen
19	21119	Edible offal of bovine animals, swine, sheep, goats, horses, asses, mules or hinnies, fresh, chilled or frozen
19	2161	Fats of bovine animals, sheep, goats, pigs and poultry, raw or rendered; wool grease
20	21113	Meat of swine, fresh or chilled
20	21114	Meat of swine, frozen
20	2112	Meat and edible offal, fresh, chilled or frozen, n.e.c.
20	2113	Preserves and preparations of meat, meat offal or blood

GTAP Sector	CPC Code	Description
20	2114	Flours, meals and pellets of meat or meat offal, inedible; greaves
20	2162	Animal oils and fats, crude and refined, except fats of bovine animals, sheep, goats, pigs and poultry
21	2163	Soya-bean, ground-nut, olive, sunflower-seed, safflower, cotton-seed rape, colza and mustard oil, crude
21	2164	Palm, coconut, palm kernel, babassu and linseed oil, crude
21	2165	Soya-bean, ground-nut, olive, sunflower-seed, safflower, cotton-seed, rape, colza and mustard oil and their fractions, refined but not chemically modified; other oils obtained solely from olives and sesame oil, and their fractions, whether or not refined, but not chemically modified
21	2166	Maize (corn) oil and its fractions, not chemically modified
21	2167	Palm, coconut, palm kernel, babassu and linseed oil and their fractions, refined but not chemically modified; castor, tung and jojoba oil and fixed vegetable fats and oils (except maize oil) and their fractions n.e.c., whether or not refined, but not chemically modified
21	2168	Margarine and similar preparations
21	2169	Animal or vegetable fats and oils and their fractions, partly or wholly hydrogenated, inter-esterified, re-esterified or elaidinised, whether or not refined, but not further prepared
21	217	Cotton linters
21	218	Oil-cake and other solid residues resulting from the extraction of vegetable fats or oils; flours and meals of oil seeds or oleaginous fruits, except those of mustard; vegetable waxes, except triglycerides; degrass; residues resulting from the treatment of fatty substances or animal or vegetable waxes
22	22	Dairy products
23	2316	Rice, semi- or wholly milled
24	235	Sugar
25	212	Prepared and preserved fish
25	213	Prepared and preserved vegetables
25	214	Fruit juices and vegetable juices
25	215	Prepared and preserved fruit and nuts
25	2311	Wheat or meslin flour
25	2312	Cereal flours other than of wheat or meslin
25	2313	Groats, meal and pellets of wheat
25	2314	Cereal groats, meal and pellets n.e.c.
25	2315	Other cereal grain products (including corn flakes)
25	2317	Other vegetable flours and meals
25	2318	Mixes and doughs for the preparation of bakers' wares
25	232	Starches and starch products; sugars and sugar syrups n.e.c.
25	233	Preparations used in animal feeding
25	234	Bakery products
25	236	Cocoa, chocolate and sugar confectionery
25	237	Macaroni, noodles, couscous and similar farinaceous products
25	239	Food products n.e.c.
26	24	Beverages
26	25	Tobacco products

GTAP Sector	ISIC Code	Description
14	15	Hunting, trapping and game propagation including related service activities
14	5	Fishing, operation of fish hatcheries and fish farms; service activities incidental to fishing
15	101	Mining and agglomeration of hard coal
15	102	Mining and agglomeration of lignite
15	103	Mining and agglomeration of peat
16	111	Extraction of crude petroleum and natural gas (part)
16	112	Service activities incidental to oil and gas extraction excluding surveying (part)
17	111	Extraction of crude petroleum and natural gas (part)
17	112	Service activities incidental to oil and gas extraction excluding surveying (part)
18	12	Mining of uranium and thorium ores
18	13	Mining of metal ores
18	14	Other mining and quarrying
27	17	Manufacture of textiles
27	243	Manufacture of man-made fibres
28	18	Manufacture of wearing apparel; dressing and dyeing of fur
29	19	Tan and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear
30	20	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
31	21	Manufacture of paper and paper products
31	22	Publishing, printing and reproduction of record media
32	231	Manufacture of coke oven products
32	232	Manufacture of refined petroleum products
32	233	Processing of nuclear fuel
33	241	Manufacture of basic chemicals
33	242	Manufacture of other chemical products
33	25	Manufacture of rubber and plastics products
34	26	Manufacture of other non-metallic mineral products
35	271	Manufacture of basic iron and steel
35	2731	Casting of iron and steel
36	272	Manufacture of basic precious and non-ferrous metals
36	2732	Casting of non-ferrous metals
37	28	Manufacture of fabricated metal products, except machinery and equipment
38	34	Manufacture of motor vehicles, trailers and semi-trailers
39	35	Manufacture of other transport equipment
40	30	Manufacture of office, accounting and computing machinery
40	32	Manufacture of radio, television and communication equipment and apparatus
41	29	Manufacture of machinery and equipment n.e.c.
41	31	Manufacture of electrical machinery and apparatus n.e.c.
41	33	Manufacture of medical, precision and optical instruments, watches and clocks
42	36	Manufacturing n.e.c.
42	37	Recycling
43	401	Production, collection and distribution of electricity
44	402	Manufacture of gas; distribution of gaseous fuels through mains
44	403	Steam and hot water supply
45	41	Collection, purification and distribution of water
46	45	Construction
47	50	Sales, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel
47	51	Wholesale trade and commission trade, except of motor vehicles and motorcycles

GTAP Sector	ISIC Code	Description
47	521	Non-specialized retail trade in stores
47	522	Retail sale of food, beverages and tobacco in specialized stores
47	523	Other retail trade of new goods in specialized stores
47	524	Retail sale of second-hand goods in stores
47	525	Retail trade not in stores
47	526	Repair of personal and household goods
47	55	Hotels and restaurants
48	60	Land transport; transport via pipelines
48	63	Supporting and auxiliary transport activities; activities of travel agencies
49	61	Water transport
50	62	Air transport
51	64	Post and telecommunications
52	65	Financial intermediation, except insurance and pension funding
52	67	Activities auxiliary to financial intermediation
53	66	Insurance and pension funding, except compulsory social security
54	K	Real estate, renting and business activities
55	92	Recreational, cultural and sporting activities
55	93	Other service activities
55	95	Private households with employed persons
56	75	Public administration and defense; compulsory social security
56	80	Education
56	85	Health and social work
56	90	Sewage and refuse disposal, sanitation and similar activities
56	91	Activities of membership organizations n.e.c.
56	99	Extra-territorial organizations and bodies
57	n.a.	n.a.

APPENDIX II - GTAP VS UNComtrade Comparison

IMPORT - AUSTRALIA						
GTAP Sector	China	Japan	South Korea	USA	ASEAN	EU-27
1	-67.28%	-83.33%	-50.00%	-100.00%	-100.00%	-9.41%
2	-100.00%	-99.96%	-97.14%	-100.00%	-99.99%	-97.37%
3	38.84%	-99.97%	-2.43%	-85.58%	-60.13%	-65.24%
4	-8.80%	-98.79%	-44.22%	-29.93%	-12.17%	-26.54%
5	185.05%	28.55%	-59.38%	-96.24%	-84.71%	270.49%
6	---	175.00%	---	---	152.11%	217.13%
7	108.93%	-99.99%	-99.97%	-100.00%	-89.60%	-79.51%
8	8.86%	49.90%	18.28%	1.28%	10.82%	13.71%
9	-99.99%	-0.66%	-99.86%	0.00%	-60.90%	-10.60%
10	-83.80%	-96.12%	-88.28%	-98.69%	-87.05%	-74.43%
11	-99.17%	-99.45%	-91.67%	-99.99%	-99.97%	-80.23%
12	---	-99.79%	---	156.81%	---	---
13	2.32%	-63.27%	---	-90.30%	---	58.43%
14	59.12%	273.39%	119.91%	-35.06%	-43.88%	34.34%
15	---	0.00%	0.00%	---	---	---
16	-74.72%	-99.74%	-98.72%	-55.08%	-34.44%	-99.18%
17	-96.52%	-99.45%	-98.04%	-84.57%	---	-96.11%
18	-30.94%	-30.45%	-40.29%	---	-32.34%	-37.12%
19	-74.82%	-100.00%	-100.00%	-96.65%	-80.91%	-78.83%
20	-60.74%	-5.30%	-55.82%	-10.57%	-76.39%	-9.09%
21	9.98%	35.52%	-5.86%	-15.00%	-3.40%	-6.69%
22	-23.84%	17.94%	-5.49%	-21.41%	-25.51%	-11.87%
23	-37.12%	-85.58%	-97.34%	-2.09%	-3.19%	12.85%
24	-11.33%	251.79%	-37.75%	-37.98%	-19.85%	-64.18%
25	-7.70%	-8.33%	-10.27%	1.26%	-2.37%	-9.17%
26	-33.35%	-39.04%	-8.51%	1.55%	-29.63%	-11.46%
27	-0.09%	-2.32%	1.00%	6.95%	-16.90%	-2.31%
28	21.40%	-32.47%	-13.11%	-41.35%	-16.48%	-19.72%
29	17.69%	-6.89%	2.62%	-10.35%	-4.11%	-9.65%
30	-87.50%	-98.67%	-74.30%	-77.38%	-81.77%	-71.52%
31	4.59%	106.63%	-0.88%	4.54%	40.24%	-10.96%
32	-83.10%	-48.94%	-14.31%	-77.26%	22.00%	-65.05%
33	-2.16%	-8.52%	-24.07%	19.81%	-22.73%	-2.38%
34	-10.26%	-7.89%	-29.65%	-18.61%	-40.69%	-14.61%
35	-18.14%	-10.04%	-37.28%	4.81%	-20.91%	8.49%
36	10.86%	---	98.81%	242.07%	43.78%	-81.27%
37	1.71%	-23.69%	-20.45%	17.38%	23.68%	-7.67%
38	-13.96%	-3.83%	-6.43%	20.09%	-5.73%	-2.19%
39	-25.10%	12.13%	3.49%	2.99%	-72.06%	-5.98%
40	17.64%	43.77%	19.97%	26.86%	18.83%	11.48%
41	2.51%	1.55%	-5.27%	11.14%	-20.27%	-2.13%
42	69.17%	-8.09%	24.13%	-0.81%	158.43%	8.34%
43	254.29%	172.36%	---	-43.09%	102.73%	-14.16%

Note: "---" denotes error over 300%;

$$\% \text{ Diff} = \frac{\text{Value}_{UNCOMTRADE} - \text{Value}_{GTAP}}{\text{Value}_{GTAP}} \times 100\%$$

EXPORT - AUSTRALIA

GTAP Sector	China	Japan	South Korea	USA	ASEAN	EU-27
1	-98.15%	-100.00%	-95.83%	-96.97%	18.64%	13.59%
2	-22.19%	-0.15%	-99.78%	---	-63.09%	15.28%
3	-59.76%	-4.28%	-5.85%	-58.70%	-1.03%	11.09%
4	64.98%	-3.17%	-20.84%	-0.83%	-0.29%	-7.15%
5	-32.85%	-13.29%	55.47%	-1.14%	-74.69%	46.22%
6	-100.00%	-100.00%	-95.65%	-46.36%	-95.99%	-84.74%
7	-0.95%	-0.24%	-10.35%	-100.00%	-0.88%	-7.58%
8	-47.18%	-5.53%	13.40%	18.51%	17.20%	25.96%
9	-40.98%	-29.70%	-13.82%	23.35%	22.29%	---
10	-19.02%	-80.18%	-69.51%	-70.80%	-61.08%	-18.73%
11	---	---	208.23%	---	---	-99.98%
12	5.06%	2.31%	37.78%	31.95%	3.25%	2.88%
13	-29.55%	-9.03%	-32.10%	-89.38%	4.85%	14.94%
14	57.53%	-59.24%	-54.81%	-56.33%	-14.30%	5.60%
15	9.47%	7.48%	-8.38%	-24.26%	-31.73%	41.38%
16	32.37%	-16.66%	-19.79%	21.39%	18.05%	-100.00%
17	-60.88%	-88.63%	---	---	---	-100.00%
18	-25.46%	-8.77%	-5.20%	-88.95%	-19.80%	49.59%
19	-6.03%	-2.05%	1.62%	-3.12%	-0.76%	8.28%
20	-9.68%	17.72%	-49.42%	0.83%	-4.74%	-25.41%
21	-2.08%	-33.76%	-12.31%	-1.04%	25.62%	-24.08%
22	2.94%	5.65%	-0.13%	-40.02%	1.30%	-14.88%
23	-100.00%	-100.00%	-100.00%	-100.00%	-100.00%	-12.56%
24	-78.17%	-99.94%	-99.02%	-89.92%	-89.20%	2.69%
25	-24.77%	-7.68%	-52.82%	-15.33%	-10.42%	2.04%
26	-18.90%	-9.92%	-8.59%	-10.53%	7.25%	10.22%
27	-42.99%	-22.15%	-25.17%	-14.64%	-11.97%	6.80%
28	-92.15%	-62.59%	-84.13%	-41.10%	-60.80%	-41.33%
29	25.44%	-6.84%	5.44%	-31.12%	-10.34%	23.71%
30	-53.84%	-98.89%	-68.33%	-82.99%	-74.45%	-46.39%
31	-79.87%	-67.25%	-72.42%	-19.13%	-47.90%	-25.44%
32	-72.50%	38.89%	49.66%	-74.60%	279.38%	36.91%
33	-8.31%	-17.96%	-1.20%	-47.07%	17.89%	-19.92%
34	-35.13%	-28.01%	-27.84%	-5.31%	-24.68%	-22.27%
35	-93.76%	-86.20%	-71.92%	-56.47%	-72.27%	-38.05%
36	-80.99%	-26.74%	-7.36%	-68.96%	6.16%	-54.42%
37	68.44%	-36.06%	-18.02%	28.92%	21.14%	-40.14%
38	-18.71%	-28.63%	-10.95%	63.56%	-26.95%	-26.52%
39	15.53%	-75.73%	-55.14%	44.96%	-0.31%	-5.63%
40	-37.65%	-2.11%	-13.62%	110.16%	106.88%	10.47%
41	-35.56%	12.18%	-3.13%	-12.77%	10.34%	1.42%
42	-42.28%	-11.62%	-63.20%	-54.02%	-2.32%	-35.08%
43	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Note: "---" denotes error over 300%;

$$\% \text{ Diff} = \frac{\text{Value}_{\text{UNCOMTRADE}} - \text{Value}_{\text{GTAP}}}{\text{Value}_{\text{GTAP}}} \times 100\%$$

IMPORT - CHINA

GTAP Sector	Australia	Japan	South Korea	USA	ASEAN	EU-27
1	-98.15%	-1.72%	---	-29.84%	-12.38%	-87.27%
2	-3.27%	-98.61%	---	-2.02%	-99.99%	-97.86%
3	-0.52%	-7.73%	---	-9.39%	-7.01%	-14.10%
4	-25.85%	-33.01%	---	-6.46%	-10.07%	-13.69%
5	-26.90%	-9.39%	---	-6.30%	-1.89%	-8.35%
6	-12.48%	-99.97%	-99.95%	---	---	-99.99%
7	-0.20%	-99.81%	---	0.70%	-20.57%	---
8	-9.01%	-1.97%	---	0.52%	-9.12%	-0.54%
9	-6.33%	-99.99%	-99.99%	-3.65%	-100.00%	-57.95%
10	-31.12%	-74.00%	-18.59%	-54.09%	-43.11%	-65.51%
11	---	---	---	-84.33%	-99.99%	122.15%
12	-0.08%	-99.99%	34.41%	4.32%	-73.59%	-26.70%
13	-6.81%	-13.31%	104.37%	-4.62%	---	-30.66%
14	-19.64%	-12.48%	---	-10.06%	-12.26%	---
15	29.16%	---	---	-82.56%	-8.38%	---
16	167.11%	0.00%	---	-40.02%	-2.59%	-99.98%
17	-22.76%	---	0.00%	---	---	-6.92%
18	-4.83%	-62.57%	17.95%	-33.30%	-7.74%	-25.68%
19	-11.88%	-94.45%	-78.36%	-13.44%	-87.82%	-69.49%
20	-15.99%	-78.34%	---	-3.84%	-62.83%	-34.01%
21	-8.35%	-5.46%	---	-8.18%	-0.56%	7.06%
22	-6.38%	-13.38%	-68.38%	-6.70%	-76.17%	-8.46%
23	-100.00%	-93.14%	---	-73.80%	-3.21%	-47.52%
24	-2.44%	-13.91%	1.98%	-85.48%	-3.06%	-81.28%
25	-20.19%	-38.36%	81.49%	-3.31%	-4.72%	-8.28%
26	-25.37%	-38.31%	49.58%	-27.77%	-10.73%	-22.81%
27	-10.86%	-12.04%	-20.76%	-3.12%	-17.25%	-29.43%
28	-97.58%	-9.68%	-11.94%	-78.51%	-33.78%	-48.28%
29	109.68%	-69.45%	-74.70%	109.49%	-57.84%	-85.73%
30	-59.72%	-95.08%	-81.50%	-88.74%	-90.11%	-88.12%
31	-63.55%	-63.53%	-48.92%	-44.70%	47.84%	-73.01%
32	5.55%	-39.02%	4.61%	-71.31%	9.73%	-40.00%
33	-28.83%	-6.71%	-5.57%	-2.91%	-21.81%	-35.75%
34	-15.97%	-4.67%	-4.32%	-4.71%	-1.84%	-28.60%
35	-88.55%	12.43%	15.50%	-37.61%	-55.58%	-19.08%
36	-11.44%	-27.73%	-6.83%	-61.73%	-38.14%	-53.68%
37	-12.11%	-5.99%	-2.75%	-2.42%	44.11%	-17.50%
38	-25.02%	-6.51%	-9.15%	-4.28%	-45.87%	-12.60%
39	-14.05%	-3.94%	-1.81%	0.32%	-67.97%	14.91%
40	-8.11%	-57.92%	-72.65%	-9.00%	-60.82%	-72.74%
41	-6.97%	-9.67%	-3.04%	4.11%	-10.89%	-18.22%
42	-58.62%	20.98%	27.68%	16.18%	12.55%	51.93%
43	-71.77%	22.90%	173.02%	-27.12%	-38.43%	-8.05%

Note: "---" denotes error over 300%;

$$\% Diff = \frac{Value_{UNCOMTRADE} - Value_{GTAP}}{Value_{GTAP}} \times 100\%$$

EXPORT - CHINA

GTAP Sector	Australia	Japan	South Korea	USA	ASEAN	EU-27
1	-64.77%	-14.06%	-1.28%	-62.17%	-1.64%	-21.35%
2	-100.00%	-3.11%	-0.09%	208.87%	-2.67%	-95.15%
3	0.07%	1.26%	-2.92%	0.51%	-0.48%	52.00%
4	-33.38%	-20.19%	-16.09%	-22.78%	-9.76%	-2.21%
5	-15.94%	3.35%	12.31%	-17.64%	-0.19%	64.10%
6	---	-3.35%	-99.98%	---	---	23.08%
7	-81.37%	272.54%	149.41%	---	135.74%	44.70%
8	6.85%	-15.45%	-6.35%	-15.36%	15.80%	26.69%
9	-99.99%	-100.00%	-100.00%	-100.00%	-12.28%	-100.00%
10	-82.82%	-55.87%	-81.58%	-89.20%	-77.92%	-91.21%
11	-99.17%	---	-99.79%	-99.83%	---	-99.92%
12	---	-99.46%	-99.63%	-25.34%	-93.51%	-98.85%
13	-48.19%	-18.28%	-33.85%	-61.54%	-31.27%	52.85%
14	-58.83%	-4.95%	-0.50%	-54.23%	-32.15%	-46.41%
15	---	37.64%	15.39%	-27.81%	6.49%	194.09%
16	---	107.22%	55.86%	28.17%	13.51%	-100.00%
17	---	---	---	---	---	-99.96%
18	-11.60%	-27.79%	-17.18%	-26.26%	-54.42%	94.76%
19	-74.75%	-54.42%	-80.65%	-62.32%	-5.86%	-98.79%
20	-84.32%	-3.57%	-26.64%	-43.11%	-3.16%	-53.38%
21	-46.27%	-8.92%	-2.20%	-43.96%	-20.50%	15.46%
22	-20.41%	-60.19%	-76.84%	-37.01%	31.84%	-45.42%
23	-45.30%	10.40%	-16.41%	24.11%	-37.24%	-84.87%
24	-67.81%	-8.86%	-12.72%	4.77%	32.89%	-35.07%
25	-6.24%	-20.16%	-14.60%	-1.92%	-8.52%	-41.10%
26	-37.00%	-3.52%	-41.75%	-62.74%	-10.48%	-56.55%
27	3.47%	-8.78%	-4.79%	-9.48%	12.13%	-6.08%
28	-8.91%	-5.16%	-5.91%	-23.99%	147.80%	7.77%
29	-43.41%	-25.25%	-26.24%	-36.05%	-20.58%	13.20%
30	-87.69%	-75.71%	-82.27%	-84.17%	-72.54%	-83.77%
31	-18.77%	-33.71%	-41.53%	-17.25%	-17.80%	-2.64%
32	-64.05%	-45.63%	-26.26%	-62.76%	-26.55%	-80.12%
33	-7.12%	-12.79%	-8.13%	-14.23%	-6.42%	0.87%
34	-15.35%	-16.68%	-11.96%	-21.26%	4.12%	16.49%
35	14.20%	44.12%	49.83%	0.89%	57.03%	57.09%
36	-28.47%	-19.10%	32.90%	1.25%	8.54%	14.33%
37	5.91%	-0.07%	-5.11%	-7.19%	8.55%	16.95%
38	4.62%	16.84%	32.53%	39.92%	29.55%	-23.83%
39	-8.55%	1.64%	27.52%	0.07%	128.16%	26.09%
40	-16.76%	-44.63%	-56.39%	-15.61%	-7.69%	-23.16%
41	-16.65%	-20.78%	-19.96%	-22.46%	5.62%	1.06%
42	-0.93%	-28.34%	12.40%	-18.56%	9.89%	11.06%
43	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Note: "---" denotes error over 300%;

$$\% \text{ Diff} = \frac{\text{Value}_{\text{UNCOMTRADE}} - \text{Value}_{\text{GTAP}}}{\text{Value}_{\text{GTAP}}} \times 100\%$$

IMPORT - JAPAN

GTAP Sector	Australia	China	South Korea	USA	ASEAN	EU-27
1	-0.01%	-39.97%	-69.36%	-3.31%	-75.89%	-98.70%
2	---	20.27%	-99.77%	25.84%	-99.99%	-29.42%
3	111.62%	-5.58%	-99.99%	26.59%	-6.87%	-2.44%
4	-9.46%	-30.34%	-23.52%	-9.18%	76.66%	15.04%
5	-4.76%	-3.93%	-37.12%	-7.33%	-2.28%	42.28%
6	-13.48%	-99.98%	-99.93%	-100.00%	-100.00%	-99.99%
7	-1.82%	9.48%	-100.00%	-29.50%	-81.23%	-4.83%
8	-10.03%	-2.09%	-36.20%	-7.75%	-28.91%	3.06%
9	63.44%	-100.00%	-99.99%	-92.56%	-100.00%	-97.74%
10	-54.63%	-63.94%	-72.21%	-85.77%	-36.91%	-72.72%
11	-99.92%	---	-99.32%	-100.00%	-76.42%	-100.00%
12	35.63%	-99.39%	-100.00%	-99.97%	-100.00%	-82.48%
13	-0.82%	16.57%	-74.98%	14.48%	---	-11.83%
14	-0.65%	-11.46%	-22.24%	-32.27%	-31.48%	-88.64%
15	20.85%	42.10%	---	-40.20%	-15.88%	---
16	---	-25.70%	-50.00%	---	152.04%	-100.00%
17	-31.34%	---	0.00%	-48.48%	-28.76%	-99.99%
18	-11.76%	2.23%	2.38%	-17.99%	-34.07%	16.25%
19	-2.05%	-70.01%	-100.00%	13.35%	-100.00%	-21.11%
20	-7.70%	-11.59%	-17.96%	6.00%	-10.50%	-11.10%
21	9.41%	-7.92%	-12.46%	-18.57%	-9.23%	-8.23%
22	-5.77%	-91.04%	-26.60%	-5.73%	-87.78%	-3.78%
23	-0.46%	-2.92%	-100.00%	3.25%	1.52%	-49.22%
24	-0.19%	4.70%	-96.77%	-57.32%	15.14%	-29.91%
25	3.91%	-27.38%	-38.38%	-15.38%	-8.83%	-23.84%
26	-9.69%	-11.36%	6.84%	121.03%	-37.45%	-12.19%
27	52.58%	-7.25%	-19.47%	-14.82%	-13.78%	-20.82%
28	-68.99%	10.60%	-19.22%	-29.85%	-4.38%	-4.25%
29	36.84%	27.21%	-35.41%	-33.24%	-12.10%	8.32%
30	-98.85%	-68.98%	-92.41%	-93.04%	-87.46%	-81.65%
31	-63.69%	-16.04%	-57.44%	-23.69%	-57.31%	-45.23%
32	29.05%	-54.08%	-7.86%	6.44%	48.53%	159.31%
33	-5.91%	-5.01%	-13.42%	-9.10%	-31.65%	-26.60%
34	0.71%	1.20%	-14.20%	-1.14%	-2.04%	-24.79%
35	-19.51%	20.51%	12.19%	-57.02%	-31.58%	-19.77%
36	-2.77%	-5.22%	-27.35%	-26.51%	-15.53%	-36.90%
37	-47.65%	17.41%	1.11%	-6.54%	-16.25%	-2.77%
38	-9.29%	-20.30%	0.98%	-33.70%	-38.06%	-9.24%
39	-9.92%	-39.72%	-66.57%	14.98%	-58.85%	1.34%
40	3.44%	-25.77%	-74.98%	-49.84%	-59.46%	-40.58%
41	-4.17%	-10.31%	0.04%	-6.23%	-19.16%	-6.67%
42	-14.47%	47.72%	-4.26%	-7.42%	95.01%	-7.49%
43	-63.28%	-18.63%	11.34%	-67.39%	-5.30%	-38.22%

Note: "---" denotes error over 300%;

$$\% Diff = \frac{Value_{UNCOMTRADE} - Value_{GTAP}}{Value_{GTAP}} \times 100\%$$

EXPORT - JAPAN

GTAP Sector	Australia	China	South Korea	USA	ASEAN	EU-27
1	-83.33%	-99.96%	-98.86%	-83.28%	-88.52%	-41.08%
2	-99.96%	-98.61%	-99.23%	-99.13%	-100.00%	-97.22%
3	6.60%	-100.00%	-100.00%	-36.71%	-100.00%	-38.13%
4	-100.00%	-11.77%	-93.31%	-46.81%	-51.08%	-47.84%
5	-98.18%	---	---	193.20%	-99.38%	20.24%
6	-99.77%	-99.97%	-99.98%	-99.98%	-99.93%	---
7	-99.99%	-98.39%	-100.00%	-100.00%	-99.91%	-56.98%
8	-9.56%	54.10%	11.19%	-4.76%	-4.95%	14.63%
9	---	-99.99%	-100.00%	-100.00%	-100.00%	-99.98%
10	-84.84%	-72.11%	-70.85%	-76.24%	-95.01%	-9.10%
11	-99.45%	---	-99.96%	-99.96%	---	-99.86%
12	-99.79%	-99.99%	-99.98%	-99.98%	-100.00%	-48.07%
13	-77.79%	-24.11%	-35.43%	-51.96%	-52.35%	193.20%
14	-1.39%	47.17%	-0.35%	-4.69%	-43.51%	29.41%
15	0.00%	---	47.88%	-75.00%	---	---
16	-99.73%	0.00%	0.00%	-100.00%	---	---
17	-99.42%	---	0.00%	0.00%	---	0.00%
18	-4.32%	-54.22%	-31.71%	-12.31%	-52.34%	25.57%
19	-100.00%	-97.33%	-100.00%	-33.67%	---	-99.60%
20	-90.62%	24.93%	-39.08%	-34.93%	---	50.60%
21	-14.60%	9.28%	0.88%	3.47%	-17.97%	-3.09%
22	-18.51%	0.02%	-59.53%	-49.09%	6.67%	-33.66%
23	-97.09%	-75.88%	-100.00%	-78.37%	-16.53%	-80.64%
24	53.91%	-18.39%	---	-44.13%	-85.53%	-1.90%
25	-1.43%	-16.74%	-17.34%	-16.12%	-11.48%	-6.04%
26	-19.36%	-15.76%	-46.36%	-15.50%	13.81%	-6.49%
27	-3.95%	-12.62%	-5.31%	-11.13%	-13.60%	-1.54%
28	-48.74%	-60.43%	-33.89%	-26.34%	-59.25%	15.57%
29	-61.79%	-77.86%	-36.67%	-73.80%	-66.02%	43.86%
30	-97.58%	-90.26%	-86.28%	-94.25%	-92.46%	-95.71%
31	53.46%	-57.22%	-32.11%	-47.85%	-48.25%	-3.45%
32	-49.18%	-41.03%	-0.48%	-31.88%	80.81%	-21.19%
33	-4.44%	-19.10%	-2.20%	-24.21%	-9.90%	-10.32%
34	20.56%	-16.39%	6.14%	17.79%	-9.14%	2.62%
35	2.26%	0.73%	4.03%	3.21%	20.67%	13.95%
36	---	-39.07%	-35.38%	-30.14%	11.03%	-45.68%
37	7.92%	-27.30%	-13.78%	-18.81%	0.83%	-4.50%
38	-0.12%	-9.89%	-8.78%	1.15%	6.74%	-8.71%
39	-3.98%	-74.70%	-71.85%	3.02%	35.08%	17.51%
40	7.22%	-74.10%	-73.12%	-60.22%	-44.39%	-48.74%
41	-5.71%	-32.03%	-22.29%	-22.08%	-2.86%	1.77%
42	-5.21%	53.39%	-30.72%	4.30%	50.34%	14.38%
43	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Note: "---" denotes error over 300%;

$$\% \text{ Diff} = \frac{\text{Value}_{UNCOMTRADE} - \text{Value}_{GTAP}}{\text{Value}_{GTAP}} \times 100\%$$

IMPORT - SOUTH KOREA

GTAP Sector	Australia	China	Japan	USA	ASEAN	EU-27
1	-95.83%	2.03%	-98.86%	0.63%	-0.92%	---
2	-2.52%	4.68%	-99.23%	-2.93%	-99.98%	-100.00%
3	8.22%	-4.81%	-5.98%	-4.25%	-99.99%	-76.87%
4	-9.19%	-35.59%	-88.22%	-7.52%	112.93%	-32.16%
5	-11.67%	-4.00%	-9.27%	-6.19%	-26.70%	78.85%
6	-100.00%	4.20%	-99.98%	-100.00%	-100.00%	-99.98%
7	-0.36%	-6.87%	-95.68%	0.64%	-52.16%	-22.57%
8	23.81%	-17.29%	-4.03%	-21.93%	-19.45%	11.64%
9	-1.24%	-100.00%	-100.00%	-69.04%	-100.00%	-92.31%
10	-82.84%	-86.84%	-63.52%	-90.00%	-67.94%	-38.69%
11	266.44%	-99.79%	245.72%	-100.00%	-99.98%	20.90%
12	-40.88%	-99.65%	-99.98%	-99.83%	-94.80%	-93.07%
13	-4.67%	0.24%	-44.67%	-4.40%	---	-18.23%
14	-43.46%	-17.61%	-26.68%	-68.72%	-31.95%	37.78%
15	36.94%	29.78%	---	95.19%	-29.11%	---
16	15.33%	-42.05%	0.00%	-99.59%	29.78%	-100.00%
17	---	---	0.00%	-14.32%	39.69%	-88.25%
18	-10.53%	-5.13%	-33.98%	-15.34%	-47.16%	-14.70%
19	0.53%	-100.00%	-99.34%	-11.90%	-100.00%	-13.55%
20	-32.93%	-45.14%	-32.23%	-5.73%	-18.60%	-11.15%
21	-26.27%	-24.58%	41.78%	7.82%	-6.53%	9.12%
22	-26.36%	-86.21%	-58.49%	1.92%	-81.78%	-3.22%
23	-100.00%	-12.99%	-100.00%	-2.06%	-90.89%	-100.00%
24	0.22%	-94.96%	-32.71%	-35.83%	24.74%	-72.84%
25	-14.34%	-24.76%	-16.19%	-30.23%	-22.49%	-20.51%
26	-18.56%	-29.70%	-35.61%	-36.98%	2.38%	5.25%
27	-2.95%	-20.83%	-10.05%	-17.86%	-11.61%	-31.43%
28	-91.90%	-3.13%	-23.88%	-54.15%	1.62%	1.68%
29	-0.29%	-10.89%	-39.96%	-85.45%	0.99%	-16.58%
30	-73.71%	-83.24%	-90.18%	-91.83%	-73.43%	-91.28%
31	-13.94%	-39.30%	-41.06%	-37.75%	-18.29%	-51.83%
32	---	-15.70%	-47.05%	-67.03%	141.54%	---
33	-15.23%	-6.29%	-3.15%	-3.41%	-34.16%	-18.07%
34	-31.33%	-9.27%	-5.14%	12.24%	-6.68%	-16.91%
35	-2.90%	44.76%	-0.24%	-79.28%	-33.44%	-23.54%
36	-6.67%	17.30%	-8.90%	-57.42%	-22.07%	-46.77%
37	-42.44%	3.60%	16.86%	79.19%	-68.08%	-27.87%
38	-7.19%	-32.54%	-5.78%	-40.75%	-70.22%	-15.24%
39	232.33%	-26.67%	25.60%	-10.22%	-51.55%	77.72%
40	-28.37%	-45.38%	-67.87%	-84.42%	-78.72%	-52.80%
41	8.60%	10.87%	-20.25%	-31.63%	-34.53%	-10.77%
42	-56.71%	76.17%	-30.59%	-51.55%	86.32%	-11.50%
43	-77.87%	-63.37%	-10.18%	-62.21%	-56.89%	-16.36%

Note: "---" denotes error over 300%;

$$\% \text{ Diff} = \frac{\text{Value}_{\text{UNCOMTRADE}} - \text{Value}_{\text{GTAP}}}{\text{Value}_{\text{GTAP}}} \times 100\%$$

EXPORT - SOUTH KOREA

GTAP Sector	Australia	China	Japan	USA	ASEAN	EU-27
1	-50.00%	-96.00%	-0.27%	-17.15%	---	-94.93%
2	22.86%	-99.82%	-99.77%	-99.80%	-99.99%	-99.84%
3	-97.98%	52.11%	202.58%	182.58%	-100.00%	-28.14%
4	-32.04%	0.84%	-16.58%	-18.83%	23.57%	-91.97%
5	-83.90%	-66.48%	-68.25%	-86.88%	-99.99%	-13.08%
6	-99.15%	-99.95%	-99.93%	-99.94%	-99.69%	-99.95%
7	-99.97%	---	-78.44%	-100.00%	-88.32%	64.49%
8	-24.29%	210.68%	-14.87%	18.36%	12.67%	35.46%
9	-99.86%	-99.99%	-99.99%	-99.99%	-99.99%	-99.99%
10	-98.26%	-97.53%	-57.37%	-55.17%	-97.43%	-42.75%
11	-91.67%	---	-99.32%	---	---	-99.53%
12	---	-100.00%	-100.00%	-100.00%	-100.00%	-100.00%
13	-100.00%	102.42%	-55.44%	-96.24%	-78.02%	143.23%
14	-7.94%	126.43%	0.28%	-0.19%	2.55%	8.27%
15	0.00%	---	---	0.00%	---	-85.71%
16	-98.67%	-100.00%	---	-80.00%	-100.00%	-83.33%
17	-97.92%	0.00%	0.00%	-98.28%	-99.21%	0.00%
18	-35.91%	-34.49%	1.48%	17.41%	-51.60%	44.41%
19	-100.00%	-100.00%	-100.00%	-100.00%	-65.24%	-99.82%
20	-8.83%	-10.17%	-2.89%	-82.09%	24.86%	-55.62%
21	-61.26%	99.07%	-9.20%	-49.59%	-6.21%	128.10%
22	27.54%	51.50%	-17.18%	72.68%	45.69%	-89.68%
23	-94.03%	-100.00%	-100.00%	-68.24%	-92.76%	-93.19%
24	-96.00%	-8.91%	-0.16%	-14.98%	-12.17%	-98.54%
25	23.62%	62.12%	-31.17%	7.59%	-12.28%	-5.67%
26	-54.40%	64.29%	1.23%	-16.31%	31.67%	-25.20%
27	-2.15%	-26.72%	-2.55%	-32.53%	-45.23%	-18.58%
28	-3.12%	181.13%	4.99%	-9.38%	-10.08%	-14.67%
29	11.52%	-59.51%	-10.53%	-26.95%	-51.52%	-14.30%
30	-77.43%	-96.12%	-88.21%	-97.86%	-94.33%	-82.80%
31	12.20%	-64.18%	-48.49%	-70.96%	-45.19%	-44.41%
32	-7.70%	3.22%	24.03%	-12.60%	72.51%	23.99%
33	0.06%	-12.28%	-3.98%	-8.98%	1.21%	-8.48%
34	0.33%	-33.24%	-2.94%	-10.30%	-11.12%	28.20%
35	1.53%	8.12%	17.14%	-24.41%	26.26%	18.01%
36	121.33%	-16.81%	-27.13%	4.81%	-2.09%	17.90%
37	21.77%	-35.11%	25.51%	-14.71%	22.57%	-10.38%
38	1.40%	26.33%	11.79%	0.44%	13.08%	4.41%
39	-8.37%	141.62%	-8.40%	-7.65%	105.85%	-22.15%
40	1.16%	-79.49%	-84.15%	-76.43%	-74.52%	-56.37%
41	-4.51%	-20.94%	6.96%	-7.59%	0.47%	-4.10%
42	21.45%	159.03%	1.76%	-7.54%	-28.22%	-9.76%
43	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Note: "---" denotes error over 300%;

$$\% \text{ Diff} = \frac{\text{Value}_{\text{UNCOMTRADE}} - \text{Value}_{\text{GTAP}}}{\text{Value}_{\text{GTAP}}} \times 100\%$$

IMPORT – U.S.

GTAP Sector	Australia	China	Japan	South Korea	ASEAN	EU-27
1	-96.97%	-22.32%	0.63%	14.05%	-79.93%	-4.96%
2	-99.99%	-100.00%	-99.13%	-99.80%	-100.00%	-94.76%
3	-60.99%	95.63%	-12.91%	-21.14%	-94.14%	-4.32%
4	-5.33%	-4.67%	-51.08%	-24.72%	-3.39%	-19.38%
5	10.52%	1.27%	-2.36%	-58.73%	-13.05%	26.64%
6	---	---	-99.98%	-99.94%	-100.00%	-100.00%
7	-100.00%	---	-99.38%	-98.14%	-98.36%	-44.52%
8	-10.56%	39.45%	29.52%	0.07%	-2.96%	-14.80%
9	-0.20%	-100.00%	-100.00%	-99.99%	-100.00%	-99.32%
10	-68.09%	-85.91%	-70.89%	-15.18%	-30.23%	-57.64%
11	-99.96%	-99.83%	-99.96%	-99.42%	66.67%	9.17%
12	21.32%	---	-99.98%	-55.36%	-100.00%	-80.61%
13	-10.05%	49.71%	-77.72%	-22.43%	---	-36.80%
14	0.04%	181.45%	-20.37%	1.06%	-30.39%	-24.56%
15	-72.53%	-21.37%	-75.00%	0.00%	-15.37%	---
16	-25.24%	-44.53%	---	---	-42.58%	27.67%
17	---	---	0.00%	---	---	---
18	1.89%	10.34%	-7.88%	-32.88%	-19.13%	-3.97%
19	2.35%	-59.19%	-32.10%	-100.00%	-100.00%	-90.18%
20	-5.93%	-54.74%	-28.35%	-85.95%	-94.85%	-11.02%
21	-6.20%	-5.57%	1.20%	-6.60%	-5.51%	-12.07%
22	-7.14%	-43.64%	-95.92%	-28.18%	-80.68%	-10.38%
23	-80.72%	-4.79%	-83.77%	-69.49%	-6.97%	15.59%
24	-2.53%	-43.86%	-79.79%	-88.71%	9.38%	-72.59%
25	11.08%	5.01%	-23.80%	-12.51%	-10.72%	-17.40%
26	-0.17%	-35.72%	-15.15%	-7.95%	-19.91%	-12.01%
27	-9.68%	12.03%	-6.73%	-28.02%	8.23%	-19.99%
28	-50.13%	8.09%	-19.16%	-3.35%	-2.94%	-10.16%
29	22.47%	11.25%	-9.27%	-17.01%	7.12%	-11.45%
30	-65.94%	-81.35%	-95.23%	-97.59%	-91.15%	-85.33%
31	-17.86%	29.18%	-47.12%	-68.08%	-26.03%	-50.90%
32	228.90%	-79.98%	-48.89%	-18.88%	-23.13%	43.41%
33	-24.24%	0.93%	-17.46%	-8.38%	-10.74%	-14.93%
34	-3.39%	19.09%	-6.05%	-0.08%	-2.30%	-21.43%
35	16.67%	11.31%	4.41%	-33.03%	60.13%	1.09%
36	-15.86%	7.46%	-36.80%	-5.01%	-6.28%	2.96%
37	5.90%	10.70%	-5.99%	-0.91%	-1.16%	-7.22%
38	-16.07%	-2.17%	-1.64%	-2.76%	-42.85%	4.10%
39	5.26%	4.19%	1.20%	-28.53%	-28.22%	14.39%
40	10.06%	11.72%	-56.48%	-73.92%	-46.40%	-29.64%
41	-21.24%	3.24%	-18.81%	-19.70%	-29.23%	-4.24%
42	-3.13%	62.42%	5.87%	2.37%	111.09%	-37.03%
43	75.70%	37.22%	206.64%	164.65%	31.81%	-11.19%

Note: "---" denotes error over 300%;

$$\% \text{ Diff} = \frac{\text{Value}_{UNCOMTRADE} - \text{Value}_{GTAP}}{\text{Value}_{GTAP}} \times 100\%$$

EXPORT – U.S.

GTAP Sector	Australia	China	Japan	South Korea	ASEAN	EU-27
1	0.49%	---	0.66%	18.15%	179.01%	-5.55%
2	0.56%	38.40%	14.30%	-0.76%	5.37%	7.11%
3	1.30%	---	0.68%	-10.93%	3.77%	0.05%
4	16.43%	2.89%	-4.98%	-0.61%	-1.42%	4.99%
5	0.59%	11.40%	-2.40%	11.13%	7.77%	16.68%
6	-39.48%	-45.30%	-84.50%	-88.89%	-99.99%	-97.14%
7	-4.60%	-2.61%	0.69%	8.37%	0.77%	-12.60%
8	5.81%	26.90%	-10.75%	-13.91%	5.68%	-2.24%
9	36.90%	49.79%	-91.87%	-72.48%	-71.37%	-90.53%
10	-97.42%	-50.32%	-89.78%	-89.48%	-77.14%	-34.12%
11	-99.99%	-58.75%	-100.00%	-100.00%	---	-99.08%
12	246.25%	-0.84%	-99.97%	-99.83%	-100.00%	-16.71%
13	-15.08%	65.26%	1.19%	2.31%	24.98%	-17.48%
14	175.04%	84.81%	14.94%	-4.30%	66.79%	-6.18%
15	---	-17.76%	-75.26%	4.52%	-49.81%	18.37%
16	-97.91%	-92.97%	---	-100.00%	-100.00%	---
17	-99.27%	-47.49%	-81.49%	-99.53%	-100.00%	---
18	-3.71%	-16.06%	-15.53%	-11.53%	2.51%	22.63%
19	-50.56%	-48.38%	11.25%	18.42%	-12.50%	-55.73%
20	-27.51%	9.09%	-8.53%	-4.00%	-1.47%	-66.89%
21	-44.24%	22.28%	-23.71%	2.72%	12.74%	4.79%
22	9.31%	-1.76%	-1.33%	14.12%	7.80%	-29.41%
23	22.26%	-53.94%	-8.95%	17.98%	299.57%	-18.95%
24	-84.30%	-21.48%	-9.71%	-52.78%	-50.13%	22.90%
25	-4.36%	2.17%	-17.68%	-17.23%	-12.14%	-27.80%
26	-5.58%	-33.59%	-6.38%	-37.09%	-57.16%	-7.27%
27	26.55%	-0.20%	-9.08%	-20.64%	-14.04%	-10.35%
28	-32.74%	-60.82%	-7.89%	-41.65%	-61.88%	-26.40%
29	24.17%	71.18%	6.58%	-23.59%	-50.87%	-47.35%
30	-71.02%	-87.28%	-89.78%	-82.57%	-91.23%	-72.10%
31	29.62%	-54.10%	-28.46%	-43.42%	-25.25%	-0.93%
32	-70.27%	-77.18%	-6.00%	-27.86%	61.32%	-56.78%
33	-3.50%	-25.62%	-17.78%	-8.06%	3.85%	-10.90%
34	-0.81%	-6.85%	3.74%	-9.02%	21.16%	-7.04%
35	5.50%	-46.56%	-67.71%	-85.92%	-71.87%	-7.23%
36	106.82%	-52.68%	8.82%	-48.17%	-38.67%	-50.57%
37	-8.55%	-33.11%	-18.85%	-10.36%	49.36%	-31.48%
38	12.06%	-4.78%	-11.20%	-12.94%	0.55%	-6.55%
39	2.49%	23.74%	10.28%	17.84%	1.93%	-1.93%
40	30.84%	-12.96%	-40.30%	-63.98%	-54.25%	-36.37%
41	6.85%	-18.47%	-14.89%	-26.58%	17.75%	8.81%
42	24.43%	47.01%	29.06%	-47.40%	27.09%	-31.17%
43	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Note: "---" denotes error over 300%;

$$\% Diff = \frac{Value_{UNCOMTRADE} - Value_{GTAP}}{Value_{GTAP}} \times 100\%$$

IMPORT - ASEAN

GTAP Sector	Australia	China	Japan	South Korea	USA	EU-27
1	4.65%	-10.64%	-89.88%	---	145.16%	-12.26%
2	-65.97%	-10.25%	-100.00%	-99.99%	-2.84%	-72.33%
3	-7.43%	-9.94%	-100.00%	-100.00%	-6.15%	-98.14%
4	-20.20%	-27.22%	-60.23%	0.34%	-16.15%	-14.97%
5	-75.90%	-12.04%	-99.44%	-99.99%	-12.07%	-27.55%
6	-95.99%	---	-99.93%	-99.69%	-99.99%	-93.56%
7	-6.88%	119.88%	-99.91%	-89.06%	-5.33%	-82.61%
8	2.96%	6.73%	-9.28%	8.64%	0.14%	-30.90%
9	13.89%	-18.11%	-100.00%	-99.99%	-73.00%	-92.24%
10	-64.34%	-78.85%	-95.37%	-97.51%	-79.05%	-58.75%
11	---	---	---	---	---	-61.42%
12	-0.02%	-93.66%	-100.00%	-100.00%	-100.00%	72.79%
13	-7.19%	-38.97%	-55.48%	-79.65%	13.51%	-15.60%
14	-28.85%	-38.50%	-54.25%	-4.74%	52.52%	-49.22%
15	-39.88%	-5.10%	---	---	-51.47%	134.35%
16	13.61%	9.24%	---	-100.00%	-100.00%	-99.51%
17	---	---	---	-99.25%	-100.00%	-71.97%
18	-33.02%	-62.55%	-65.83%	-59.72%	-21.18%	23.82%
19	-6.41%	-11.25%	---	-68.19%	-17.47%	-18.78%
20	-14.95%	-6.94%	---	18.94%	-9.39%	-14.08%
21	15.41%	-29.28%	-23.75%	-11.34%	0.34%	-17.10%
22	-4.83%	22.96%	-0.44%	32.96%	1.00%	-5.22%
23	-100.00%	-43.80%	-26.18%	-92.85%	244.74%	-51.97%
24	-90.06%	15.09%	-87.38%	-22.74%	-52.52%	-57.08%
25	-18.94%	-17.18%	-18.27%	-19.22%	-19.66%	-14.47%
26	-10.90%	-19.56%	8.75%	25.07%	-60.38%	66.68%
27	-16.29%	4.43%	-19.17%	-49.53%	-18.99%	-20.15%
28	-61.74%	133.40%	-61.33%	-15.75%	-62.63%	-36.47%
29	-12.84%	-25.45%	-67.45%	-53.30%	-52.60%	-42.49%
30	-77.56%	-75.87%	-93.04%	-94.90%	-92.21%	-87.57%
31	-52.39%	-25.65%	-53.15%	-50.59%	-31.69%	-55.32%
32	263.01%	-30.21%	72.04%	64.31%	54.45%	144.96%
33	11.79%	-13.62%	-15.74%	-7.49%	-3.25%	-7.71%
34	-32.94%	-9.21%	-17.91%	-19.04%	10.99%	-9.63%
35	-74.73%	46.08%	12.37%	17.88%	-73.95%	-2.42%
36	4.17%	5.39%	8.89%	-4.53%	-39.74%	0.32%
37	10.47%	1.06%	-5.06%	15.01%	40.30%	21.41%
38	-29.37%	23.09%	2.50%	7.55%	-2.59%	1.28%
39	-2.16%	120.81%	32.92%	104.69%	1.05%	8.86%
40	103.12%	-9.33%	-45.20%	-74.81%	-54.70%	-67.06%
41	6.19%	1.60%	-6.13%	-3.10%	14.23%	13.44%
42	-4.78%	3.63%	44.40%	-33.25%	24.05%	10.16%
43	-50.67%	62.42%	5.60%	131.95%	-24.13%	8.76%

Note: "---" denotes error over 300%;

$$\% \text{ Diff} = \frac{\text{Value}_{UNCOMTRADE} - \text{Value}_{GTAP}}{\text{Value}_{GTAP}} \times 100\%$$

EXPORT - ASEAN

GTAP Sector	Australia	China	Japan	South Korea	USA	EU-27
1	-100.00%	-3.99%	-75.14%	12.79%	-77.43%	45.86%
2	-99.99%	-99.99%	-99.99%	-99.98%	-100.00%	-100.00%
3	-58.80%	2.06%	2.10%	-99.99%	-94.07%	-68.53%
4	-5.09%	13.65%	120.69%	158.64%	2.27%	27.90%
5	-83.75%	7.47%	6.69%	10.08%	-7.79%	-51.28%
6	152.11%	---	-100.00%	-100.00%	-100.00%	-99.86%
7	-89.12%	-15.35%	-78.50%	-39.67%	-98.27%	-97.74%
8	20.03%	-0.53%	-20.45%	-14.44%	3.41%	10.00%
9	-60.18%	-100.00%	-100.00%	-100.00%	-100.00%	-99.84%
10	-86.31%	-39.91%	-32.42%	-66.52%	-24.89%	-63.33%
11	-99.97%	-99.99%	-76.42%	-99.98%	66.67%	-100.00%
12	---	-73.57%	-100.00%	-94.80%	-100.00%	-99.61%
13	---	---	---	---	---	---
14	-35.85%	-0.57%	-21.32%	-27.88%	-19.40%	-31.48%
15	---	2.06%	-6.26%	-21.21%	2.64%	35.82%
16	-31.87%	1.20%	161.87%	34.85%	-40.36%	-100.00%
17	---	---	-24.35%	48.35%	---	-100.00%
18	-19.29%	17.84%	18.99%	4.88%	-10.37%	-1.16%
19	-80.38%	-87.75%	-100.00%	-100.00%	-100.00%	-91.98%
20	-76.14%	-61.94%	2.75%	-8.60%	-94.83%	-10.14%
21	7.80%	8.15%	-2.23%	6.54%	0.06%	208.49%
22	-21.60%	-75.25%	-86.91%	-80.99%	-80.16%	-97.67%
23	10.96%	11.74%	14.64%	-90.77%	6.78%	-34.87%
24	-9.16%	6.25%	25.66%	47.43%	17.93%	-60.47%
25	4.29%	6.86%	-2.45%	-16.02%	-5.09%	-16.73%
26	-24.12%	-8.50%	-34.43%	7.61%	-13.23%	-53.77%
27	-10.62%	-10.84%	-8.00%	-5.21%	14.10%	-9.14%
28	-12.49%	-31.31%	0.66%	6.43%	2.32%	-5.13%
29	1.00%	-56.24%	-6.85%	6.25%	13.27%	-15.35%
30	-79.38%	-88.78%	-85.80%	-69.72%	-89.74%	-83.31%
31	55.42%	61.86%	-52.74%	-11.39%	-19.23%	-27.82%
32	28.10%	15.73%	55.96%	156.31%	-19.83%	-34.45%
33	-16.56%	-15.45%	-27.47%	-30.21%	-6.80%	2.28%
34	-31.14%	7.07%	7.27%	4.32%	14.92%	27.92%
35	-14.07%	-52.44%	-27.54%	-31.56%	71.89%	8.66%
36	44.55%	-36.61%	-14.31%	-20.88%	-3.71%	37.03%
37	33.50%	52.90%	-10.79%	-67.33%	6.34%	9.54%
38	-0.95%	-44.18%	-35.42%	-69.22%	-40.75%	-40.16%
39	-70.42%	-67.51%	-57.94%	-49.45%	-26.87%	38.46%
40	21.25%	-60.41%	-58.82%	-78.48%	-45.48%	-23.90%
41	-16.98%	-7.69%	-15.84%	-32.41%	-26.99%	-19.43%
42	166.75%	16.02%	102.97%	94.73%	118.63%	80.49%
43	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Note: "---" denotes error over 300%;

$$\% \text{ Diff} = \frac{\text{Value}_{\text{UNCOMTRADE}} - \text{Value}_{\text{GTAP}}}{\text{Value}_{\text{GTAP}}} \times 100\%$$

IMPORT - EU-27

GTAP Sector	Australia	China	Japan	South Korea	USA	ASEAN
1	-0.34%	-26.15%	-47.95%	-95.40%	-8.85%	28.36%
2	6.31%	-95.16%	-97.22%	-99.84%	1.50%	-100.00%
3	3.97%	29.55%	-44.66%	-31.27%	-3.09%	-69.43%
4	-22.08%	-11.07%	-52.83%	-92.09%	3.65%	10.82%
5	1.77%	45.99%	6.29%	-23.43%	13.65%	-55.62%
6	-84.75%	13.52%	---	-99.95%	-97.15%	-99.86%
7	-12.38%	36.62%	-58.09%	61.12%	-32.99%	-97.99%
8	13.42%	17.79%	7.42%	28.67%	-4.69%	4.11%
9	---	-100.00%	-99.98%	-99.99%	-90.73%	-99.84%
10	-24.06%	-91.53%	-16.68%	-45.72%	-35.17%	-64.28%
11	-99.98%	-99.92%	-99.86%	-99.53%	-99.08%	-100.00%
12	-0.54%	-98.87%	-50.19%	-100.00%	-17.63%	-99.62%
13	-4.52%	30.63%	173.64%	139.33%	-21.36%	---
14	-4.52%	-50.39%	-1.09%	-2.12%	-7.23%	-41.41%
15	27.56%	176.11%	---	-85.71%	11.39%	20.06%
16	-100.00%	-100.00%	---	-83.33%	---	-100.00%
17	-100.00%	-99.96%	0.00%	0.00%	---	-100.00%
18	34.93%	67.21%	13.59%	36.58%	18.59%	-41.42%
19	3.07%	-98.83%	-99.61%	-99.82%	-56.11%	-92.05%
20	-29.21%	-55.50%	42.51%	-56.56%	-67.71%	-21.37%
21	-27.20%	3.91%	-9.69%	117.37%	2.37%	175.97%
22	-18.49%	-46.06%	-37.05%	-89.70%	-30.83%	-97.68%
23	-21.21%	-85.33%	-81.59%	-93.22%	-20.91%	-40.47%
24	-4.79%	-41.21%	-2.84%	-98.54%	9.36%	-62.55%
25	-4.24%	-45.63%	-13.22%	-11.15%	-29.15%	-22.41%
26	3.80%	-58.13%	-11.57%	-30.25%	-10.11%	-55.65%
27	2.01%	-11.89%	-7.43%	-24.57%	-12.87%	-14.14%
28	-43.06%	2.33%	10.25%	-18.64%	-26.99%	-9.63%
29	20.32%	5.75%	35.72%	-18.50%	-48.21%	-19.81%
30	-52.04%	-85.78%	-96.00%	-84.21%	-72.64%	-85.38%
31	-29.81%	-10.61%	-10.76%	-49.17%	-3.43%	-32.99%
32	34.12%	-81.33%	-25.65%	19.01%	-59.75%	-36.08%
33	-21.39%	-5.58%	-13.98%	-13.73%	-11.83%	-1.51%
34	-28.59%	1.45%	-3.41%	19.66%	-8.88%	10.87%
35	-42.74%	46.96%	7.57%	10.65%	-9.66%	2.90%
36	-54.85%	10.89%	-46.32%	14.89%	-50.83%	34.37%
37	-42.67%	8.58%	-8.90%	-15.20%	-32.25%	2.49%
38	-28.19%	-27.33%	-13.56%	-3.48%	-7.32%	-42.37%
39	-10.74%	22.43%	14.87%	-23.22%	-2.39%	33.97%
40	8.50%	-24.68%	-49.72%	-57.02%	-36.70%	-25.09%
41	-1.16%	-3.56%	-1.47%	-7.47%	7.83%	-22.12%
42	-36.41%	4.61%	10.64%	-14.04%	-31.80%	74.25%
43	16.49%	8.76%	61.86%	19.55%	12.60%	-8.05%

Note: "---" denotes error over 300%;

$$\% \text{ Diff} = \frac{\text{Value}_{UNCOMTRADE} - \text{Value}_{GTAP}}{\text{Value}_{GTAP}} \times 100\%$$

EXPORT - EU-27

GTAP Sector	Australia	China	Japan	South Korea	USA	ASEAN
1	3.26%	-87.27%	-98.70%	---	8.32%	-1.82%
2	-97.36%	-97.86%	-24.95%	-100.00%	-94.73%	-71.53%
3	-63.91%	-8.29%	4.37%	-76.22%	0.94%	-98.08%
4	-16.45%	-6.33%	51.72%	-23.39%	4.99%	1.66%
5	---	7.38%	86.96%	97.70%	43.34%	-21.20%
6	217.13%	-99.99%	-99.99%	-99.98%	-100.00%	-93.56%
7	-79.33%	---	0.39%	-17.63%	-42.43%	-81.48%
8	20.10%	5.38%	10.84%	18.97%	-6.89%	-26.62%
9	-6.06%	-56.34%	-97.63%	-91.91%	-99.29%	-91.86%
10	-72.75%	-63.81%	-70.88%	-35.96%	-55.48%	-54.87%
11	-80.23%	122.15%	-100.00%	20.90%	9.17%	-61.42%
12	---	-24.19%	-82.02%	-92.93%	-80.12%	79.31%
13	69.64%	-22.94%	-2.00%	-6.77%	-28.43%	-9.16%
14	41.66%	---	-87.32%	58.69%	-2.03%	-42.24%
15	---	---	---	---	---	156.91%
16	-99.15%	-99.97%	-100.00%	-100.00%	32.65%	-99.48%
17	-95.97%	-6.92%	-99.99%	-88.25%	---	-71.86%
18	-27.39%	-18.35%	27.13%	3.70%	3.19%	43.14%
19	-78.55%	-64.84%	-11.46%	-0.88%	-89.97%	-11.24%
20	-5.61%	-31.82%	-7.55%	-7.55%	-8.35%	-8.23%
21	-3.13%	11.74%	-4.49%	14.02%	-8.68%	-11.99%
22	-7.63%	-2.50%	4.00%	2.80%	-5.94%	0.38%
23	30.60%	-47.47%	-44.07%	-100.00%	32.49%	-49.83%
24	-62.29%	-80.86%	-23.52%	-71.91%	-71.50%	-54.34%
25	-1.63%	-1.03%	-17.52%	-13.76%	-10.28%	-7.38%
26	-6.19%	-19.63%	-3.55%	9.28%	-6.35%	78.03%
27	3.94%	-22.51%	-15.93%	-26.98%	-15.17%	-15.06%
28	-16.84%	-46.32%	1.04%	6.98%	-6.23%	-34.43%
29	-5.88%	-85.20%	14.16%	-12.40%	-7.52%	-40.31%
30	-68.23%	-86.90%	-79.14%	-90.09%	-83.63%	-85.94%
31	-3.24%	-70.91%	-40.69%	-47.49%	-46.91%	-51.52%
32	-64.68%	-36.98%	170.42%	---	50.34%	153.87%
33	0.72%	-31.57%	-24.56%	-14.97%	-12.94%	-3.11%
34	-2.92%	-21.76%	-17.28%	-6.58%	-11.00%	-0.49%
35	14.87%	-14.93%	-15.49%	-19.99%	7.34%	3.28%
36	-81.13%	-52.60%	-35.90%	-45.66%	4.77%	3.26%
37	-1.80%	-12.65%	4.17%	-23.87%	-1.85%	28.92%
38	1.92%	-9.96%	-6.99%	-11.88%	6.45%	5.41%
39	-4.35%	16.09%	2.49%	81.39%	16.34%	10.46%
40	13.75%	-72.38%	-39.61%	-52.09%	-28.37%	-66.74%
41	1.30%	-15.53%	-3.93%	-7.76%	-1.20%	17.19%
42	11.41%	55.05%	-5.44%	-8.79%	-36.29%	12.24%
43	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Note: "---" denotes error over 300%;

$$\% \text{ Diff} = \frac{\text{Value}_{\text{UNCOMTRADE}} - \text{Value}_{\text{GTAP}}}{\text{Value}_{\text{GTAP}}} \times 100\%$$

APPENDIX III - Trade Forecasting (Commodity-Level) at Median Growth Case Scenario

TRADE FORECASTING BETWEEN AUSTRALIA AND CHINA

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	3.53%	3.49%	3.67%	3.79%	3.92%	3.92%	1.95%	1.87%	1.90%	1.94%	1.99%	2.04%
02		21.42%	21.41%	21.54%	21.72%	21.98%	22.42%	3.89%	3.90%	4.05%	4.11%	4.32%	4.50%
03		5.91%	5.75%	5.89%	5.93%	6.17%	6.37%	0.81%	0.81%	0.99%	1.11%	1.13%	1.14%
04		11.32%	11.44%	11.80%	12.13%	12.64%	12.88%	-1.43%	-1.39%	-1.22%	-1.12%	-1.10%	-1.06%
05		13.38%	14.94%	17.01%	19.26%	20.21%	21.12%	0.78%	0.91%	1.19%	1.43%	1.48%	1.52%
06	VEGETABLE PRODUCTS	10.20%	10.19%	10.56%	10.75%	10.88%	11.37%	3.05%	2.94%	3.08%	3.02%	3.11%	3.20%
07		5.71%	5.57%	5.73%	5.80%	5.98%	6.21%	-0.69%	-0.83%	-0.48%	-0.45%	-0.43%	-0.42%
08		5.43%	5.32%	5.50%	5.59%	5.65%	5.84%	-1.03%	-1.22%	-0.82%	-0.82%	-0.78%	-0.75%
09		8.01%	7.96%	8.26%	8.41%	8.64%	8.73%	1.11%	1.06%	1.35%	1.43%	1.43%	1.45%
10		5.51%	5.25%	5.59%	5.55%	5.59%	5.84%	1.45%	1.41%	1.49%	1.57%	1.59%	1.59%
11		5.90%	5.74%	5.89%	5.92%	5.94%	6.23%	1.20%	1.22%	1.35%	1.45%	1.52%	1.56%
12		8.98%	9.02%	9.33%	9.55%	9.71%	9.94%	1.98%	2.05%	2.54%	2.81%	2.84%	2.90%
13		5.96%	5.80%	5.94%	5.98%	6.23%	6.35%	2.30%	2.26%	2.39%	2.39%	2.50%	2.51%
14		6.69%	6.74%	7.15%	7.40%	7.47%	7.50%	3.08%	2.98%	3.09%	3.02%	3.07%	3.08%
15	FATS & OILS	8.51%	8.49%	8.88%	9.11%	9.56%	9.64%	2.52%	2.53%	2.80%	2.90%	2.97%	3.11%
16	PREPARED FOODSTUFFS	6.55%	6.48%	6.72%	6.87%	7.14%	7.45%	-1.22%	-1.20%	-1.01%	-0.91%	-0.90%	-0.89%
17		11.33%	11.40%	11.73%	12.01%	12.52%	12.69%	-1.46%	-1.45%	-1.25%	-1.16%	-1.11%	-1.11%
18		6.06%	5.90%	6.05%	6.09%	6.27%	6.43%	0.36%	0.38%	0.55%	0.66%	0.67%	0.68%
19		5.96%	5.80%	5.95%	5.98%	6.27%	6.34%	0.32%	0.34%	0.51%	0.62%	0.63%	0.63%
20		5.96%	5.80%	5.95%	5.98%	6.06%	6.34%	0.32%	0.34%	0.51%	0.62%	0.64%	0.67%
21		6.15%	6.01%	6.17%	6.23%	6.39%	6.71%	-1.04%	-1.00%	-0.82%	-0.71%	-0.70%	-0.68%
22		3.46%	3.41%	3.57%	3.70%	3.81%	3.84%	2.60%	2.58%	2.63%	2.70%	2.82%	2.94%
23		7.49%	7.44%	7.77%	7.95%	7.99%	8.19%	-0.74%	-0.86%	-0.48%	-0.49%	-0.46%	-0.46%
24		4.16%	4.18%	4.44%	4.64%	4.80%	4.95%	2.60%	2.59%	2.63%	2.70%	2.81%	2.95%
25	MINERAL PRODUCTS	4.26%	4.15%	4.30%	4.35%	4.37%	4.40%	7.42%	7.48%	7.60%	7.77%	7.92%	7.98%
26		2.80%	2.90%	3.17%	3.31%	3.34%	3.45%	7.42%	7.49%	7.60%	7.77%	8.06%	8.36%
27		6.68%	6.91%	7.42%	7.77%	7.98%	7.98%	8.33%	8.79%	9.24%	9.65%	9.89%	10.22%
28	CHEMICAL PRODUCTS	7.89%	7.76%	7.91%	7.95%	8.28%	8.41%	6.12%	6.55%	7.04%	7.43%	7.46%	7.84%
29		7.91%	7.77%	7.92%	7.96%	8.15%	8.30%	5.61%	5.99%	6.44%	6.78%	6.88%	7.19%
30		7.54%	7.40%	7.54%	7.57%	7.65%	7.73%	5.55%	5.93%	6.38%	6.72%	7.04%	7.27%
31		7.89%	7.75%	7.90%	7.94%	8.33%	8.46%	7.29%	7.39%	7.53%	7.71%	8.04%	8.41%
32		7.91%	7.78%	7.92%	7.96%	8.33%	8.53%	5.61%	5.99%	6.45%	6.78%	6.86%	6.95%
33		7.91%	7.78%	7.92%	7.96%	7.97%	8.22%	5.61%	5.99%	6.45%	6.78%	7.08%	7.43%
34		7.55%	7.35%	7.44%	7.43%	7.69%	8.05%	5.57%	5.95%	6.40%	6.74%	6.90%	6.99%
35		7.67%	7.55%	7.72%	7.78%	7.99%	8.19%	2.66%	3.05%	3.55%	3.95%	4.02%	4.15%
36		6.83%	6.49%	6.43%	6.30%	6.57%	6.90%	5.06%	5.44%	5.89%	6.23%	6.46%	6.72%
37		7.91%	7.78%	7.92%	7.96%	8.14%	8.33%	5.61%	5.99%	6.45%	6.78%	7.12%	7.27%
38		7.68%	7.53%	7.66%	7.69%	7.69%	7.86%	5.46%	5.84%	6.29%	6.63%	6.64%	6.78%
39	PLASTICS	7.91%	7.78%	7.92%	7.96%	8.17%	8.22%	5.61%	5.99%	6.45%	6.78%	7.11%	7.37%
40		7.90%	7.77%	7.92%	7.96%	8.33%	8.34%	5.26%	5.58%	5.99%	6.28%	6.41%	6.67%
41	LEATHER GOODS	2.67%	2.35%	2.30%	2.16%	2.25%	2.29%	1.30%	1.26%	1.35%	1.39%	1.43%	1.49%
42		3.59%	3.29%	3.25%	3.15%	3.16%	3.29%	-0.91%	-0.88%	-0.70%	-0.74%	-0.73%	-0.70%
43		3.53%	3.49%	3.67%	3.79%	3.79%	3.93%	2.03%	1.96%	1.99%	2.04%	2.13%	2.22%
44	WOOD PRODUCTS	2.81%	2.58%	2.69%	2.67%	2.78%	2.82%	1.12%	1.14%	1.32%	1.34%	1.37%	1.40%
45		2.65%	2.40%	2.51%	2.48%	2.58%	2.62%	1.63%	1.62%	1.77%	1.76%	1.80%	1.80%
46		2.61%	2.36%	2.46%	2.43%	2.45%	2.46%	-0.16%	-0.14%	0.02%	0.04%	0.05%	0.05%
47	PAPER	6.98%	6.80%	6.90%	6.93%	6.96%	7.31%	2.32%	2.32%	2.40%	2.40%	2.46%	2.48%
48		6.98%	6.80%	6.90%	6.93%	7.15%	7.15%	2.32%	2.32%	2.40%	2.40%	2.51%	2.52%
49		6.98%	6.80%	6.90%	6.93%	7.02%	7.02%	2.32%	2.32%	2.40%	2.40%	2.44%	2.50%

TRADE FORECASTING BETWEEN AUSTRALIA AND CHINA (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	5.30%	5.35%	5.77%	6.29%	6.56%	6.88%	0.78%	0.91%	1.19%	1.43%	1.47%	1.51%
51		5.67%	5.83%	6.39%	7.10%	7.27%	7.37%	0.78%	0.91%	1.19%	1.43%	1.47%	1.54%
52		4.13%	3.80%	3.71%	3.55%	3.55%	3.72%	5.07%	5.28%	5.67%	6.00%	6.12%	6.34%
53		4.13%	3.80%	3.71%	3.55%	3.67%	3.72%	6.32%	6.47%	6.87%	7.22%	7.53%	7.66%
54		4.13%	3.80%	3.71%	3.55%	3.69%	3.75%	1.76%	1.97%	2.20%	2.30%	2.34%	2.34%
55		4.13%	3.80%	3.71%	3.55%	3.67%	3.82%	1.76%	1.97%	2.20%	2.30%	2.31%	2.33%
56		4.13%	3.80%	3.71%	3.55%	3.58%	3.70%	1.76%	1.97%	2.20%	2.30%	2.41%	2.52%
57		4.13%	3.80%	3.71%	3.55%	3.68%	3.70%	1.76%	1.97%	2.20%	2.30%	2.31%	2.36%
58		4.13%	3.80%	3.71%	3.55%	3.62%	3.68%	1.76%	1.97%	2.20%	2.30%	2.42%	2.50%
59		5.67%	5.34%	5.28%	5.16%	5.25%	5.34%	3.30%	3.60%	3.96%	4.21%	4.27%	4.34%
60		4.13%	3.80%	3.71%	3.55%	3.55%	3.56%	1.76%	1.97%	2.20%	2.30%	2.40%	2.45%
61		2.91%	2.64%	2.61%	2.53%	2.60%	2.63%	1.42%	1.60%	1.82%	1.92%	1.96%	2.03%
62		2.83%	2.57%	2.54%	2.47%	2.51%	2.54%	0.29%	0.39%	0.54%	0.64%	0.64%	0.66%
63	4.28%	3.95%	3.87%	3.72%	3.81%	3.89%	1.71%	1.91%	2.14%	2.24%	2.33%	2.37%	
64	FOOTWEAR	2.67%	2.35%	2.29%	2.16%	2.23%	2.33%	-0.95%	-0.93%	-0.75%	-0.79%	-0.76%	-0.74%
65		3.06%	2.81%	2.81%	2.75%	2.78%	2.82%	5.31%	5.69%	6.14%	6.48%	6.77%	7.06%
66		6.63%	6.24%	6.14%	5.98%	6.22%	6.45%	0.45%	0.58%	0.74%	0.79%	0.82%	0.85%
67		6.63%	6.24%	6.14%	5.98%	6.19%	6.37%	0.45%	0.58%	0.74%	0.79%	0.80%	0.81%
68	STONE & GLASS	5.21%	5.01%	5.10%	5.10%	5.26%	5.43%	1.98%	2.17%	2.40%	2.58%	2.63%	2.72%
69		5.21%	5.01%	5.10%	5.10%	5.24%	5.34%	1.98%	2.17%	2.40%	2.58%	2.63%	2.64%
70		5.16%	4.95%	5.03%	5.03%	5.14%	5.16%	1.97%	2.16%	2.39%	2.57%	2.57%	2.66%
71	PRECIOUS STONES	6.94%	6.60%	6.57%	6.45%	6.69%	6.87%	6.49%	6.57%	6.73%	6.90%	6.97%	7.09%
72	BASE METALS	4.87%	4.65%	4.63%	4.55%	4.75%	4.89%	4.66%	4.96%	5.27%	5.61%	5.67%	5.72%
73		6.31%	5.97%	5.90%	5.78%	5.98%	6.03%	2.00%	2.27%	2.54%	2.76%	2.78%	2.84%
74		7.98%	7.87%	8.13%	8.20%	8.60%	8.92%	1.25%	1.16%	1.21%	1.09%	1.12%	1.13%
75		8.35%	8.18%	8.43%	8.45%	8.79%	9.13%	1.28%	1.16%	1.19%	1.04%	1.09%	1.13%
76		7.41%	7.16%	7.26%	7.22%	7.50%	7.83%	1.29%	1.17%	1.21%	1.06%	1.09%	1.12%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		8.41%	8.25%	8.50%	8.53%	8.56%	8.74%	1.28%	1.16%	1.19%	1.03%	1.06%	1.08%
79		8.41%	8.25%	8.50%	8.53%	8.84%	8.84%	1.28%	1.16%	1.19%	1.03%	1.07%	1.09%
80		8.27%	8.10%	8.33%	8.35%	8.65%	8.94%	1.28%	1.16%	1.19%	1.04%	1.08%	1.10%
81		9.00%	8.88%	9.21%	9.26%	9.38%	9.80%	1.28%	1.15%	1.19%	1.03%	1.07%	1.11%
82		6.38%	6.02%	5.92%	5.79%	6.00%	6.08%	1.62%	1.88%	2.14%	2.33%	2.40%	2.44%
83		6.38%	6.02%	5.92%	5.79%	5.92%	5.97%	1.62%	1.88%	2.14%	2.33%	2.33%	2.35%
84		MACHINE	6.33%	6.00%	6.01%	5.92%	6.09%	6.14%	1.33%	1.53%	1.75%	1.89%	1.93%
85	4.52%		4.20%	4.23%	4.16%	4.20%	4.32%	2.08%	2.20%	2.44%	2.47%	2.59%	2.60%
86	VEHICLES	9.27%	8.75%	8.65%	8.41%	8.60%	8.97%	0.41%	0.51%	0.65%	0.77%	0.77%	0.79%
87		7.40%	7.17%	7.23%	7.21%	7.57%	7.92%	0.98%	1.15%	1.31%	1.48%	1.53%	1.59%
88		9.25%	8.72%	8.61%	8.37%	8.59%	8.73%	0.14%	0.20%	0.32%	0.41%	0.42%	0.43%
89		9.38%	8.84%	8.73%	8.48%	8.55%	8.72%	0.08%	0.13%	0.25%	0.34%	0.35%	0.37%
90	CLOCKS & MUSICAL INST.	7.89%	7.49%	7.44%	7.29%	7.65%	8.00%	0.89%	1.07%	1.25%	1.36%	1.39%	1.42%
91		7.75%	7.37%	7.31%	7.17%	7.53%	7.82%	0.82%	1.00%	1.18%	1.28%	1.31%	1.32%
92		6.63%	6.24%	6.14%	5.98%	5.98%	6.00%	0.45%	0.58%	0.74%	0.79%	0.81%	0.82%
93	ARMS	7.82%	7.43%	7.37%	7.22%	7.35%	7.62%	0.91%	1.09%	1.27%	1.38%	1.39%	1.42%
94	MISC. ART.	6.72%	6.34%	6.25%	6.09%	6.34%	6.48%	1.14%	1.34%	1.56%	1.69%	1.70%	1.75%
95		6.63%	6.24%	6.14%	5.98%	6.22%	6.27%	0.45%	0.58%	0.74%	0.79%	0.80%	0.80%
96		6.58%	6.20%	6.10%	5.94%	6.13%	6.39%	0.27%	0.39%	0.55%	0.60%	0.61%	0.62%
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

TRADE FORECASTING BETWEEN AUSTRALIA AND JAPAN

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	1.51%	1.46%	1.76%	1.96%	2.04%	2.07%	-1.47%	-1.26%	-1.16%	-1.04%	-0.99%	-0.96%
02		0.20%	-0.40%	-0.49%	-0.69%	-0.68%	-0.67%	-1.43%	-1.18%	-1.13%	-1.07%	-1.05%	-1.00%
03		-0.52%	-0.85%	-0.71%	-0.74%	-0.74%	-0.73%	-2.66%	-2.44%	-2.32%	-2.25%	-2.15%	-2.09%
04		0.21%	-0.20%	-0.09%	-0.11%	-0.10%	-0.10%	-0.69%	-0.34%	-0.17%	-0.05%	-0.04%	-0.04%
05		0.09%	-0.16%	0.02%	0.06%	0.06%	0.06%	-2.11%	-1.86%	-1.72%	-1.59%	-1.54%	-1.49%
06	VEGETABLE PRODUCTS	-0.62%	-1.24%	-1.21%	-1.54%	-1.47%	-1.40%	-4.11%	-4.20%	-4.03%	-4.11%	-3.99%	-3.84%
07		-0.66%	-1.00%	-0.87%	-0.90%	-0.89%	-0.85%	-3.52%	-3.39%	-3.28%	-3.24%	-3.16%	-3.06%
08		-0.66%	-1.00%	-0.87%	-0.90%	-0.89%	-0.88%	-3.89%	-3.80%	-3.67%	-3.60%	-3.45%	-3.37%
09		-0.64%	-1.14%	-1.06%	-1.25%	-1.24%	-1.21%	-3.97%	-4.01%	-3.86%	-3.92%	-3.86%	-3.76%
10		-2.27%	-2.84%	-2.27%	-2.41%	-2.35%	-2.28%	-1.74%	-1.66%	-1.58%	-1.46%	-1.44%	-1.40%
11		-0.58%	-0.91%	-0.77%	-0.79%	-0.77%	-0.76%	-2.95%	-2.76%	-2.69%	-2.67%	-2.59%	-2.52%
12		-0.45%	-0.92%	-0.84%	-1.02%	-1.01%	-1.00%	-2.55%	-2.51%	-2.31%	-2.25%	-2.25%	-2.21%
13		-0.65%	-0.99%	-0.86%	-0.89%	-0.87%	-0.85%	-3.11%	-2.92%	-2.84%	-2.83%	-2.75%	-2.70%
14		-0.32%	-0.66%	-0.39%	-0.43%	-0.42%	-0.42%	-2.10%	-2.02%	-1.87%	-1.91%	-1.83%	-1.75%
15	FATS & OILS	-1.96%	-2.53%	-2.52%	-2.74%	-2.63%	-2.59%	-1.46%	-1.21%	-1.15%	-1.09%	-1.08%	-1.04%
16	PREPARED FOODSTUFFS	-0.52%	-0.90%	-0.80%	-0.86%	-0.84%	-0.80%	-3.96%	-3.87%	-3.86%	-3.93%	-3.85%	-3.68%
17		0.38%	-0.07%	0.04%	0.01%	0.01%	0.01%	-0.65%	-0.29%	-0.12%	0.00%	0.00%	0.00%
18		-0.66%	-1.01%	-0.88%	-0.92%	-0.89%	-0.85%	-3.24%	-3.08%	-2.99%	-2.99%	-2.86%	-2.82%
19		-0.66%	-1.00%	-0.87%	-0.90%	-0.87%	-0.84%	-3.12%	-2.94%	-2.86%	-2.85%	-2.72%	-2.69%
20		-0.66%	-1.00%	-0.87%	-0.90%	-0.86%	-0.83%	-3.12%	-2.94%	-2.86%	-2.85%	-2.80%	-2.78%
21		-0.62%	-0.97%	-0.83%	-0.86%	-0.85%	-0.82%	-2.18%	-1.91%	-1.78%	-1.71%	-1.63%	-1.57%
22		0.43%	0.28%	0.42%	0.50%	0.51%	0.52%	-1.28%	-1.09%	-1.09%	-1.05%	-1.05%	-1.04%
23		-0.75%	-1.13%	-0.95%	-1.01%	-0.97%	-0.95%	-3.63%	-3.51%	-3.45%	-3.50%	-3.37%	-3.21%
24		0.41%	0.23%	0.37%	0.42%	0.43%	0.44%	-1.79%	-1.63%	-1.59%	-1.56%	-1.50%	-1.47%
25	MINERAL PRODUCTS	-1.48%	-1.75%	-1.63%	-1.68%	-1.67%	-1.60%	-0.72%	-0.78%	-0.71%	-0.64%	-0.63%	-0.62%
26		-1.04%	-1.25%	-1.15%	-1.22%	-1.22%	-1.17%	-0.72%	-0.78%	-0.71%	-0.64%	-0.62%	-0.62%
27		2.83%	3.09%	3.67%	4.10%	4.11%	4.21%	-1.97%	-1.91%	-1.65%	-1.60%	-1.56%	-1.54%
28	CHEMICAL PRODUCTS	-1.51%	-1.97%	-1.91%	-2.02%	-1.93%	-1.86%	1.23%	1.60%	1.91%	2.13%	2.22%	2.26%
29		-2.23%	-2.86%	-2.96%	-3.24%	-3.15%	-3.13%	-0.27%	0.14%	0.48%	0.68%	0.71%	0.74%
30		-2.25%	-2.88%	-2.97%	-3.26%	-3.18%	-3.09%	-0.30%	0.12%	0.47%	0.68%	0.70%	0.72%
31		-2.23%	-2.85%	-2.95%	-3.23%	-3.11%	-3.09%	-0.69%	-0.72%	-0.63%	-0.55%	-0.54%	-0.52%
32		-2.23%	-2.86%	-2.96%	-3.24%	-3.17%	-3.04%	-0.18%	0.23%	0.57%	0.78%	0.79%	0.82%
33		-2.23%	-2.86%	-2.96%	-3.24%	-3.22%	-3.13%	-0.18%	0.23%	0.57%	0.78%	0.78%	0.79%
34		-2.33%	-2.96%	-3.05%	-3.34%	-3.31%	-3.16%	-0.58%	-0.17%	0.17%	0.38%	0.39%	0.39%
35		-2.15%	-2.77%	-2.85%	-3.12%	-2.99%	-2.98%	-1.17%	-0.83%	-0.66%	-0.54%	-0.52%	-0.49%
36		-3.24%	-3.90%	-4.01%	-4.29%	-4.24%	-4.19%	-3.11%	-2.73%	-2.52%	-2.39%	-2.30%	-2.25%
37		-2.23%	-2.86%	-2.96%	-3.24%	-3.19%	-3.18%	-0.18%	0.23%	0.57%	0.78%	0.78%	0.79%
38		-2.23%	-2.86%	-2.94%	-3.21%	-3.08%	-2.97%	-0.37%	0.04%	0.38%	0.58%	0.60%	0.61%
39	PLASTICS	-2.23%	-2.86%	-2.96%	-3.24%	-3.18%	-3.11%	-0.18%	0.23%	0.57%	0.78%	0.80%	0.83%
40		-2.23%	-2.86%	-2.96%	-3.24%	-3.14%	-3.14%	-0.23%	0.17%	0.51%	0.71%	0.73%	0.74%
41	LEATHER GOODS	-8.98%	-9.63%	-9.68%	-9.93%	-9.66%	-9.49%	-7.82%	-7.66%	-7.64%	-7.70%	-7.48%	-7.16%
42		-6.50%	-7.35%	-7.59%	-8.00%	-7.78%	-7.77%	-7.56%	-7.40%	-7.45%	-7.60%	-7.24%	-6.96%
43		-0.26%	-0.35%	-0.26%	-0.18%	-0.17%	-0.17%	-4.00%	-3.91%	-3.94%	-3.95%	-3.91%	-3.77%
44	WOOD PRODUCTS	-2.17%	-2.78%	-2.86%	-3.13%	-3.09%	-3.09%	-3.25%	-3.29%	-3.39%	-3.56%	-3.46%	-3.32%
45		-1.19%	-1.51%	-1.41%	-1.47%	-1.44%	-1.41%	-3.23%	-3.27%	-3.36%	-3.54%	-3.43%	-3.34%
46		-1.72%	-2.06%	-1.99%	-2.08%	-2.04%	-2.04%	-3.53%	-3.61%	-3.77%	-3.98%	-3.90%	-3.72%
47	PAPER	-1.35%	-1.83%	-1.72%	-1.79%	-1.74%	-1.72%	-1.59%	-1.29%	-1.21%	-1.20%	-1.19%	-1.19%
48		-1.35%	-1.83%	-1.72%	-1.79%	-1.77%	-1.70%	-1.59%	-1.29%	-1.21%	-1.20%	-1.18%	-1.15%
49		-1.35%	-1.83%	-1.72%	-1.79%	-1.79%	-1.78%	-1.59%	-1.29%	-1.21%	-1.20%	-1.16%	-1.12%

TRADE FORECASTING BETWEEN AUSTRALIA AND JAPAN (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-6.03%	-6.68%	-6.79%	-7.08%	-6.82%	-6.63%	-6.51%	-6.10%	-5.80%	-5.63%	-5.39%	-5.29%
51		-6.03%	-6.68%	-6.79%	-7.08%	-6.93%	-6.81%	-6.26%	-5.83%	-5.51%	-5.32%	-5.14%	-4.97%
52		-6.03%	-6.68%	-6.79%	-7.08%	-6.90%	-6.90%	-4.74%	-4.59%	-4.34%	-4.17%	-3.97%	-3.97%
53		-6.03%	-6.68%	-6.79%	-7.08%	-7.08%	-6.87%	-2.44%	-2.43%	-2.21%	-2.07%	-2.07%	-2.05%
54		-6.03%	-6.68%	-6.79%	-7.08%	-6.98%	-6.74%	-8.82%	-8.70%	-8.66%	-8.74%	-8.40%	-7.99%
55		-6.03%	-6.68%	-6.79%	-7.08%	-7.01%	-6.88%	-8.82%	-8.70%	-8.66%	-8.74%	-8.58%	-8.21%
56		-6.03%	-6.68%	-6.79%	-7.08%	-6.77%	-6.65%	-8.82%	-8.70%	-8.66%	-8.74%	-8.40%	-8.13%
57		-6.03%	-6.68%	-6.79%	-7.08%	-6.78%	-6.75%	-8.82%	-8.70%	-8.66%	-8.74%	-8.66%	-8.50%
58		-6.03%	-6.68%	-6.79%	-7.08%	-6.80%	-6.47%	-8.82%	-8.70%	-8.66%	-8.74%	-8.34%	-8.18%
59		-3.81%	-4.46%	-4.54%	-4.79%	-4.67%	-4.56%	-5.05%	-4.71%	-4.54%	-4.44%	-4.24%	-4.18%
60		-6.03%	-6.68%	-6.79%	-7.08%	-6.84%	-6.64%	-8.82%	-8.70%	-8.66%	-8.74%	-8.58%	-8.21%
61		-6.29%	-6.92%	-7.01%	-7.27%	-6.99%	-6.71%	-8.18%	-7.98%	-7.95%	-8.01%	-7.74%	-7.71%
62		-6.74%	-7.33%	-7.38%	-7.59%	-7.50%	-7.48%	-7.59%	-7.32%	-7.30%	-7.35%	-7.24%	-6.91%
63	-4.03%	-4.65%	-4.63%	-4.80%	-4.59%	-4.56%	-8.44%	-8.30%	-8.24%	-8.29%	-8.14%	-8.12%	
64	FOOTWEAR	-8.98%	-9.64%	-9.69%	-9.93%	-9.75%	-9.32%	-9.18%	-9.07%	-9.11%	-9.28%	-9.27%	-9.04%
65		-2.37%	-2.99%	-3.08%	-3.36%	-3.28%	-3.25%	-1.28%	-0.82%	-0.45%	-0.21%	-0.21%	-0.20%
66		-6.20%	-7.09%	-7.35%	-7.80%	-7.41%	-7.22%	-5.94%	-5.77%	-5.90%	-6.08%	-5.84%	-5.77%
67	-6.20%	-7.09%	-7.35%	-7.80%	-7.59%	-7.53%	-5.94%	-5.77%	-5.90%	-6.08%	-5.93%	-5.85%	
68	STONE & GLASS	-2.37%	-2.86%	-2.79%	-2.89%	-2.81%	-2.81%	-2.80%	-2.51%	-2.37%	-2.31%	-2.20%	-2.10%
69		-2.37%	-2.86%	-2.79%	-2.89%	-2.75%	-2.69%	-2.80%	-2.51%	-2.37%	-2.31%	-2.26%	-2.21%
70		-2.40%	-2.89%	-2.82%	-2.92%	-2.85%	-2.78%	-2.92%	-2.61%	-2.48%	-2.40%	-2.38%	-2.37%
71	PRECIOUS STONES	-2.29%	-2.71%	-2.50%	-2.57%	-2.55%	-2.44%	-2.15%	-2.28%	-2.19%	-2.26%	-2.17%	-2.10%
72	BASE METALS	-2.35%	-2.78%	-2.79%	-2.91%	-2.91%	-2.86%	-0.57%	-0.27%	0.00%	0.24%	0.25%	0.26%
73		-2.51%	-3.01%	-2.99%	-3.12%	-3.05%	-3.03%	-2.96%	-2.62%	-2.45%	-2.33%	-2.26%	-2.17%
74		-0.70%	-1.04%	-0.86%	-0.84%	-0.81%	-0.81%	-3.88%	-4.17%	-4.13%	-4.47%	-4.34%	-4.22%
75		-1.70%	-2.07%	-1.83%	-1.88%	-1.85%	-1.84%	-3.93%	-4.23%	-4.19%	-4.55%	-4.51%	-4.33%
76		-1.80%	-2.19%	-1.96%	-2.01%	-1.95%	-1.87%	-3.93%	-4.23%	-4.19%	-4.54%	-4.42%	-4.34%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		-1.69%	-2.07%	-1.82%	-1.87%	-1.87%	-1.80%	-3.93%	-4.23%	-4.19%	-4.55%	-4.50%	-4.28%
79		-1.69%	-2.07%	-1.82%	-1.87%	-1.82%	-1.79%	-3.93%	-4.23%	-4.19%	-4.55%	-4.32%	-4.30%
80		-1.70%	-2.08%	-1.83%	-1.88%	-1.86%	-1.81%	-3.93%	-4.23%	-4.19%	-4.55%	-4.37%	-4.32%
81		-1.66%	-2.04%	-1.79%	-1.84%	-1.76%	-1.76%	-3.93%	-4.23%	-4.19%	-4.55%	-4.43%	-4.33%
82		-3.35%	-3.94%	-3.90%	-4.01%	-3.90%	-3.74%	-3.65%	-3.31%	-3.18%	-3.14%	-3.04%	-3.00%
83		-3.35%	-3.94%	-3.90%	-4.01%	-3.92%	-3.79%	-3.65%	-3.31%	-3.18%	-3.14%	-3.11%	-3.05%
84	MACHINE	-2.13%	-2.68%	-2.55%	-2.63%	-2.60%	-2.59%	-2.92%	-2.58%	-2.39%	-2.28%	-2.27%	-2.17%
85		-4.36%	-5.05%	-4.96%	-5.14%	-4.91%	-4.83%	-4.18%	-3.89%	-3.77%	-3.79%	-3.77%	-3.59%
86	VEHICLES	-1.47%	-2.01%	-1.90%	-1.99%	-1.91%	-1.86%	-2.34%	-2.53%	-2.90%	-3.27%	-3.25%	-3.17%
87		-0.65%	-0.99%	-0.82%	-0.79%	-0.75%	-0.74%	-1.63%	-1.36%	-1.31%	-1.29%	-1.29%	-1.26%
88		-2.38%	-3.16%	-3.15%	-3.40%	-3.35%	-3.31%	-2.47%	-2.72%	-3.12%	-3.54%	-3.43%	-3.40%
89		-2.38%	-3.16%	-3.15%	-3.40%	-3.40%	-3.33%	-2.43%	-2.68%	-3.09%	-3.51%	-3.47%	-3.36%
90	CLOCKS & MUSICAL INST.	-2.18%	-2.84%	-2.77%	-2.92%	-2.82%	-2.71%	-4.52%	-4.29%	-4.25%	-4.30%	-4.17%	-4.01%
91		-2.18%	-2.84%	-2.77%	-2.92%	-2.79%	-2.75%	-4.54%	-4.31%	-4.26%	-4.31%	-4.17%	-4.01%
92		-6.20%	-7.09%	-7.35%	-7.80%	-7.64%	-7.37%	-5.94%	-5.77%	-5.90%	-6.08%	-6.00%	-5.72%
93	ARMS	-2.19%	-2.85%	-2.78%	-2.93%	-2.87%	-2.82%	-4.48%	-4.25%	-4.20%	-4.25%	-4.04%	-3.91%
94	MISC. ART.	-3.53%	-4.22%	-4.22%	-4.42%	-4.39%	-4.32%	-5.60%	-5.40%	-5.48%	-5.62%	-5.50%	-5.31%
95		-6.20%	-7.09%	-7.35%	-7.80%	-7.44%	-7.36%	-5.94%	-5.77%	-5.90%	-6.08%	-6.00%	-5.95%
96		-6.21%	-7.09%	-7.35%	-7.80%	-7.67%	-7.50%	-5.95%	-5.78%	-5.91%	-6.09%	-5.93%	-5.72%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	

TRADE FORECASTING BETWEEN AUSTRALIA AND SOUTH KOREA

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	-0.01%	-0.12%	-0.01%	0.04%	0.04%	0.04%	0.49%	0.46%	0.62%	0.82%	0.83%	0.85%
02		6.89%	6.43%	6.13%	5.77%	5.83%	5.99%	-0.07%	-0.02%	0.20%	0.45%	0.47%	0.47%
03		1.47%	1.33%	1.48%	1.49%	1.52%	1.57%	-1.91%	-2.05%	-2.03%	-2.01%	-1.96%	-1.86%
04		3.72%	3.59%	3.65%	3.65%	3.80%	3.99%	0.17%	0.16%	0.31%	0.42%	0.43%	0.43%
05		3.57%	3.99%	4.78%	5.55%	5.63%	5.82%	0.10%	0.10%	0.29%	0.51%	0.53%	0.55%
06	VEGETABLE PRODUCTS	12.56%	11.90%	11.67%	11.20%	11.70%	11.99%	-2.33%	-2.33%	-2.02%	-1.81%	-1.73%	-1.68%
07		1.87%	1.70%	1.83%	1.82%	1.88%	1.92%	-4.05%	-4.07%	-3.84%	-3.70%	-3.63%	-3.53%
08		2.64%	2.44%	2.52%	2.48%	2.49%	2.49%	-5.49%	-5.48%	-5.12%	-4.91%	-4.88%	-4.68%
09		4.64%	4.57%	4.82%	4.87%	4.95%	5.19%	-7.04%	-7.41%	-7.40%	-7.55%	-7.52%	-7.18%
10		1.66%	1.56%	1.75%	1.81%	1.82%	1.85%	-1.02%	-1.18%	-1.18%	-1.12%	-1.06%	-1.06%
11		1.47%	1.34%	1.48%	1.50%	1.57%	1.63%	-0.57%	-0.69%	-0.69%	-0.64%	-0.62%	-0.59%
12		6.73%	6.61%	6.82%	6.80%	6.82%	6.89%	-6.43%	-6.77%	-6.72%	-6.83%	-6.60%	-6.30%
13		1.49%	1.34%	1.48%	1.48%	1.52%	1.53%	1.15%	1.08%	1.22%	1.30%	1.36%	1.39%
14		0.83%	0.67%	0.84%	0.82%	0.84%	0.85%	1.83%	1.76%	1.89%	1.97%	2.01%	2.03%
15	FATS & OILS	-2.55%	-3.05%	-3.20%	-3.49%	-3.35%	-3.22%	-0.07%	-0.04%	0.19%	0.43%	0.45%	0.46%
16	PREPARED FOODSTUFFS	1.53%	1.38%	1.52%	1.52%	1.60%	1.65%	-2.41%	-2.62%	-2.65%	-2.71%	-2.69%	-2.56%
17		4.23%	4.10%	4.13%	4.11%	4.25%	4.46%	0.36%	0.28%	0.39%	0.46%	0.47%	0.49%
18		1.60%	1.46%	1.60%	1.62%	1.65%	1.66%	-3.21%	-3.37%	-3.31%	-3.29%	-3.27%	-3.20%
19		1.49%	1.35%	1.49%	1.49%	1.51%	1.56%	-2.02%	-2.18%	-2.17%	-2.16%	-2.08%	-2.08%
20		1.49%	1.35%	1.49%	1.49%	1.50%	1.55%	-2.02%	-2.18%	-2.17%	-2.16%	-2.06%	-1.98%
21		1.63%	1.48%	1.62%	1.63%	1.63%	1.69%	-0.53%	-0.57%	-0.45%	-0.37%	-0.36%	-0.35%
22		1.32%	1.28%	1.45%	1.56%	1.57%	1.63%	0.33%	0.21%	0.18%	0.24%	0.25%	0.26%
23		1.58%	1.44%	1.60%	1.62%	1.70%	1.70%	0.34%	0.20%	0.37%	0.39%	0.40%	0.42%
24		1.47%	1.44%	1.62%	1.74%	1.75%	1.80%	0.09%	-0.02%	-0.03%	0.03%	0.03%	0.04%
25	MINERAL PRODUCTS	-0.43%	-0.61%	-0.50%	-0.51%	-0.49%	-0.48%	2.47%	2.57%	2.71%	2.91%	3.04%	3.10%
26		-3.10%	-3.74%	-4.11%	-4.60%	-4.46%	-4.46%	2.47%	2.57%	2.72%	2.91%	2.92%	3.05%
27		2.17%	2.38%	2.90%	3.27%	3.34%	3.35%	1.99%	2.36%	2.65%	3.28%	3.36%	3.50%
28	CHEMICAL PRODUCTS	-2.40%	-2.91%	-3.09%	-3.37%	-3.20%	-3.12%	2.97%	3.34%	3.78%	4.13%	4.15%	4.32%
29		-3.67%	-4.46%	-4.98%	-5.63%	-5.52%	-5.29%	3.11%	3.51%	3.99%	4.37%	4.57%	4.69%
30		-3.71%	-4.49%	-5.00%	-5.64%	-5.48%	-5.29%	3.04%	3.44%	3.92%	4.31%	4.52%	4.72%
31		-3.68%	-4.47%	-4.99%	-5.65%	-5.49%	-5.38%	2.61%	2.78%	3.00%	3.24%	3.24%	3.39%
32		-3.68%	-4.47%	-5.00%	-5.65%	-5.60%	-5.46%	3.11%	3.52%	3.99%	4.37%	4.48%	4.56%
33		-3.68%	-4.47%	-5.00%	-5.65%	-5.46%	-5.22%	3.11%	3.52%	3.99%	4.37%	4.40%	4.45%
34		-3.66%	-4.46%	-4.97%	-5.62%	-5.50%	-5.42%	3.09%	3.49%	3.97%	4.35%	4.40%	4.55%
35		-2.71%	-3.34%	-3.68%	-4.12%	-4.10%	-4.08%	1.64%	1.88%	2.23%	2.52%	2.56%	2.66%
36		-3.53%	-4.26%	-4.72%	-5.30%	-5.24%	-5.06%	2.81%	3.20%	3.66%	4.04%	4.24%	4.24%
37		-3.68%	-4.47%	-5.00%	-5.65%	-5.55%	-5.30%	3.11%	3.52%	3.99%	4.37%	4.42%	4.60%
38		-3.28%	-4.00%	-4.43%	-4.98%	-4.98%	-4.81%	3.05%	3.45%	3.92%	4.30%	4.44%	4.54%
39	PLASTICS	-3.68%	-4.47%	-5.00%	-5.65%	-5.56%	-5.53%	3.11%	3.52%	3.99%	4.37%	4.42%	4.52%
40		-3.67%	-4.47%	-4.99%	-5.64%	-5.63%	-5.63%	2.87%	3.18%	3.59%	3.92%	4.05%	4.18%
41	LEATHER GOODS	-6.51%	-6.74%	-6.72%	-6.84%	-6.58%	-6.55%	-5.26%	-5.43%	-5.44%	-5.50%	-5.34%	-5.30%
42		-4.25%	-4.55%	-4.61%	-4.80%	-4.76%	-4.58%	-6.25%	-6.50%	-6.59%	-6.77%	-6.46%	-6.37%
43		-0.01%	-0.12%	-0.01%	0.04%	0.04%	0.04%	-0.53%	-0.70%	-0.75%	-0.75%	-0.73%	-0.70%
44	WOOD PRODUCTS	-1.88%	-2.29%	-2.39%	-2.61%	-2.59%	-2.55%	0.22%	0.20%	0.41%	0.52%	0.53%	0.54%
45		-0.11%	-0.24%	-0.05%	-0.02%	-0.02%	-0.02%	0.78%	0.74%	0.92%	1.02%	1.04%	1.09%
46		-0.23%	-0.35%	-0.16%	-0.12%	-0.12%	-0.11%	-1.80%	-1.86%	-1.65%	-1.60%	-1.53%	-1.49%
47	PAPER	1.04%	0.87%	0.99%	0.96%	1.01%	1.01%	0.46%	0.40%	0.53%	0.57%	0.60%	0.60%
48		1.04%	0.87%	0.99%	0.96%	0.97%	1.01%	0.46%	0.40%	0.53%	0.57%	0.58%	0.61%
49		1.04%	0.87%	0.99%	0.96%	0.99%	1.00%	0.46%	0.40%	0.53%	0.57%	0.58%	0.58%

TRADE FORECASTING BETWEEN AUSTRALIA AND SOUTH KOREA (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-3.85%	-3.95%	-3.71%	-3.47%	-3.31%	-3.22%	-5.59%	-5.66%	-5.62%	-5.69%	-5.43%	-5.28%
51		-3.58%	-3.58%	-3.23%	-2.83%	-2.71%	-2.59%	-5.59%	-5.66%	-5.62%	-5.68%	-5.40%	-5.20%
52		-4.70%	-5.09%	-5.26%	-5.56%	-5.38%	-5.19%	-3.20%	-3.18%	-3.04%	-2.95%	-2.95%	-2.86%
53		-4.70%	-5.09%	-5.26%	-5.56%	-5.42%	-5.34%	-0.72%	-0.75%	-0.61%	-0.52%	-0.52%	-0.50%
54		-4.70%	-5.09%	-5.26%	-5.56%	-5.38%	-5.33%	-5.60%	-5.67%	-5.64%	-5.71%	-5.46%	-5.26%
55		-4.70%	-5.09%	-5.26%	-5.56%	-5.48%	-5.21%	-5.60%	-5.67%	-5.64%	-5.71%	-5.42%	-5.33%
56		-4.70%	-5.09%	-5.26%	-5.56%	-5.37%	-5.12%	-5.60%	-5.67%	-5.64%	-5.71%	-5.48%	-5.41%
57		-4.70%	-5.09%	-5.26%	-5.56%	-5.34%	-5.33%	-5.60%	-5.67%	-5.64%	-5.71%	-5.43%	-5.42%
58		-4.70%	-5.09%	-5.26%	-5.56%	-5.36%	-5.09%	-5.60%	-5.67%	-5.64%	-5.71%	-5.49%	-5.49%
59		-3.57%	-4.01%	-4.19%	-4.49%	-4.47%	-4.28%	-0.25%	0.13%	0.62%	1.03%	1.05%	1.08%
60		-4.70%	-5.09%	-5.26%	-5.56%	-5.36%	-5.17%	-5.60%	-5.67%	-5.64%	-5.71%	-5.65%	-5.62%
61		-4.54%	-4.87%	-4.97%	-5.20%	-4.95%	-4.84%	-5.58%	-5.66%	-5.64%	-5.70%	-5.42%	-5.22%
62		-4.29%	-4.52%	-4.53%	-4.64%	-4.49%	-4.31%	-5.53%	-5.63%	-5.64%	-5.68%	-5.56%	-5.56%
63	-4.07%	-4.39%	-4.47%	-4.67%	-4.44%	-4.43%	-5.33%	-5.38%	-5.34%	-5.39%	-5.15%	-5.07%	
64	FOOTWEAR	-6.53%	-6.77%	-6.74%	-6.87%	-6.81%	-6.69%	-6.50%	-6.75%	-6.83%	-7.01%	-6.90%	-6.56%
65		-3.79%	-4.48%	-4.91%	-5.46%	-5.43%	-5.42%	2.80%	3.21%	3.70%	4.09%	4.15%	4.34%
66		-2.79%	-3.19%	-3.36%	-3.64%	-3.60%	-3.54%	-3.07%	-3.40%	-3.67%	-3.97%	-3.82%	-3.79%
67		-2.79%	-3.19%	-3.36%	-3.64%	-3.49%	-3.38%	-3.07%	-3.40%	-3.67%	-3.97%	-3.96%	-3.81%
68	STONE & GLASS	0.60%	0.54%	0.76%	0.85%	0.86%	0.90%	-0.91%	-0.89%	-0.83%	-0.77%	-0.74%	-0.71%
69		0.60%	0.54%	0.76%	0.85%	0.86%	0.87%	-0.91%	-0.89%	-0.83%	-0.77%	-0.76%	-0.72%
70		0.22%	0.15%	0.37%	0.46%	0.48%	0.49%	-1.22%	-1.19%	-1.12%	-1.05%	-1.04%	-0.99%
71	PRECIOUS STONES	-0.18%	-0.27%	0.01%	0.04%	0.04%	0.04%	0.29%	0.26%	0.35%	0.34%	0.34%	0.35%
72	BASE METALS	1.02%	1.04%	1.26%	1.39%	1.46%	1.46%	0.92%	1.23%	1.56%	1.88%	1.98%	1.99%
73		0.97%	0.95%	1.18%	1.30%	1.35%	1.37%	0.49%	0.77%	1.07%	1.36%	1.41%	1.47%
74		1.51%	1.49%	1.73%	1.84%	1.85%	1.85%	-1.25%	-1.44%	-1.46%	-1.69%	-1.63%	-1.61%
75		0.18%	0.12%	0.44%	0.50%	0.52%	0.54%	-1.63%	-1.88%	-1.95%	-2.27%	-2.16%	-2.11%
76		0.23%	0.17%	0.48%	0.54%	0.55%	0.57%	-1.64%	-1.88%	-1.95%	-2.27%	-2.23%	-2.13%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		0.18%	0.12%	0.44%	0.50%	0.50%	0.51%	-1.63%	-1.88%	-1.95%	-2.27%	-2.27%	-2.22%
79		0.18%	0.12%	0.44%	0.50%	0.52%	0.53%	-1.63%	-1.88%	-1.95%	-2.27%	-2.15%	-2.09%
80		0.18%	0.12%	0.45%	0.50%	0.52%	0.54%	-1.63%	-1.88%	-1.95%	-2.27%	-2.22%	-2.18%
81		0.17%	0.11%	0.43%	0.49%	0.49%	0.50%	-1.63%	-1.88%	-1.95%	-2.27%	-2.25%	-2.14%
82		0.60%	0.55%	0.77%	0.88%	0.91%	0.91%	-2.35%	-2.35%	-2.27%	-2.24%	-2.16%	-2.09%
83		0.60%	0.55%	0.77%	0.88%	0.91%	0.93%	-2.35%	-2.35%	-2.27%	-2.24%	-2.18%	-2.10%
84	MACHINE	0.55%	0.48%	0.75%	0.85%	0.87%	0.92%	-0.34%	-0.32%	-0.23%	-0.22%	-0.21%	-0.21%
85		-1.05%	-1.17%	-0.90%	-0.84%	-0.84%	-0.81%	-0.65%	-0.62%	-0.46%	-0.45%	-0.43%	-0.42%
86	VEHICLES	1.90%	1.84%	2.05%	2.13%	2.17%	2.23%	0.33%	0.29%	0.31%	0.36%	0.38%	0.39%
87		1.75%	1.74%	1.96%	2.07%	2.14%	2.24%	0.44%	0.49%	0.58%	0.69%	0.71%	0.72%
88		2.17%	1.95%	2.16%	2.15%	2.19%	2.22%	-0.45%	-0.84%	-1.11%	-1.37%	-1.31%	-1.27%
89		2.38%	2.16%	2.36%	2.34%	2.36%	2.42%	-0.18%	-0.60%	-0.90%	-1.18%	-1.13%	-1.12%
90	CLOCKS & MUSICAL INST.	1.69%	1.59%	1.83%	1.91%	1.95%	2.05%	-0.81%	-0.82%	-0.77%	-0.82%	-0.78%	-0.77%
91		1.69%	1.59%	1.83%	1.91%	1.92%	1.99%	-0.88%	-0.89%	-0.84%	-0.88%	-0.88%	-0.85%
92		-2.79%	-3.19%	-3.36%	-3.64%	-3.59%	-3.57%	-3.07%	-3.40%	-3.67%	-3.97%	-3.92%	-3.82%
93	ARMS	1.67%	1.57%	1.81%	1.89%	1.94%	1.95%	-0.83%	-0.84%	-0.79%	-0.84%	-0.83%	-0.79%
94	MISC. ART.	0.05%	-0.11%	0.04%	0.06%	0.06%	0.07%	-1.12%	-1.12%	-1.04%	-1.02%	-1.01%	-0.98%
95		-2.79%	-3.19%	-3.36%	-3.64%	-3.47%	-3.42%	-3.07%	-3.40%	-3.67%	-3.97%	-3.83%	-3.76%
96		-2.80%	-3.20%	-3.37%	-3.65%	-3.62%	-3.53%	-3.25%	-3.57%	-3.83%	-4.11%	-3.97%	-3.92%
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

TRADE FORECASTING BETWEEN AUSTRALIA AND U.S.

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.89%	1.06%	1.36%	1.57%	1.64%	1.68%	1.95%	1.88%	2.04%	1.91%	1.96%	2.02%
02		-1.50%	-1.22%	-0.97%	-0.70%	-0.67%	-0.64%	3.39%	3.21%	3.32%	3.03%	3.04%	3.17%
03		-1.30%	-1.25%	-0.97%	-0.79%	-0.75%	-0.74%	1.37%	1.16%	1.17%	0.80%	0.83%	0.85%
04		-0.72%	-0.47%	-0.17%	0.12%	0.13%	0.13%	2.83%	2.65%	2.71%	2.38%	2.40%	2.42%
05		-0.08%	0.05%	0.36%	0.56%	0.57%	0.58%	0.15%	-0.45%	-0.87%	-1.70%	-1.66%	-1.58%
06	VEGETABLE PRODUCTS	-0.11%	-0.33%	-0.26%	-0.60%	-0.59%	-0.57%	-0.01%	-0.12%	0.30%	0.26%	0.27%	0.28%
07		-1.32%	-1.37%	-1.18%	-1.13%	-1.13%	-1.13%	0.23%	0.13%	0.25%	0.15%	0.15%	0.16%
08		-1.32%	-1.41%	-1.27%	-1.28%	-1.26%	-1.26%	-0.05%	-0.10%	0.07%	0.07%	0.08%	0.08%
09		-0.55%	-0.68%	-0.53%	-0.68%	-0.68%	-0.68%	0.39%	0.22%	0.48%	0.30%	0.31%	0.32%
10		-3.24%	-3.39%	-2.74%	-2.64%	-2.62%	-2.52%	3.78%	4.19%	5.01%	5.45%	5.65%	5.72%
11		-1.05%	-0.99%	-0.73%	-0.54%	-0.51%	-0.51%	1.53%	1.31%	1.25%	0.88%	0.92%	0.94%
12		-0.43%	-0.58%	-0.46%	-0.66%	-0.64%	-0.63%	0.62%	0.57%	0.93%	0.89%	0.91%	0.93%
13		-1.32%	-1.26%	-0.98%	-0.79%	-0.79%	-0.78%	1.13%	0.86%	0.82%	0.39%	0.40%	0.41%
14		-1.24%	-1.25%	-0.85%	-0.82%	-0.81%	-0.79%	0.73%	0.58%	0.85%	0.62%	0.63%	0.63%
15	FATS & OILS	-1.56%	-1.47%	-1.13%	-1.01%	-0.99%	-0.95%	3.31%	3.13%	3.25%	2.96%	2.99%	2.99%
16	PREPARED FOODSTUFFS	-1.41%	-1.24%	-0.98%	-0.75%	-0.73%	-0.72%	1.62%	1.32%	1.27%	0.78%	0.80%	0.80%
17		-0.62%	-0.38%	-0.08%	0.20%	0.20%	0.20%	2.73%	2.54%	2.60%	2.29%	2.40%	2.45%
18		-1.27%	-1.23%	-0.96%	-0.79%	-0.78%	-0.76%	1.08%	0.81%	0.80%	0.38%	0.39%	0.39%
19		-1.32%	-1.27%	-0.99%	-0.80%	-0.79%	-0.76%	1.13%	0.86%	0.82%	0.39%	0.41%	0.42%
20		-1.32%	-1.27%	-0.99%	-0.80%	-0.78%	-0.76%	1.13%	0.86%	0.82%	0.39%	0.41%	0.42%
21		-1.28%	-1.22%	-0.94%	-0.74%	-0.71%	-0.69%	1.56%	1.32%	1.31%	0.91%	0.93%	0.95%
22		0.13%	0.17%	0.38%	0.56%	0.57%	0.58%	1.69%	1.49%	1.42%	1.07%	1.10%	1.14%
23		-1.40%	-1.38%	-1.06%	-0.96%	-0.92%	-0.92%	1.06%	0.82%	0.96%	0.59%	0.62%	0.64%
24		0.14%	0.17%	0.37%	0.54%	0.55%	0.55%	1.68%	1.49%	1.41%	1.07%	1.12%	1.17%
25	MINERAL PRODUCTS	-0.69%	-0.58%	-0.35%	-0.28%	-0.28%	-0.28%	1.41%	1.50%	1.64%	1.59%	1.64%	1.69%
26		-0.58%	-0.47%	-0.25%	-0.19%	-0.19%	-0.19%	1.48%	1.60%	1.76%	1.76%	1.80%	1.88%
27		4.16%	4.72%	5.54%	6.18%	6.47%	6.60%	4.54%	5.15%	4.64%	5.06%	5.13%	5.27%
28	CHEMICAL PRODUCTS	-1.61%	-1.34%	-0.93%	-0.57%	-0.57%	-0.55%	2.86%	2.96%	3.18%	3.01%	3.11%	3.13%
29		-1.74%	-1.49%	-1.10%	-0.76%	-0.75%	-0.72%	2.90%	3.00%	3.22%	3.04%	3.06%	3.08%
30		-1.77%	-1.51%	-1.12%	-0.79%	-0.78%	-0.75%	2.85%	2.95%	3.17%	3.00%	3.10%	3.13%
31		-1.73%	-1.47%	-1.09%	-0.76%	-0.72%	-0.70%	2.83%	2.94%	3.16%	2.99%	3.09%	3.13%
32		-1.74%	-1.49%	-1.10%	-0.76%	-0.76%	-0.75%	2.91%	3.01%	3.23%	3.06%	3.07%	3.18%
33		-1.74%	-1.49%	-1.10%	-0.76%	-0.74%	-0.72%	2.91%	3.01%	3.23%	3.06%	3.09%	3.11%
34		-1.84%	-1.59%	-1.20%	-0.86%	-0.84%	-0.84%	2.49%	2.57%	2.79%	2.61%	2.65%	2.68%
35		-1.67%	-1.43%	-1.05%	-0.74%	-0.73%	-0.72%	2.51%	2.43%	2.54%	2.26%	2.26%	2.30%
36		-2.85%	-2.60%	-2.23%	-1.89%	-1.85%	-1.82%	-0.21%	-0.31%	-0.27%	-0.59%	-0.56%	-0.56%
37		-1.74%	-1.49%	-1.10%	-0.76%	-0.74%	-0.72%	2.91%	3.01%	3.23%	3.06%	3.14%	3.23%
38		-1.86%	-1.60%	-1.20%	-0.87%	-0.85%	-0.85%	2.59%	2.64%	2.81%	2.59%	2.59%	2.65%
39	PLASTICS	-1.74%	-1.49%	-1.10%	-0.76%	-0.74%	-0.71%	2.91%	3.01%	3.23%	3.06%	3.20%	3.23%
40		-1.74%	-1.49%	-1.10%	-0.76%	-0.76%	-0.75%	2.90%	3.01%	3.23%	3.05%	3.15%	3.20%
41	LEATHER GOODS	-10.03%	-9.86%	-9.60%	-9.37%	-8.95%	-8.61%	-2.51%	-2.59%	-2.49%	-2.71%	-2.60%	-2.57%
42		-7.76%	-7.67%	-7.50%	-7.34%	-7.33%	-7.25%	-3.99%	-4.45%	-4.76%	-5.51%	-5.30%	-5.04%
43		-0.46%	-0.53%	-0.39%	-0.32%	-0.31%	-0.30%	0.69%	0.49%	0.45%	0.14%	0.14%	0.15%
44	WOOD PRODUCTS	-2.57%	-2.35%	-1.94%	-1.61%	-1.53%	-1.52%	1.37%	1.05%	0.92%	0.43%	0.43%	0.45%
45		-2.80%	-2.60%	-2.18%	-1.85%	-1.78%	-1.72%	1.12%	0.74%	0.55%	0.01%	0.01%	0.01%
46		-2.84%	-2.64%	-2.23%	-1.90%	-1.90%	-1.83%	1.13%	0.73%	0.52%	-0.04%	-0.04%	-0.04%
47	PAPER	-2.20%	-2.00%	-1.66%	-1.35%	-1.35%	-1.29%	1.85%	1.67%	1.64%	1.21%	1.24%	1.27%
48		-2.20%	-2.00%	-1.66%	-1.35%	-1.33%	-1.31%	1.85%	1.67%	1.64%	1.21%	1.22%	1.23%
49		-2.20%	-2.00%	-1.66%	-1.35%	-1.34%	-1.33%	1.85%	1.67%	1.64%	1.21%	1.24%	1.30%

TRADE FORECASTING BETWEEN AUSTRALIA AND U.S. (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-7.36%	-7.14%	-6.85%	-6.59%	-6.39%	-6.14%	-2.38%	-3.72%	-5.06%	-7.15%	-6.97%	-6.65%
51		-7.08%	-6.83%	-6.51%	-6.23%	-6.20%	-6.17%	-2.43%	-3.82%	-5.22%	-7.39%	-7.31%	-7.03%
52		-8.30%	-8.20%	-8.03%	-7.88%	-7.74%	-7.50%	-1.14%	-1.46%	-1.59%	-2.17%	-2.15%	-2.04%
53		-8.30%	-8.20%	-8.03%	-7.88%	-7.62%	-7.62%	-1.14%	-1.46%	-1.59%	-2.17%	-2.07%	-2.05%
54		-8.30%	-8.20%	-8.03%	-7.88%	-7.77%	-7.74%	-1.14%	-1.46%	-1.59%	-2.17%	-2.12%	-2.09%
55		-8.30%	-8.20%	-8.03%	-7.88%	-7.60%	-7.37%	-1.14%	-1.46%	-1.59%	-2.17%	-2.13%	-2.05%
56		-8.30%	-8.20%	-8.03%	-7.88%	-7.64%	-7.40%	-1.14%	-1.46%	-1.59%	-2.17%	-2.17%	-2.16%
57		-8.30%	-8.20%	-8.03%	-7.88%	-7.59%	-7.21%	-1.14%	-1.46%	-1.59%	-2.17%	-2.12%	-2.04%
58		-8.30%	-8.20%	-8.03%	-7.88%	-7.62%	-7.39%	-1.14%	-1.46%	-1.59%	-2.17%	-2.08%	-2.04%
59		-3.96%	-3.71%	-3.33%	-2.99%	-2.84%	-2.72%	-0.91%	-1.13%	-1.18%	-1.63%	-1.62%	-1.59%
60		-8.30%	-8.20%	-8.03%	-7.88%	-7.62%	-7.54%	-1.14%	-1.46%	-1.59%	-2.17%	-2.14%	-2.13%
61		-8.90%	-8.76%	-8.56%	-8.37%	-8.35%	-8.06%	-1.34%	-1.73%	-1.89%	-2.55%	-2.50%	-2.45%
62		-9.16%	-9.01%	-8.80%	-8.59%	-8.23%	-8.21%	-1.40%	-1.82%	-1.99%	-2.67%	-2.58%	-2.56%
63	-5.94%	-5.68%	-5.32%	-4.96%	-4.88%	-4.77%	-0.52%	-0.84%	-0.98%	-1.57%	-1.55%	-1.50%	
64	FOOTWEAR	-10.17%	-10.00%	-9.76%	-9.54%	-9.27%	-8.85%	-7.70%	-8.04%	-8.18%	-8.75%	-8.55%	-8.30%
65		-2.46%	-2.17%	-1.74%	-1.37%	-1.34%	-1.27%	1.46%	1.44%	1.59%	1.32%	1.34%	1.39%
66		-6.74%	-6.72%	-6.61%	-6.51%	-6.25%	-6.02%	-3.35%	-3.88%	-4.29%	-5.11%	-5.08%	-4.99%
67	-6.74%	-6.72%	-6.61%	-6.51%	-6.30%	-6.29%	-3.35%	-3.88%	-4.29%	-5.11%	-4.90%	-4.86%	
68	STONE & GLASS	-2.65%	-2.42%	-2.04%	-1.70%	-1.69%	-1.64%	1.16%	1.02%	1.02%	0.64%	0.65%	0.65%
69		-2.65%	-2.42%	-2.04%	-1.70%	-1.65%	-1.59%	1.16%	1.02%	1.02%	0.64%	0.65%	0.68%
70		-2.74%	-2.51%	-2.13%	-1.79%	-1.72%	-1.66%	1.14%	1.00%	1.00%	0.62%	0.63%	0.63%
71	PRECIOUS STONES	-4.28%	-3.97%	-3.50%	-3.08%	-3.03%	-3.00%	-1.02%	-1.19%	-1.20%	-1.61%	-1.58%	-1.54%
72	BASE METALS	-1.14%	-0.67%	-0.12%	0.44%	0.45%	0.46%	1.15%	1.21%	1.38%	1.25%	1.26%	1.27%
73		-3.48%	-3.16%	-2.73%	-2.29%	-2.23%	-2.17%	0.71%	0.59%	0.60%	0.26%	0.26%	0.27%
74		-1.19%	-0.90%	-0.48%	-0.09%	-0.08%	-0.08%	0.73%	0.62%	0.66%	0.31%	0.31%	0.32%
75		-2.21%	-1.66%	-0.90%	-0.28%	-0.27%	-0.26%	-0.55%	-0.67%	-0.61%	-0.99%	-0.95%	-0.91%
76		-2.91%	-2.45%	-1.81%	-1.25%	-1.24%	-1.22%	-0.49%	-0.62%	-0.58%	-0.97%	-0.95%	-0.91%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		-2.17%	-1.62%	-0.85%	-0.22%	-0.22%	-0.21%	-0.55%	-0.67%	-0.62%	-0.99%	-0.97%	-0.97%
79		-2.17%	-1.62%	-0.85%	-0.22%	-0.22%	-0.22%	-0.55%	-0.67%	-0.62%	-0.99%	-0.98%	-0.98%
80		-2.26%	-1.72%	-0.97%	-0.34%	-0.34%	-0.33%	-0.55%	-0.67%	-0.61%	-0.99%	-0.97%	-0.96%
81		-1.82%	-1.24%	-0.41%	0.24%	0.25%	0.26%	-0.57%	-0.68%	-0.62%	-1.00%	-0.97%	-0.94%
82		-3.99%	-3.67%	-3.28%	-2.85%	-2.73%	-2.72%	0.08%	-0.18%	-0.28%	-0.78%	-0.76%	-0.74%
83		-3.99%	-3.67%	-3.28%	-2.85%	-2.81%	-2.79%	0.08%	-0.18%	-0.28%	-0.78%	-0.75%	-0.74%
84	MACHINE	-3.49%	-3.22%	-2.79%	-2.40%	-2.34%	-2.29%	0.80%	0.48%	0.31%	-0.27%	-0.26%	-0.26%
85		-4.61%	-4.37%	-3.96%	-3.59%	-3.46%	-3.43%	-0.20%	-0.51%	-0.62%	-1.20%	-1.19%	-1.17%
86	VEHICLES	-3.13%	-2.98%	-2.62%	-2.31%	-2.20%	-2.14%	2.34%	2.25%	2.24%	1.89%	1.98%	2.07%
87		-1.64%	-1.40%	-1.02%	-0.66%	-0.63%	-0.61%	2.56%	2.43%	2.39%	2.02%	2.06%	2.06%
88		-3.24%	-3.10%	-2.74%	-2.44%	-2.32%	-2.29%	2.32%	2.24%	2.23%	1.88%	1.96%	2.02%
89		-3.24%	-3.10%	-2.73%	-2.44%	-2.35%	-2.29%	2.32%	2.24%	2.23%	1.88%	1.91%	2.00%
90	CLOCKS & MUSICAL INST.	-3.34%	-3.06%	-2.63%	-2.23%	-2.17%	-2.11%	0.85%	0.50%	0.30%	-0.32%	-0.32%	-0.31%
91		-3.34%	-3.05%	-2.63%	-2.22%	-2.12%	-2.02%	0.86%	0.51%	0.31%	-0.31%	-0.29%	-0.29%
92		-6.74%	-6.72%	-6.61%	-6.51%	-6.46%	-6.30%	-3.35%	-3.88%	-4.29%	-5.11%	-5.07%	-4.88%
93	ARMS	-3.35%	-3.06%	-2.64%	-2.23%	-2.15%	-2.08%	0.85%	0.50%	0.30%	-0.31%	-0.31%	-0.30%
94	MISC. ART.	-4.53%	-4.31%	-3.96%	-3.62%	-3.62%	-3.50%	-1.34%	-1.73%	-1.98%	-2.62%	-2.56%	-2.43%
95		-6.74%	-6.72%	-6.61%	-6.51%	-6.36%	-6.19%	-3.35%	-3.88%	-4.29%	-5.11%	-5.05%	-4.97%
96		-6.75%	-6.73%	-6.62%	-6.51%	-6.38%	-6.11%	-3.35%	-3.88%	-4.29%	-5.12%	-4.96%	-4.88%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	

TRADE FORECASTING BETWEEN AUSTRALIA AND ASEAN

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	2.82%	3.08%	2.94%	3.23%	3.34%	3.47%	0.05%	0.01%	-0.17%	-0.11%	-0.11%	-0.11%
02		9.32%	9.87%	8.50%	8.78%	8.82%	9.20%	-1.03%	-1.10%	-0.87%	-0.83%	-0.81%	-0.80%
03		2.02%	2.06%	1.78%	1.89%	1.90%	1.98%	-0.13%	-0.07%	-0.19%	-0.11%	-0.11%	-0.11%
04		2.86%	2.99%	2.63%	2.80%	2.90%	2.99%	1.23%	1.35%	1.34%	1.43%	1.44%	1.51%
05		3.90%	4.35%	4.01%	4.41%	4.62%	4.75%	0.04%	0.00%	-0.17%	-0.11%	-0.10%	-0.10%
06	VEGETABLE PRODUCTS	5.07%	5.36%	4.63%	4.81%	4.99%	4.99%	-2.77%	-2.97%	-2.82%	-2.92%	-2.91%	-2.77%
07		2.31%	2.40%	2.02%	2.15%	2.17%	2.27%	-2.75%	-2.79%	-2.72%	-2.65%	-2.62%	-2.58%
08		2.57%	2.72%	2.24%	2.39%	2.46%	2.46%	-3.47%	-3.57%	-3.45%	-3.40%	-3.26%	-3.17%
09		4.21%	4.43%	3.78%	3.93%	4.12%	4.13%	-1.46%	-1.49%	-1.47%	-1.45%	-1.39%	-1.34%
10		3.21%	3.22%	2.84%	2.90%	3.04%	3.07%	-1.31%	-1.50%	-2.32%	-2.63%	-2.55%	-2.42%
11		2.01%	2.04%	1.77%	1.87%	1.92%	1.95%	0.25%	0.34%	0.14%	0.22%	0.23%	0.24%
12		4.59%	4.84%	4.15%	4.31%	4.38%	4.43%	-1.67%	-1.72%	-1.57%	-1.52%	-1.45%	-1.42%
13		2.33%	2.42%	2.15%	2.30%	2.33%	2.38%	-0.30%	-0.23%	-0.37%	-0.32%	-0.31%	-0.31%
14		4.13%	4.42%	4.12%	4.41%	4.49%	4.55%	-0.55%	-0.61%	-0.63%	-0.69%	-0.67%	-0.64%
15		FATS & OILS	4.12%	4.31%	3.85%	4.03%	4.03%	4.09%	-0.68%	-0.72%	-0.48%	-0.43%	-0.43%
16	PREPARED FOODSTUFFS	2.05%	2.09%	1.80%	1.91%	1.93%	2.01%	-2.95%	-3.23%	-3.33%	-3.57%	-3.57%	-3.43%
17		3.84%	4.00%	3.49%	3.65%	3.82%	3.86%	0.43%	0.47%	0.53%	0.61%	0.62%	0.65%
18		2.17%	2.22%	1.92%	2.03%	2.10%	2.15%	-0.32%	-0.25%	-0.39%	-0.32%	-0.32%	-0.32%
19		2.02%	2.05%	1.77%	1.88%	1.93%	2.00%	-0.27%	-0.20%	-0.34%	-0.28%	-0.27%	-0.26%
20		2.02%	2.05%	1.77%	1.88%	1.93%	1.94%	-0.27%	-0.20%	-0.34%	-0.28%	-0.28%	-0.27%
21		2.03%	2.07%	1.79%	1.89%	1.93%	2.02%	0.74%	0.85%	0.79%	0.88%	0.92%	0.93%
22		1.51%	1.51%	1.46%	1.57%	1.61%	1.67%	1.08%	1.19%	0.89%	1.00%	1.00%	1.04%
23		3.83%	4.01%	3.58%	3.76%	3.77%	3.84%	-1.10%	-1.18%	-1.07%	-1.08%	-1.05%	-1.01%
24		2.94%	3.09%	2.76%	2.92%	2.94%	3.07%	1.06%	1.18%	0.88%	0.99%	0.99%	1.02%
25		MINERAL PRODUCTS	0.18%	0.24%	0.20%	0.23%	0.24%	0.24%	3.92%	4.29%	3.63%	3.85%	3.87%
26	0.11%		0.20%	0.23%	0.26%	0.27%	0.28%	3.95%	4.31%	3.65%	3.87%	3.89%	4.03%
27	8.57%		9.49%	9.60%	10.17%	10.33%	10.34%	3.69%	4.74%	5.01%	6.00%	6.14%	6.35%
28	CHEMICAL PRODUCTS	2.90%	3.07%	3.07%	3.30%	3.43%	3.56%	3.39%	3.93%	3.83%	4.18%	4.33%	4.41%
29		2.86%	2.91%	2.48%	2.54%	2.54%	2.59%	2.83%	3.32%	3.25%	3.55%	3.67%	3.71%
30		2.78%	2.84%	2.41%	2.47%	2.52%	2.55%	2.79%	3.28%	3.21%	3.51%	3.65%	3.70%
31		2.79%	2.85%	2.43%	2.49%	2.57%	2.59%	2.96%	3.44%	3.31%	3.60%	3.69%	3.79%
32		2.86%	2.92%	2.49%	2.54%	2.62%	2.69%	2.84%	3.33%	3.26%	3.56%	3.72%	3.88%
33		2.86%	2.92%	2.49%	2.54%	2.59%	2.60%	2.84%	3.33%	3.26%	3.56%	3.56%	3.72%
34		2.43%	2.48%	2.03%	2.09%	2.12%	2.14%	2.76%	3.25%	3.17%	3.46%	3.50%	3.60%
35		2.55%	2.60%	2.23%	2.31%	2.32%	2.38%	1.53%	1.74%	1.71%	1.86%	1.95%	2.02%
36		0.11%	0.04%	-0.56%	-0.59%	-0.58%	-0.56%	1.96%	2.37%	2.23%	2.46%	2.49%	2.58%
37		2.86%	2.92%	2.49%	2.54%	2.57%	2.67%	2.84%	3.33%	3.26%	3.56%	3.65%	3.67%
38		2.73%	2.78%	2.35%	2.41%	2.52%	2.55%	2.72%	3.20%	3.12%	3.42%	3.53%	3.53%
39	PLASTICS	2.86%	2.92%	2.49%	2.54%	2.66%	2.73%	2.84%	3.33%	3.26%	3.56%	3.67%	3.70%
40		2.96%	3.04%	2.62%	2.70%	2.81%	2.83%	2.80%	3.29%	3.22%	3.51%	3.56%	3.59%
41	LEATHER GOODS	-5.03%	-5.06%	-5.69%	-5.72%	-5.62%	-5.58%	-2.91%	-2.88%	-3.21%	-3.25%	-3.13%	-3.01%
42		-3.59%	-3.70%	-4.40%	-4.51%	-4.32%	-4.22%	-3.61%	-3.60%	-4.04%	-4.21%	-4.17%	-3.98%
43		1.24%	1.28%	1.19%	1.32%	1.35%	1.41%	-0.04%	-0.03%	-0.29%	-0.22%	-0.22%	-0.21%
44	WOOD PRODUCTS	1.43%	1.51%	1.28%	1.44%	1.49%	1.55%	-0.84%	-0.80%	-0.97%	-0.99%	-0.95%	-0.95%
45		1.73%	1.86%	1.63%	1.83%	1.92%	1.99%	-1.17%	-1.20%	-1.39%	-1.48%	-1.46%	-1.45%
46		1.01%	1.05%	0.81%	0.94%	0.98%	1.00%	-1.29%	-1.31%	-1.52%	-1.60%	-1.53%	-1.46%
47	PAPER	2.25%	2.27%	1.84%	1.91%	1.92%	2.01%	1.48%	1.72%	1.43%	1.54%	1.58%	1.60%
48		2.25%	2.27%	1.84%	1.91%	1.98%	2.05%	1.48%	1.72%	1.43%	1.54%	1.57%	1.62%
49		2.25%	2.27%	1.84%	1.91%	1.92%	2.01%	1.48%	1.72%	1.43%	1.54%	1.57%	1.64%

TRADE FORECASTING BETWEEN AUSTRALIA AND ASEAN (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	1.94%	2.94%	2.53%	3.40%	3.46%	3.53%	-2.58%	-2.53%	-2.73%	-2.86%	-2.76%	-2.63%
51		3.12%	4.29%	3.84%	4.80%	4.92%	5.10%	-2.45%	-2.41%	-2.55%	-2.68%	-2.56%	-2.54%
52		-3.14%	-3.30%	-3.98%	-4.13%	-3.93%	-3.93%	1.02%	1.34%	1.00%	1.23%	1.24%	1.28%
53		-3.12%	-3.28%	-3.95%	-4.10%	-4.07%	-4.00%	2.56%	2.88%	2.49%	2.74%	2.84%	2.85%
54		-3.14%	-3.30%	-3.98%	-4.13%	-3.96%	-3.85%	-3.24%	-3.14%	-3.61%	-3.75%	-3.64%	-3.55%
55		-3.14%	-3.30%	-3.98%	-4.13%	-4.13%	-3.93%	-3.24%	-3.14%	-3.61%	-3.75%	-3.63%	-3.45%
56		-3.14%	-3.30%	-3.98%	-4.13%	-3.98%	-3.84%	-3.24%	-3.14%	-3.61%	-3.75%	-3.56%	-3.41%
57		-3.14%	-3.30%	-3.98%	-4.13%	-3.97%	-3.84%	-3.24%	-3.14%	-3.61%	-3.75%	-3.62%	-3.45%
58		-3.14%	-3.30%	-3.98%	-4.13%	-4.08%	-4.03%	-3.24%	-3.14%	-3.61%	-3.75%	-3.61%	-3.47%
59		-0.73%	-0.81%	-1.43%	-1.48%	-1.41%	-1.37%	0.32%	0.66%	0.45%	0.62%	0.62%	0.65%
60		-3.14%	-3.30%	-3.98%	-4.13%	-3.99%	-3.85%	-3.24%	-3.14%	-3.61%	-3.75%	-3.68%	-3.57%
61		-3.74%	-3.81%	-4.37%	-4.42%	-4.22%	-4.15%	-3.40%	-3.33%	-3.72%	-3.84%	-3.82%	-3.81%
62		-3.83%	-3.88%	-4.43%	-4.46%	-4.25%	-4.13%	-3.52%	-3.47%	-3.81%	-3.90%	-3.72%	-3.72%
63	-2.03%	-2.10%	-2.69%	-2.74%	-2.62%	-2.51%	-2.87%	-2.76%	-3.23%	-3.35%	-3.25%	-3.24%	
64	FOOTWEAR	-5.07%	-5.10%	-5.74%	-5.77%	-5.74%	-5.55%	-4.37%	-4.39%	-4.82%	-5.01%	-4.94%	-4.81%
65		-0.66%	-0.55%	-0.93%	-0.79%	-0.76%	-0.74%	2.10%	2.59%	2.53%	2.84%	2.85%	2.94%
66		-1.88%	-2.13%	-2.98%	-3.21%	-3.21%	-3.16%	-1.00%	-1.00%	-1.54%	-1.73%	-1.70%	-1.67%
67		-1.88%	-2.13%	-2.98%	-3.21%	-3.12%	-3.07%	-1.00%	-1.00%	-1.54%	-1.73%	-1.68%	-1.65%
68	STONE & GLASS	0.85%	0.82%	0.42%	0.44%	0.46%	0.48%	0.35%	0.62%	0.43%	0.59%	0.60%	0.61%
69		0.85%	0.82%	0.42%	0.44%	0.45%	0.47%	0.35%	0.62%	0.43%	0.59%	0.62%	0.65%
70		0.81%	0.77%	0.37%	0.40%	0.40%	0.42%	0.21%	0.48%	0.29%	0.44%	0.44%	0.46%
71	PRECIOUS STONES	1.70%	1.88%	1.41%	1.56%	1.57%	1.60%	-0.62%	-0.64%	-1.28%	-1.52%	-1.49%	-1.48%
72	BASE METALS	2.00%	2.16%	1.92%	2.12%	2.22%	2.31%	2.37%	2.86%	2.47%	2.78%	2.86%	2.88%
73		1.26%	1.27%	0.77%	0.84%	0.85%	0.88%	0.80%	1.18%	0.88%	1.10%	1.11%	1.13%
74		2.67%	2.85%	2.57%	2.76%	2.78%	2.85%	-0.69%	-0.72%	-1.36%	-1.61%	-1.59%	-1.57%
75		2.80%	3.06%	2.63%	2.82%	2.88%	2.89%	-0.75%	-0.79%	-1.44%	-1.70%	-1.63%	-1.60%
76		2.62%	2.86%	2.42%	2.60%	2.67%	2.71%	-0.75%	-0.78%	-1.42%	-1.68%	-1.63%	-1.61%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		2.81%	3.07%	2.64%	2.83%	2.85%	2.95%	-0.75%	-0.79%	-1.44%	-1.71%	-1.63%	-1.57%
79		2.81%	3.07%	2.64%	2.83%	2.96%	2.97%	-0.75%	-0.79%	-1.44%	-1.71%	-1.65%	-1.62%
80		2.79%	3.05%	2.62%	2.81%	2.83%	2.85%	-0.75%	-0.79%	-1.44%	-1.70%	-1.64%	-1.58%
81		2.86%	3.12%	2.69%	2.88%	3.00%	3.12%	-0.75%	-0.79%	-1.44%	-1.71%	-1.65%	-1.57%
82		0.69%	0.63%	0.05%	0.06%	0.06%	0.06%	-0.53%	-0.26%	-0.50%	-0.38%	-0.36%	-0.35%
83		0.69%	0.63%	0.05%	0.06%	0.06%	0.06%	-0.53%	-0.26%	-0.50%	-0.38%	-0.38%	-0.37%
84	MACHINE	1.44%	1.47%	1.05%	1.15%	1.16%	1.21%	-0.38%	-0.21%	-0.66%	-0.66%	-0.62%	-0.61%
85		-0.27%	-0.30%	-0.75%	-0.71%	-0.69%	-0.68%	-0.26%	-0.10%	-0.50%	-0.54%	-0.53%	-0.53%
86	VEHICLES	2.71%	2.67%	2.20%	2.24%	2.33%	2.39%	0.24%	0.22%	-0.34%	-0.42%	-0.41%	-0.40%
87		2.55%	2.66%	2.46%	2.65%	2.72%	2.81%	0.91%	1.11%	0.68%	0.76%	0.77%	0.77%
88		2.80%	2.65%	1.96%	1.88%	1.94%	1.97%	0.18%	0.14%	-0.43%	-0.52%	-0.52%	-0.50%
89		2.84%	2.68%	1.99%	1.91%	1.99%	2.01%	0.19%	0.15%	-0.42%	-0.51%	-0.49%	-0.49%
90	CLOCKS & MUSICAL INST.	2.39%	2.39%	1.85%	1.91%	1.93%	1.94%	-0.74%	-0.62%	-1.11%	-1.15%	-1.14%	-1.10%
91		2.39%	2.39%	1.86%	1.92%	1.93%	2.00%	-0.77%	-0.64%	-1.13%	-1.18%	-1.12%	-1.10%
92		-1.88%	-2.13%	-2.98%	-3.21%	-3.05%	-2.94%	-1.00%	-1.00%	-1.54%	-1.73%	-1.72%	-1.68%
93	ARMS	2.36%	2.36%	1.82%	1.88%	1.93%	1.99%	-0.73%	-0.60%	-1.07%	-1.11%	-1.08%	-1.05%
94	MISC. ART.	-0.75%	-0.90%	-1.61%	-1.71%	-1.68%	-1.61%	-0.73%	-0.64%	-1.12%	-1.21%	-1.21%	-1.18%
95		-1.88%	-2.13%	-2.98%	-3.21%	-3.14%	-3.06%	-1.00%	-1.00%	-1.54%	-1.73%	-1.65%	-1.63%
96		-1.89%	-2.14%	-2.99%	-3.22%	-3.14%	-3.12%	-1.05%	-1.04%	-1.58%	-1.77%	-1.72%	-1.66%
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

TRADE FORECASTING BETWEEN AUSTRALIA AND EU-27

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.99%	1.00%	1.22%	1.36%	1.40%	1.47%	-0.37%	-0.13%	0.20%	0.53%	0.55%	0.57%
02		0.67%	0.23%	0.00%	-0.30%	-0.30%	-0.30%	0.52%	1.04%	1.63%	2.17%	2.18%	2.28%
03		-0.60%	-0.84%	-0.76%	-0.82%	-0.78%	-0.78%	-0.31%	-0.04%	0.21%	0.50%	0.52%	0.55%
04		0.66%	0.43%	0.43%	0.35%	0.36%	0.38%	-0.41%	0.01%	0.42%	0.82%	0.86%	0.86%
05		0.10%	-0.03%	0.11%	0.15%	0.15%	0.15%	-3.20%	-3.08%	-2.80%	-2.67%	-2.58%	-2.53%
06	VEGETABLE PRODUCTS	-1.20%	-1.50%	-1.40%	-1.57%	-1.55%	-1.51%	-0.81%	-0.62%	-0.18%	0.11%	0.11%	0.12%
07		-0.65%	-0.89%	-0.80%	-0.85%	-0.83%	-0.82%	-2.23%	-2.21%	-2.06%	-1.91%	-1.86%	-1.86%
08		-0.73%	-0.94%	-0.84%	-0.86%	-0.83%	-0.80%	-2.40%	-2.42%	-2.29%	-2.15%	-2.11%	-2.01%
09		-0.98%	-1.27%	-1.18%	-1.30%	-1.24%	-1.18%	-0.74%	-0.54%	-0.10%	0.21%	0.21%	0.21%
10		-2.48%	-2.86%	-2.36%	-2.41%	-2.38%	-2.32%	-0.79%	-0.48%	0.15%	0.64%	0.64%	0.67%
11		-0.35%	-0.57%	-0.48%	-0.51%	-0.51%	-0.49%	-0.61%	-0.39%	-0.20%	0.04%	0.04%	0.04%
12		-1.07%	-1.38%	-1.26%	-1.40%	-1.40%	-1.36%	-0.59%	-0.38%	0.04%	0.35%	0.35%	0.37%
13		-0.58%	-0.82%	-0.74%	-0.80%	-0.78%	-0.75%	-0.79%	-0.52%	-0.27%	-0.01%	-0.01%	-0.01%
14		-0.40%	-0.66%	-0.42%	-0.50%	-0.50%	-0.50%	-1.23%	-1.08%	-0.90%	-0.73%	-0.72%	-0.70%
15	FATS & OILS	-0.94%	-1.32%	-1.15%	-1.33%	-1.32%	-1.26%	0.47%	0.97%	1.55%	2.06%	2.16%	2.19%
16	PREPARED FOODSTUFFS	-0.10%	-0.42%	-0.47%	-0.63%	-0.61%	-0.59%	-0.60%	-0.21%	0.19%	0.55%	0.56%	0.57%
17		0.80%	0.57%	0.56%	0.48%	0.50%	0.51%	-0.14%	0.27%	0.66%	1.05%	1.10%	1.13%
18		-0.63%	-0.88%	-0.80%	-0.87%	-0.85%	-0.84%	-0.68%	-0.41%	-0.11%	0.18%	0.18%	0.19%
19		-0.62%	-0.86%	-0.78%	-0.85%	-0.84%	-0.81%	-0.67%	-0.38%	-0.11%	0.17%	0.17%	0.18%
20		-0.62%	-0.86%	-0.78%	-0.85%	-0.84%	-0.83%	-0.67%	-0.38%	-0.11%	0.17%	0.17%	0.18%
21		-0.49%	-0.73%	-0.66%	-0.72%	-0.72%	-0.70%	-0.58%	-0.24%	0.07%	0.39%	0.41%	0.41%
22		0.46%	0.35%	0.45%	0.49%	0.49%	0.51%	-0.61%	-0.39%	-0.21%	0.02%	0.02%	0.03%
23		-0.90%	-1.25%	-1.07%	-1.22%	-1.17%	-1.15%	-0.43%	-0.10%	0.29%	0.63%	0.66%	0.68%
24		0.45%	0.33%	0.43%	0.48%	0.50%	0.51%	-0.61%	-0.39%	-0.21%	0.02%	0.03%	0.03%
25	MINERAL PRODUCTS	-1.34%	-1.56%	-1.54%	-1.65%	-1.65%	-1.60%	-0.10%	0.07%	0.25%	0.45%	0.47%	0.47%
26		-0.62%	-0.77%	-0.71%	-0.80%	-0.79%	-0.77%	-0.10%	0.07%	0.25%	0.45%	0.47%	0.47%
27		0.15%	0.05%	0.29%	0.37%	0.38%	0.38%	1.18%	1.24%	1.42%	1.55%	1.58%	1.59%
28	CHEMICAL PRODUCTS	-0.86%	-1.22%	-1.28%	-1.50%	-1.49%	-1.45%	1.32%	1.91%	2.45%	2.96%	2.97%	3.10%
29		-0.86%	-1.23%	-1.29%	-1.51%	-1.45%	-1.44%	1.33%	1.94%	2.50%	3.02%	3.14%	3.17%
30		-0.91%	-1.27%	-1.33%	-1.55%	-1.54%	-1.47%	1.28%	1.88%	2.44%	2.96%	3.03%	3.18%
31		-0.86%	-1.23%	-1.29%	-1.51%	-1.45%	-1.44%	0.37%	0.69%	1.00%	1.32%	1.38%	1.45%
32		-0.86%	-1.23%	-1.29%	-1.51%	-1.47%	-1.45%	1.33%	1.94%	2.50%	3.03%	3.14%	3.30%
33		-0.86%	-1.23%	-1.29%	-1.51%	-1.48%	-1.42%	1.33%	1.94%	2.50%	3.03%	3.05%	3.15%
34		-0.97%	-1.34%	-1.41%	-1.63%	-1.55%	-1.52%	1.20%	1.80%	2.35%	2.88%	2.94%	3.08%
35		-0.71%	-1.05%	-1.09%	-1.27%	-1.23%	-1.23%	0.76%	1.31%	1.82%	2.31%	2.42%	2.42%
36		-2.04%	-2.44%	-2.54%	-2.77%	-2.65%	-2.52%	-0.08%	0.45%	0.93%	1.39%	1.44%	1.51%
37		-0.86%	-1.23%	-1.29%	-1.51%	-1.49%	-1.45%	1.33%	1.94%	2.50%	3.03%	3.09%	3.14%
38		-0.94%	-1.32%	-1.38%	-1.61%	-1.61%	-1.54%	1.18%	1.78%	2.33%	2.85%	2.99%	3.13%
39	PLASTICS	-0.86%	-1.23%	-1.29%	-1.51%	-1.45%	-1.44%	1.33%	1.94%	2.50%	3.03%	3.15%	3.20%
40		-0.86%	-1.22%	-1.28%	-1.50%	-1.43%	-1.41%	1.27%	1.87%	2.43%	2.95%	3.02%	3.13%
41	LEATHER GOODS	-9.05%	-9.53%	-9.71%	-10.04%	-9.75%	-9.68%	-4.20%	-4.13%	-4.03%	-4.04%	-3.96%	-3.78%
42		-7.61%	-8.13%	-8.37%	-8.74%	-8.52%	-8.40%	-4.94%	-4.92%	-4.89%	-5.00%	-4.89%	-4.68%
43		-0.22%	-0.31%	-0.19%	-0.13%	-0.13%	-0.13%	-1.15%	-1.01%	-0.84%	-0.64%	-0.63%	-0.62%
44	WOOD PRODUCTS	-1.51%	-1.80%	-1.73%	-1.84%	-1.79%	-1.73%	-1.15%	-0.81%	-0.50%	-0.21%	-0.20%	-0.20%
45		-1.51%	-1.79%	-1.70%	-1.79%	-1.75%	-1.74%	-1.36%	-1.09%	-0.83%	-0.58%	-0.56%	-0.54%
46		-1.63%	-1.92%	-1.84%	-1.94%	-1.85%	-1.80%	-1.40%	-1.06%	-0.77%	-0.48%	-0.48%	-0.46%
47	PAPER	-0.95%	-1.32%	-1.37%	-1.56%	-1.52%	-1.50%	-0.17%	0.27%	0.64%	1.01%	1.04%	1.06%
48		-0.95%	-1.32%	-1.37%	-1.56%	-1.50%	-1.48%	-0.17%	0.27%	0.64%	1.01%	1.05%	1.09%
49		-0.95%	-1.32%	-1.37%	-1.56%	-1.54%	-1.47%	-0.17%	0.27%	0.64%	1.01%	1.04%	1.09%

TRADE FORECASTING BETWEEN AUSTRALIA AND EU-27 (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-6.22%	-6.69%	-6.89%	-7.20%	-7.07%	-6.83%	-4.42%	-4.42%	-4.22%	-4.27%	-4.15%	-4.14%
51		-6.06%	-6.50%	-6.69%	-6.97%	-6.63%	-6.39%	-4.45%	-4.44%	-4.25%	-4.29%	-4.24%	-4.08%
52		-6.78%	-7.31%	-7.58%	-7.97%	-7.71%	-7.55%	-1.75%	-1.46%	-1.22%	-1.08%	-1.04%	-1.00%
53		-6.72%	-7.24%	-7.49%	-7.87%	-7.81%	-7.74%	-1.35%	-1.09%	-0.79%	-0.59%	-0.57%	-0.56%
54		-6.78%	-7.31%	-7.58%	-7.97%	-7.70%	-7.47%	-1.77%	-1.48%	-1.25%	-1.11%	-1.05%	-1.04%
55		-6.78%	-7.31%	-7.58%	-7.97%	-7.60%	-7.28%	-1.77%	-1.48%	-1.25%	-1.11%	-1.07%	-1.02%
56		-6.78%	-7.31%	-7.58%	-7.97%	-7.81%	-7.52%	-1.77%	-1.48%	-1.25%	-1.11%	-1.06%	-1.03%
57		-6.78%	-7.31%	-7.58%	-7.97%	-7.85%	-7.77%	-1.77%	-1.48%	-1.25%	-1.11%	-1.09%	-1.09%
58		-6.78%	-7.31%	-7.58%	-7.97%	-7.63%	-7.39%	-1.77%	-1.48%	-1.25%	-1.11%	-1.08%	-1.03%
59		-3.31%	-3.72%	-3.83%	-4.06%	-4.05%	-3.85%	-1.10%	-0.70%	-0.34%	-0.03%	-0.03%	-0.03%
60		-6.78%	-7.31%	-7.58%	-7.97%	-7.92%	-7.56%	-1.77%	-1.48%	-1.25%	-1.11%	-1.06%	-1.02%
61		-7.62%	-8.10%	-8.32%	-8.66%	-8.53%	-8.42%	-2.53%	-2.30%	-2.15%	-2.08%	-1.99%	-1.94%
62		-7.79%	-8.26%	-8.47%	-8.80%	-8.66%	-8.55%	-2.87%	-2.69%	-2.58%	-2.54%	-2.49%	-2.40%
63	-5.38%	-5.86%	-6.04%	-6.35%	-6.29%	-6.15%	-1.69%	-1.38%	-1.14%	-0.97%	-0.95%	-0.93%	
64	FOOTWEAR	-9.13%	-9.63%	-9.83%	-10.17%	-9.89%	-9.73%	-5.07%	-5.06%	-5.03%	-5.15%	-5.11%	-5.03%
65		-2.98%	-3.27%	-3.27%	-3.41%	-3.37%	-3.28%	-0.05%	0.47%	0.94%	1.37%	1.43%	1.44%
66		-5.31%	-5.98%	-6.36%	-6.86%	-6.73%	-6.51%	-3.86%	-3.76%	-3.77%	-3.82%	-3.75%	-3.60%
67	-5.31%	-5.98%	-6.36%	-6.86%	-6.70%	-6.54%	-3.86%	-3.76%	-3.77%	-3.82%	-3.80%	-3.76%	
68	STONE & GLASS	-1.99%	-2.35%	-2.41%	-2.59%	-2.52%	-2.49%	-0.29%	0.16%	0.54%	0.92%	0.96%	0.97%
69		-1.99%	-2.35%	-2.41%	-2.59%	-2.48%	-2.41%	-0.29%	0.16%	0.54%	0.92%	0.96%	0.96%
70		-2.05%	-2.41%	-2.47%	-2.65%	-2.59%	-2.55%	-0.43%	0.00%	0.38%	0.74%	0.74%	0.76%
71	PRECIOUS STONES	-3.43%	-3.86%	-3.93%	-4.17%	-4.07%	-3.93%	-1.55%	-1.45%	-1.30%	-1.24%	-1.19%	-1.18%
72	BASE METALS	-0.72%	-0.88%	-0.80%	-0.81%	-0.79%	-0.76%	-0.28%	0.13%	0.51%	0.88%	0.92%	0.94%
73		-1.88%	-2.24%	-2.30%	-2.47%	-2.43%	-2.43%	-0.76%	-0.35%	0.00%	0.34%	0.35%	0.36%
74		-0.20%	-0.42%	-0.37%	-0.43%	-0.43%	-0.41%	-2.40%	-2.35%	-2.24%	-2.28%	-2.23%	-2.22%
75		-1.08%	-1.32%	-1.14%	-1.22%	-1.22%	-1.21%	-2.55%	-2.54%	-2.45%	-2.53%	-2.40%	-2.28%
76		-1.70%	-2.01%	-1.95%	-2.07%	-2.07%	-1.99%	-2.53%	-2.51%	-2.41%	-2.49%	-2.38%	-2.34%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		-1.04%	-1.27%	-1.09%	-1.17%	-1.16%	-1.10%	-2.55%	-2.54%	-2.45%	-2.53%	-2.51%	-2.49%
79		-1.04%	-1.27%	-1.09%	-1.17%	-1.15%	-1.13%	-2.55%	-2.54%	-2.45%	-2.53%	-2.46%	-2.40%
80		-1.13%	-1.37%	-1.21%	-1.29%	-1.28%	-1.27%	-2.55%	-2.54%	-2.44%	-2.53%	-2.46%	-2.35%
81		-0.67%	-0.88%	-0.63%	-0.69%	-0.68%	-0.67%	-2.56%	-2.55%	-2.45%	-2.54%	-2.41%	-2.34%
82		-2.44%	-2.84%	-2.94%	-3.14%	-3.00%	-2.91%	-1.33%	-0.95%	-0.65%	-0.35%	-0.35%	-0.35%
83		-2.44%	-2.84%	-2.94%	-3.14%	-3.11%	-3.07%	-1.33%	-0.95%	-0.65%	-0.35%	-0.35%	-0.34%
84	MACHINE	-1.87%	-2.36%	-2.50%	-2.78%	-2.76%	-2.74%	-1.30%	-0.87%	-0.54%	-0.23%	-0.23%	-0.22%
85		-2.78%	-3.29%	-3.41%	-3.71%	-3.60%	-3.52%	-1.98%	-1.58%	-1.25%	-0.97%	-0.97%	-0.97%
86	VEHICLES	-1.35%	-1.92%	-2.08%	-2.42%	-2.32%	-2.27%	-0.25%	0.06%	0.29%	0.53%	0.54%	0.55%
87		-0.29%	-0.53%	-0.51%	-0.60%	-0.59%	-0.58%	-0.28%	0.13%	0.45%	0.79%	0.80%	0.84%
88		-1.61%	-2.26%	-2.47%	-2.88%	-2.73%	-2.63%	-0.26%	0.05%	0.28%	0.51%	0.53%	0.55%
89		-1.60%	-2.25%	-2.46%	-2.87%	-2.80%	-2.77%	-0.25%	0.06%	0.28%	0.52%	0.53%	0.56%
90	CLOCKS & MUSICAL INST.	-1.85%	-2.37%	-2.53%	-2.84%	-2.83%	-2.81%	-1.21%	-0.78%	-0.45%	-0.13%	-0.13%	-0.12%
91		-1.86%	-2.37%	-2.53%	-2.84%	-2.70%	-2.61%	-1.26%	-0.83%	-0.50%	-0.19%	-0.19%	-0.18%
92		-5.31%	-5.98%	-6.36%	-6.86%	-6.70%	-6.51%	-3.86%	-3.76%	-3.77%	-3.82%	-3.75%	-3.58%
93	ARMS	-1.86%	-2.37%	-2.53%	-2.83%	-2.70%	-2.64%	-1.21%	-0.77%	-0.44%	-0.13%	-0.12%	-0.12%
94	MISC. ART.	-3.40%	-3.94%	-4.16%	-4.50%	-4.37%	-4.21%	-2.36%	-2.05%	-1.84%	-1.65%	-1.63%	-1.56%
95		-5.31%	-5.98%	-6.36%	-6.86%	-6.76%	-6.74%	-3.86%	-3.76%	-3.77%	-3.82%	-3.79%	-3.70%
96		-5.34%	-6.00%	-6.38%	-6.88%	-6.68%	-6.36%	-3.92%	-3.82%	-3.83%	-3.88%	-3.83%	-3.78%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	

TRADE FORECASTING BETWEEN CHINA AND AUSTRALIA

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	1.90%	1.82%	1.86%	1.90%	1.99%	2.05%	3.06%	3.00%	3.16%	3.25%	3.40%	3.40%
02		3.91%	3.93%	4.09%	4.16%	4.21%	4.28%	20.55%	20.60%	20.79%	21.01%	21.47%	22.00%
03		0.78%	0.79%	0.96%	1.08%	1.11%	1.13%	5.68%	5.51%	5.64%	5.67%	5.76%	5.86%
04		-1.44%	-1.40%	-1.23%	-1.12%	-1.08%	-1.05%	11.11%	11.23%	11.56%	11.88%	11.92%	12.13%
05		0.79%	0.91%	1.19%	1.43%	1.48%	1.52%	6.25%	6.26%	6.64%	6.99%	7.17%	7.37%
06	VEGETABLE PRODUCTS	3.02%	2.92%	3.07%	3.02%	3.13%	3.19%	10.02%	9.99%	10.35%	10.51%	10.61%	11.11%
07		-0.36%	-0.44%	-0.15%	-0.08%	-0.08%	-0.08%	5.48%	5.32%	5.47%	5.51%	5.61%	5.81%
08		-0.83%	-0.98%	-0.61%	-0.59%	-0.58%	-0.57%	5.18%	5.05%	5.21%	5.28%	5.45%	5.52%
09		1.30%	1.23%	1.55%	1.63%	1.69%	1.70%	7.67%	7.60%	7.88%	8.02%	8.40%	8.68%
10		1.52%	1.48%	1.55%	1.64%	1.66%	1.68%	5.49%	5.17%	5.47%	5.37%	5.58%	5.84%
11		1.12%	1.15%	1.29%	1.39%	1.45%	1.50%	5.64%	5.47%	5.61%	5.63%	5.90%	6.18%
12		2.33%	2.37%	2.86%	3.11%	3.16%	3.27%	8.97%	8.99%	9.32%	9.54%	9.73%	9.83%
13		2.47%	2.42%	2.56%	2.55%	2.55%	2.67%	5.70%	5.52%	5.66%	5.68%	5.69%	5.79%
14		3.12%	3.03%	3.14%	3.08%	3.11%	3.12%	6.37%	6.40%	6.80%	7.03%	7.31%	7.37%
15	FATS & OILS	2.58%	2.61%	2.88%	2.98%	3.02%	3.07%	7.28%	7.19%	7.47%	7.62%	7.88%	8.10%
16	PREPARED FOODSTUFFS	-1.18%	-1.16%	-0.96%	-0.85%	-0.82%	-0.80%	5.96%	5.83%	6.00%	6.08%	6.36%	6.43%
17		-0.68%	-0.66%	-0.43%	-0.33%	-0.33%	-0.32%	12.71%	12.78%	13.06%	13.33%	13.95%	13.96%
18		0.39%	0.41%	0.59%	0.70%	0.72%	0.73%	5.79%	5.62%	5.76%	5.79%	5.96%	6.18%
19		0.33%	0.36%	0.53%	0.64%	0.67%	0.67%	5.70%	5.53%	5.66%	5.69%	5.79%	6.08%
20		0.33%	0.36%	0.53%	0.64%	0.64%	0.67%	5.70%	5.53%	5.66%	5.69%	5.88%	6.06%
21		-0.92%	-0.87%	-0.68%	-0.57%	-0.57%	-0.57%	5.89%	5.74%	5.89%	5.94%	6.23%	6.50%
22		2.60%	2.59%	2.64%	2.71%	2.82%	2.89%	3.31%	3.25%	3.40%	3.52%	3.56%	3.71%
23		-0.29%	-0.39%	-0.02%	-0.02%	-0.02%	-0.01%	6.58%	6.47%	6.72%	6.83%	6.89%	7.09%
24		2.60%	2.59%	2.64%	2.72%	2.77%	2.85%	3.96%	3.96%	4.21%	4.40%	4.55%	4.57%
25	MINERAL PRODUCTS	7.26%	7.32%	7.44%	7.59%	7.61%	7.83%	3.74%	3.65%	3.80%	3.85%	3.98%	4.18%
26		7.26%	7.32%	7.44%	7.59%	7.64%	7.68%	2.28%	2.37%	2.64%	2.76%	2.81%	2.90%
27		9.38%	9.85%	10.24%	10.63%	11.02%	11.57%	6.08%	6.43%	7.10%	7.59%	7.78%	7.79%
28	CHEMICAL PRODUCTS	6.82%	7.30%	7.82%	8.27%	8.64%	8.84%	7.77%	7.64%	7.80%	7.84%	7.92%	8.30%
29		5.60%	5.98%	6.44%	6.78%	7.11%	7.40%	7.79%	7.65%	7.80%	7.84%	8.18%	8.54%
30		5.49%	5.87%	6.33%	6.67%	6.71%	6.90%	7.39%	7.25%	7.38%	7.41%	7.77%	7.96%
31		7.20%	7.27%	7.40%	7.56%	7.79%	8.12%	7.76%	7.63%	7.78%	7.82%	8.06%	8.23%
32		5.61%	5.99%	6.45%	6.79%	6.82%	7.08%	7.79%	7.66%	7.81%	7.84%	8.04%	8.44%
33		5.61%	5.99%	6.45%	6.79%	7.12%	7.16%	7.79%	7.66%	7.81%	7.84%	7.97%	8.27%
34		5.57%	5.95%	6.41%	6.75%	6.89%	7.00%	7.54%	7.36%	7.46%	7.46%	7.67%	7.93%
35		2.40%	2.78%	3.27%	3.67%	3.74%	3.79%	7.52%	7.40%	7.56%	7.62%	7.75%	7.83%
36		5.13%	5.51%	5.97%	6.31%	6.53%	6.74%	6.79%	6.46%	6.41%	6.30%	6.48%	6.64%
37		5.61%	5.99%	6.45%	6.79%	7.06%	7.21%	7.79%	7.66%	7.81%	7.84%	8.22%	8.48%
38		5.35%	5.74%	6.19%	6.53%	6.73%	6.78%	7.57%	7.42%	7.55%	7.58%	7.60%	7.68%
39	PLASTICS	5.61%	5.99%	6.45%	6.79%	6.90%	6.93%	7.79%	7.66%	7.81%	7.84%	8.09%	8.23%
40		5.05%	5.33%	5.72%	5.99%	5.99%	6.25%	7.79%	7.66%	7.80%	7.84%	8.07%	8.25%
41	LEATHER GOODS	0.91%	0.89%	1.00%	1.04%	1.06%	1.10%	2.41%	2.08%	2.01%	1.86%	1.88%	1.90%
42		-0.93%	-0.90%	-0.72%	-0.76%	-0.74%	-0.74%	3.47%	3.16%	3.12%	3.01%	3.06%	3.09%
43		2.04%	1.97%	2.01%	2.06%	2.15%	2.26%	3.06%	3.00%	3.16%	3.25%	3.30%	3.41%
44	WOOD PRODUCTS	1.44%	1.46%	1.64%	1.66%	1.66%	1.72%	1.83%	1.57%	1.65%	1.59%	1.66%	1.69%
45		1.99%	1.97%	2.12%	2.11%	2.16%	2.24%	1.62%	1.34%	1.40%	1.32%	1.33%	1.34%
46		-0.15%	-0.11%	0.07%	0.10%	0.11%	0.11%	1.59%	1.31%	1.37%	1.29%	1.34%	1.36%
47	PAPER	2.35%	2.38%	2.48%	2.51%	2.60%	2.65%	6.75%	6.55%	6.64%	6.66%	6.76%	6.99%
48		2.35%	2.38%	2.48%	2.51%	2.59%	2.68%	6.75%	6.55%	6.64%	6.66%	6.75%	7.05%
49		2.35%	2.38%	2.48%	2.51%	2.53%	2.59%	6.75%	6.55%	6.64%	6.66%	6.80%	7.13%

TRADE FORECASTING BETWEEN CHINA AND AUSTRALIA (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	0.79%	0.92%	1.20%	1.44%	1.45%	1.48%	4.07%	3.75%	3.69%	3.56%	3.65%	3.80%
51		0.78%	0.92%	1.20%	1.44%	1.46%	1.49%	4.09%	3.78%	3.72%	3.61%	3.65%	3.78%
52		4.65%	4.87%	5.26%	5.57%	5.85%	6.10%	4.01%	3.67%	3.58%	3.41%	3.49%	3.56%
53		6.30%	6.45%	6.85%	7.20%	7.39%	7.67%	4.01%	3.67%	3.58%	3.41%	3.57%	3.70%
54		1.79%	1.99%	2.23%	2.34%	2.42%	2.45%	4.01%	3.67%	3.58%	3.41%	3.41%	3.51%
55		1.79%	1.99%	2.23%	2.34%	2.46%	2.58%	4.01%	3.67%	3.58%	3.41%	3.57%	3.57%
56		1.79%	1.99%	2.23%	2.34%	2.46%	2.49%	4.01%	3.67%	3.58%	3.41%	3.44%	3.55%
57		1.79%	1.99%	2.23%	2.34%	2.46%	2.50%	4.01%	3.67%	3.58%	3.41%	3.48%	3.56%
58		1.79%	1.99%	2.23%	2.34%	2.39%	2.45%	4.01%	3.67%	3.58%	3.41%	3.49%	3.57%
59		2.85%	3.12%	3.45%	3.66%	3.71%	3.73%	5.24%	4.92%	4.85%	4.73%	4.81%	5.00%
60		1.79%	1.99%	2.23%	2.34%	2.45%	2.56%	4.01%	3.67%	3.58%	3.41%	3.54%	3.54%
61		1.71%	1.91%	2.15%	2.26%	2.34%	2.35%	2.81%	2.53%	2.50%	2.41%	2.46%	2.55%
62		0.36%	0.48%	0.65%	0.76%	0.77%	0.81%	2.71%	2.43%	2.41%	2.32%	2.37%	2.42%
63	1.73%	1.94%	2.18%	2.29%	2.38%	2.39%	4.13%	3.80%	3.71%	3.55%	3.72%	3.86%	
64	FOOTWEAR	-0.94%	-0.92%	-0.74%	-0.78%	-0.76%	-0.75%	2.41%	2.08%	2.01%	1.86%	1.87%	1.90%
65		5.49%	5.88%	6.34%	6.67%	6.88%	7.04%	2.99%	2.74%	2.73%	2.67%	2.72%	2.82%
66		0.45%	0.58%	0.74%	0.80%	0.83%	0.84%	6.49%	6.10%	5.98%	5.82%	6.08%	6.35%
67		0.45%	0.58%	0.74%	0.80%	0.82%	0.84%	6.49%	6.10%	5.98%	5.82%	6.04%	6.28%
68	STONE & GLASS	1.98%	2.18%	2.41%	2.60%	2.71%	2.77%	4.95%	4.74%	4.82%	4.82%	5.04%	5.07%
69		1.98%	2.18%	2.41%	2.60%	2.65%	2.73%	4.95%	4.74%	4.82%	4.82%	4.97%	5.05%
70		1.96%	2.17%	2.40%	2.58%	2.69%	2.77%	4.90%	4.68%	4.75%	4.74%	4.98%	5.18%
71	PRECIOUS STONES	5.09%	5.16%	5.33%	5.47%	5.48%	5.65%	6.84%	6.50%	6.47%	6.35%	6.65%	6.81%
72	BASE METALS	4.60%	4.92%	5.25%	5.60%	5.74%	5.90%	4.80%	4.58%	4.57%	4.50%	4.70%	4.85%
73		2.41%	2.69%	2.98%	3.24%	3.26%	3.30%	6.11%	5.77%	5.70%	5.58%	5.70%	5.94%
74		1.22%	1.10%	1.14%	0.99%	1.02%	1.05%	7.53%	7.43%	7.65%	7.73%	7.92%	7.99%
75		1.23%	1.10%	1.14%	0.98%	1.01%	1.01%	8.02%	7.83%	8.03%	8.04%	8.13%	8.51%
76		1.23%	1.10%	1.14%	0.98%	1.03%	1.08%	7.04%	6.77%	6.81%	6.76%	6.89%	7.04%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		1.23%	1.10%	1.14%	0.98%	0.99%	1.01%	8.09%	7.91%	8.13%	8.14%	8.26%	8.37%
79		1.23%	1.10%	1.14%	0.98%	0.98%	1.00%	8.09%	7.91%	8.13%	8.14%	8.40%	8.46%
80		1.23%	1.10%	1.14%	0.98%	1.02%	1.05%	7.92%	7.73%	7.92%	7.92%	8.07%	8.40%
81		1.23%	1.10%	1.14%	0.98%	1.00%	1.05%	8.92%	8.80%	9.13%	9.18%	9.60%	9.83%
82		1.62%	1.89%	2.15%	2.34%	2.45%	2.51%	6.27%	5.90%	5.80%	5.67%	5.68%	5.77%
83		1.62%	1.89%	2.15%	2.34%	2.44%	2.48%	6.27%	5.90%	5.80%	5.67%	5.89%	5.92%
84	MACHINE	1.67%	1.91%	2.18%	2.37%	2.39%	2.50%	6.38%	6.04%	6.04%	5.94%	5.98%	5.99%
85		2.03%	2.14%	2.38%	2.41%	2.42%	2.50%	4.54%	4.22%	4.25%	4.17%	4.26%	4.39%
86	VEHICLES	0.45%	0.56%	0.70%	0.83%	0.85%	0.88%	9.18%	8.65%	8.55%	8.31%	8.34%	8.39%
87		0.98%	1.16%	1.32%	1.49%	1.52%	1.55%	7.31%	7.08%	7.15%	7.13%	7.41%	7.52%
88		0.20%	0.28%	0.41%	0.50%	0.52%	0.54%	9.18%	8.64%	8.53%	8.28%	8.34%	8.56%
89		0.09%	0.15%	0.27%	0.36%	0.36%	0.38%	9.29%	8.74%	8.62%	8.37%	8.72%	8.75%
90	CLOCKS & MUSICAL INST.	0.89%	1.08%	1.26%	1.37%	1.38%	1.42%	7.80%	7.41%	7.34%	7.19%	7.55%	7.76%
91		0.82%	0.99%	1.18%	1.29%	1.32%	1.35%	7.72%	7.33%	7.27%	7.13%	7.45%	7.81%
92		0.45%	0.58%	0.74%	0.80%	0.82%	0.83%	6.49%	6.10%	5.98%	5.82%	6.03%	6.28%
93	ARMS	0.90%	1.08%	1.27%	1.38%	1.38%	1.45%	7.70%	7.31%	7.25%	7.10%	7.14%	7.28%
94	MISC. ART.	1.12%	1.32%	1.53%	1.66%	1.72%	1.74%	6.61%	6.23%	6.13%	5.97%	6.16%	6.27%
95		0.45%	0.58%	0.74%	0.80%	0.83%	0.86%	6.49%	6.10%	5.98%	5.82%	5.97%	6.10%
96		0.09%	0.20%	0.36%	0.40%	0.40%	0.41%	6.45%	6.06%	5.95%	5.79%	5.92%	6.05%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	

TRADE FORECASTING BETWEEN CHINA AND JAPAN

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	2.00%	1.81%	1.78%	1.78%	1.78%	1.86%	-0.59%	-0.48%	-0.53%	-0.51%	-0.50%	-0.50%
02		-0.70%	-1.03%	-0.91%	-0.85%	-0.84%	-0.84%	10.10%	9.49%	8.70%	7.89%	8.20%	8.59%
03		0.00%	-0.25%	-0.20%	-0.20%	-0.19%	-0.19%	2.24%	2.36%	2.34%	2.32%	2.42%	2.52%
04		-1.78%	-2.13%	-2.09%	-2.11%	-2.07%	-2.00%	3.08%	3.27%	3.31%	3.38%	3.48%	3.53%
05		0.04%	-0.21%	-0.16%	-0.16%	-0.16%	-0.15%	1.80%	1.95%	1.94%	1.95%	1.95%	2.04%
06	VEGETABLE PRODUCTS	2.12%	1.49%	1.46%	1.11%	1.12%	1.14%	5.98%	6.03%	6.12%	6.15%	6.38%	6.49%
07		-0.10%	-0.36%	-0.29%	-0.30%	-0.29%	-0.28%	1.96%	2.05%	2.04%	2.04%	2.08%	2.18%
08		-0.24%	-0.53%	-0.43%	-0.46%	-0.45%	-0.43%	1.29%	1.34%	1.38%	1.42%	1.46%	1.50%
09		1.30%	0.79%	0.80%	0.56%	0.56%	0.58%	4.74%	4.83%	4.90%	4.92%	5.09%	5.28%
10		-3.08%	-3.45%	-2.95%	-2.97%	-2.92%	-2.81%	2.26%	2.37%	2.46%	2.62%	2.67%	2.69%
11		0.06%	-0.18%	-0.13%	-0.12%	-0.12%	-0.12%	2.62%	2.72%	2.67%	2.63%	2.75%	2.82%
12		1.58%	1.02%	1.02%	0.73%	0.76%	0.79%	5.44%	5.53%	5.64%	5.71%	5.83%	5.98%
13		0.16%	-0.09%	-0.04%	-0.04%	-0.04%	-0.04%	2.65%	2.75%	2.70%	2.66%	2.77%	2.87%
14		3.12%	2.74%	2.75%	2.59%	2.61%	2.71%	4.19%	4.26%	4.42%	4.44%	4.64%	4.84%
15		FATS & OILS	1.55%	1.12%	1.06%	0.89%	0.94%	0.96%	7.88%	7.61%	7.33%	6.91%	7.10%
16	PREPARED FOODSTUFFS	-0.04%	-0.29%	-0.24%	-0.23%	-0.22%	-0.22%	7.38%	7.14%	6.69%	6.20%	6.42%	6.48%
17		-2.03%	-2.44%	-2.44%	-2.51%	-2.41%	-2.40%	6.14%	6.24%	6.63%	6.72%	7.03%	7.20%
18		0.06%	-0.20%	-0.15%	-0.17%	-0.17%	-0.16%	2.77%	2.87%	2.82%	2.78%	2.84%	2.85%
19		-0.03%	-0.28%	-0.23%	-0.23%	-0.22%	-0.22%	2.64%	2.74%	2.69%	2.64%	2.67%	2.77%
20		-0.03%	-0.28%	-0.23%	-0.23%	-0.22%	-0.22%	2.64%	2.74%	2.69%	2.64%	2.72%	2.73%
21		-0.09%	-0.34%	-0.29%	-0.29%	-0.28%	-0.28%	2.65%	2.75%	2.70%	2.66%	2.72%	2.74%
22		2.27%	2.13%	2.15%	2.18%	2.28%	2.37%	1.44%	1.61%	1.59%	1.62%	1.65%	1.69%
23		-0.64%	-0.93%	-0.82%	-0.85%	-0.84%	-0.81%	6.22%	6.13%	6.00%	5.76%	5.98%	6.16%
24		2.36%	2.13%	2.13%	2.09%	2.14%	2.20%	2.98%	3.17%	3.24%	3.34%	3.39%	3.45%
25		MINERAL PRODUCTS	3.81%	3.78%	3.97%	4.17%	4.31%	4.48%	1.20%	1.26%	1.33%	1.41%	1.44%
26	5.58%		5.53%	5.67%	5.83%	5.90%	5.98%	0.49%	0.50%	0.62%	0.74%	0.78%	0.78%
27	7.89%		8.25%	8.67%	9.11%	9.26%	9.57%	3.49%	3.83%	4.23%	4.49%	4.70%	4.84%
28	CHEMICAL PRODUCTS	2.22%	1.82%	1.76%	1.63%	1.64%	1.68%	6.30%	6.43%	6.50%	6.53%	6.61%	6.86%
29		1.97%	1.52%	1.43%	1.23%	1.28%	1.34%	6.35%	6.48%	6.53%	6.55%	6.78%	7.04%
30		1.95%	1.50%	1.41%	1.22%	1.26%	1.29%	5.69%	5.83%	5.90%	5.95%	6.06%	6.12%
31		1.99%	1.54%	1.44%	1.25%	1.28%	1.29%	6.29%	6.41%	6.47%	6.50%	6.76%	6.77%
32		1.98%	1.52%	1.43%	1.23%	1.29%	1.33%	6.37%	6.50%	6.55%	6.57%	6.80%	6.96%
33		1.98%	1.52%	1.43%	1.23%	1.27%	1.31%	6.37%	6.50%	6.55%	6.57%	6.86%	7.08%
34		1.94%	1.49%	1.40%	1.20%	1.24%	1.27%	6.18%	6.31%	6.33%	6.34%	6.57%	6.62%
35		1.95%	1.50%	1.40%	1.21%	1.27%	1.30%	5.04%	5.19%	5.23%	5.27%	5.46%	5.74%
36		1.59%	1.15%	1.06%	0.88%	0.90%	0.91%	5.32%	5.44%	5.33%	5.27%	5.45%	5.48%
37		1.98%	1.52%	1.43%	1.23%	1.23%	1.26%	6.37%	6.50%	6.55%	6.57%	6.80%	6.87%
38		1.79%	1.35%	1.27%	1.09%	1.12%	1.17%	6.00%	6.12%	6.16%	6.17%	6.44%	6.73%
39	PLASTICS	1.98%	1.52%	1.43%	1.23%	1.28%	1.33%	6.37%	6.50%	6.55%	6.57%	6.90%	7.06%
40		1.98%	1.52%	1.43%	1.23%	1.27%	1.31%	6.34%	6.46%	6.52%	6.54%	6.58%	6.59%
41	LEATHER GOODS	-1.41%	-1.93%	-1.97%	-2.16%	-2.12%	-2.03%	1.85%	1.81%	1.56%	1.35%	1.38%	1.43%
42		-1.25%	-1.75%	-1.80%	-1.97%	-1.91%	-1.82%	2.06%	2.09%	1.87%	1.72%	1.73%	1.75%
43		2.00%	1.81%	1.78%	1.78%	1.83%	1.91%	-0.59%	-0.48%	-0.53%	-0.51%	-0.51%	-0.49%
44	WOOD PRODUCTS	1.56%	1.13%	1.06%	0.89%	0.90%	0.91%	2.17%	2.24%	2.23%	2.17%	2.24%	2.36%
45		0.38%	0.04%	0.05%	-0.05%	-0.05%	-0.05%	2.09%	2.15%	2.14%	2.07%	2.11%	2.19%
46		-0.69%	-1.05%	-1.07%	-1.19%	-1.18%	-1.17%	2.05%	2.11%	2.10%	2.03%	2.03%	2.11%
47	PAPER	1.41%	1.06%	1.08%	1.01%	1.04%	1.08%	5.07%	5.20%	5.09%	5.03%	5.16%	5.27%
48		1.41%	1.06%	1.08%	1.01%	1.04%	1.07%	5.07%	5.20%	5.09%	5.03%	5.24%	5.48%
49		1.41%	1.06%	1.08%	1.01%	1.01%	1.04%	5.07%	5.20%	5.09%	5.03%	5.28%	5.49%

TRADE FORECASTING BETWEEN CHINA AND JAPAN (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	1.03%	0.67%	0.64%	0.53%	0.55%	0.58%	0.06%	-0.03%	-0.21%	-0.37%	-0.35%	-0.35%
51		1.03%	0.67%	0.64%	0.53%	0.55%	0.56%	0.06%	-0.03%	-0.21%	-0.37%	-0.36%	-0.36%
52		1.03%	0.67%	0.64%	0.53%	0.55%	0.58%	0.06%	-0.03%	-0.20%	-0.36%	-0.36%	-0.35%
53		1.03%	0.67%	0.64%	0.53%	0.54%	0.56%	0.15%	0.07%	-0.10%	-0.25%	-0.25%	-0.24%
54		1.03%	0.67%	0.64%	0.53%	0.53%	0.56%	0.06%	-0.03%	-0.21%	-0.37%	-0.36%	-0.35%
55		1.03%	0.67%	0.64%	0.53%	0.54%	0.56%	0.06%	-0.03%	-0.21%	-0.37%	-0.36%	-0.36%
56		1.03%	0.67%	0.64%	0.53%	0.54%	0.56%	0.06%	-0.03%	-0.21%	-0.37%	-0.35%	-0.34%
57		1.03%	0.67%	0.64%	0.53%	0.53%	0.54%	0.06%	-0.03%	-0.21%	-0.37%	-0.35%	-0.34%
58		1.03%	0.67%	0.64%	0.53%	0.56%	0.56%	0.06%	-0.03%	-0.21%	-0.37%	-0.36%	-0.35%
59		1.19%	0.79%	0.74%	0.61%	0.63%	0.66%	1.79%	1.83%	1.73%	1.66%	1.68%	1.76%
60		1.03%	0.67%	0.64%	0.53%	0.54%	0.57%	0.06%	-0.03%	-0.21%	-0.37%	-0.36%	-0.36%
61		0.77%	0.42%	0.41%	0.33%	0.34%	0.35%	1.29%	1.40%	1.26%	1.18%	1.22%	1.25%
62		0.10%	-0.23%	-0.19%	-0.20%	-0.20%	-0.19%	1.35%	1.48%	1.33%	1.26%	1.29%	1.31%
63	0.85%	0.49%	0.47%	0.38%	0.39%	0.39%	0.20%	0.11%	-0.06%	-0.21%	-0.21%	-0.21%	
64	FOOTWEAR	-1.61%	-2.16%	-2.21%	-2.42%	-2.41%	-2.39%	1.91%	1.86%	1.60%	1.39%	1.41%	1.45%
65		1.79%	1.35%	1.27%	1.10%	1.10%	1.12%	1.54%	1.67%	1.54%	1.48%	1.54%	1.56%
66		-1.34%	-1.85%	-1.92%	-2.10%	-2.09%	-2.02%	4.75%	4.86%	4.65%	4.53%	4.72%	4.75%
67		-1.34%	-1.85%	-1.92%	-2.10%	-2.08%	-2.04%	4.75%	4.86%	4.65%	4.53%	4.68%	4.82%
68	STONE & GLASS	0.57%	0.28%	0.30%	0.28%	0.29%	0.29%	3.19%	3.32%	3.28%	3.27%	3.40%	3.43%
69		0.57%	0.28%	0.30%	0.28%	0.30%	0.31%	3.19%	3.32%	3.28%	3.27%	3.35%	3.49%
70		0.59%	0.29%	0.31%	0.29%	0.30%	0.30%	2.96%	3.09%	3.05%	3.03%	3.04%	3.13%
71	PRECIOUS STONES	1.74%	1.42%	1.41%	1.37%	1.41%	1.47%	5.59%	5.62%	5.52%	5.43%	5.61%	5.67%
72	BASE METALS	1.77%	1.53%	1.53%	1.54%	1.55%	1.59%	4.05%	4.02%	3.94%	3.90%	4.01%	4.06%
73		1.01%	0.72%	0.75%	0.76%	0.78%	0.81%	4.20%	4.21%	4.04%	3.91%	3.98%	4.15%
74		0.81%	0.54%	0.55%	0.57%	0.59%	0.61%	6.19%	6.20%	6.21%	6.16%	6.25%	6.33%
75		2.07%	1.77%	1.75%	1.72%	1.78%	1.83%	7.26%	7.09%	7.10%	6.97%	7.31%	7.40%
76		1.74%	1.43%	1.43%	1.40%	1.45%	1.51%	6.11%	6.03%	5.98%	5.86%	6.00%	6.24%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		2.09%	1.78%	1.76%	1.73%	1.80%	1.85%	7.33%	7.15%	7.16%	7.03%	7.06%	7.34%
79		2.09%	1.78%	1.76%	1.73%	1.79%	1.84%	7.33%	7.15%	7.16%	7.03%	7.20%	7.51%
80		2.05%	1.75%	1.73%	1.70%	1.78%	1.85%	7.18%	7.02%	7.02%	6.89%	7.23%	7.28%
81		2.19%	1.88%	1.86%	1.82%	1.83%	1.83%	7.89%	7.65%	7.68%	7.53%	7.83%	8.11%
82		0.07%	-0.28%	-0.23%	-0.24%	-0.23%	-0.23%	4.30%	4.33%	4.13%	3.99%	4.00%	4.03%
83		0.07%	-0.28%	-0.23%	-0.24%	-0.24%	-0.23%	4.30%	4.33%	4.13%	3.99%	4.19%	4.25%
84	MACHINE	-0.11%	-0.54%	-0.50%	-0.56%	-0.55%	-0.52%	3.97%	3.98%	3.78%	3.63%	3.72%	3.81%
85		0.51%	-0.06%	-0.04%	-0.24%	-0.23%	-0.22%	3.66%	3.75%	3.62%	3.53%	3.54%	3.69%
86	VEHICLES	-1.17%	-1.59%	-1.60%	-1.64%	-1.63%	-1.59%	7.55%	7.22%	6.74%	6.32%	6.46%	6.64%
87		-0.14%	-0.41%	-0.39%	-0.36%	-0.35%	-0.34%	5.34%	5.42%	5.27%	5.19%	5.30%	5.31%
88		-1.69%	-2.21%	-2.25%	-2.35%	-2.33%	-2.32%	7.51%	7.17%	6.68%	6.26%	6.36%	6.64%
89		-1.80%	-2.33%	-2.38%	-2.48%	-2.47%	-2.44%	7.70%	7.34%	6.83%	6.39%	6.48%	6.63%
90	CLOCKS & MUSICAL INST.	-0.34%	-0.73%	-0.69%	-0.72%	-0.71%	-0.69%	4.05%	4.01%	3.78%	3.59%	3.61%	3.73%
91		-0.34%	-0.73%	-0.69%	-0.72%	-0.69%	-0.65%	3.99%	3.95%	3.72%	3.54%	3.55%	3.68%
92		-1.34%	-1.85%	-1.92%	-2.10%	-2.02%	-1.94%	4.75%	4.86%	4.65%	4.53%	4.72%	4.80%
93	ARMS	-0.33%	-0.73%	-0.68%	-0.71%	-0.68%	-0.67%	4.05%	4.01%	3.79%	3.60%	3.68%	3.73%
94	MISC. ART.	-0.40%	-0.82%	-0.80%	-0.86%	-0.86%	-0.84%	4.47%	4.54%	4.34%	4.21%	4.36%	4.40%
95		-1.34%	-1.85%	-1.92%	-2.10%	-2.10%	-2.09%	4.75%	4.86%	4.65%	4.53%	4.57%	4.79%
96		-1.34%	-1.85%	-1.92%	-2.10%	-2.08%	-1.99%	4.69%	4.79%	4.58%	4.46%	4.59%	4.70%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	

TRADE FORECASTING BETWEEN CHINA AND SOUTH KOREA

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	2.43%	2.28%	2.21%	2.19%	2.20%	2.25%	2.63%	2.46%	2.37%	2.36%	2.36%	2.40%
02		1.59%	1.11%	0.78%	0.39%	0.41%	0.42%	13.96%	13.41%	12.93%	12.54%	12.61%	12.93%
03		1.68%	1.64%	1.75%	1.81%	1.83%	1.85%	3.07%	2.88%	2.82%	2.84%	2.85%	2.87%
04		2.10%	2.03%	2.06%	2.08%	2.13%	2.15%	5.03%	4.92%	4.97%	5.12%	5.31%	5.33%
05		1.59%	1.55%	1.69%	1.77%	1.79%	1.81%	2.52%	2.37%	2.34%	2.39%	2.51%	2.61%
06	VEGETABLE PRODUCTS	18.47%	17.65%	17.24%	16.63%	16.72%	17.24%	2.88%	2.57%	2.49%	2.40%	2.44%	2.53%
07		4.91%	4.47%	4.47%	4.21%	4.28%	4.48%	2.21%	2.09%	2.16%	2.24%	2.35%	2.37%
08		5.68%	5.10%	5.07%	4.71%	4.94%	5.17%	0.30%	0.27%	0.49%	0.67%	0.69%	0.69%
09		16.22%	15.77%	15.63%	15.27%	15.30%	15.85%	3.19%	2.90%	2.81%	2.73%	2.82%	2.91%
10		5.66%	5.05%	4.67%	4.12%	4.32%	4.35%	3.60%	3.36%	3.20%	3.13%	3.27%	3.27%
11		2.26%	2.21%	2.27%	2.32%	2.41%	2.45%	3.82%	3.57%	3.47%	3.44%	3.56%	3.62%
12		15.49%	15.56%	15.80%	16.04%	16.76%	17.31%	4.07%	3.85%	3.77%	3.74%	3.90%	4.03%
13		2.24%	2.20%	2.26%	2.31%	2.34%	2.39%	3.86%	3.61%	3.51%	3.48%	3.49%	3.55%
14		1.87%	1.80%	2.19%	2.27%	2.36%	2.38%	9.63%	9.42%	9.60%	9.61%	10.03%	10.11%
15	FATS & OILS	0.63%	0.24%	0.16%	-0.12%	-0.11%	-0.11%	10.10%	9.86%	9.97%	9.93%	10.24%	10.38%
16	PREPARED FOODSTUFFS	2.01%	1.85%	1.81%	1.74%	1.82%	1.83%	6.19%	6.03%	6.00%	6.03%	6.23%	6.32%
17		0.19%	0.11%	0.17%	0.20%	0.20%	0.20%	9.05%	8.97%	9.15%	9.28%	9.52%	9.86%
18		4.30%	4.42%	4.69%	4.91%	5.07%	5.14%	3.80%	3.54%	3.45%	3.41%	3.58%	3.61%
19		2.19%	2.14%	2.19%	2.24%	2.35%	2.38%	3.84%	3.59%	3.49%	3.46%	3.50%	3.58%
20		2.19%	2.14%	2.19%	2.24%	2.25%	2.26%	3.84%	3.59%	3.49%	3.46%	3.52%	3.67%
21		2.18%	2.13%	2.19%	2.23%	2.24%	2.25%	3.86%	3.61%	3.52%	3.48%	3.65%	3.71%
22		3.36%	3.35%	3.39%	3.47%	3.62%	3.71%	2.56%	2.40%	2.33%	2.37%	2.38%	2.39%
23		0.76%	0.55%	0.77%	0.70%	0.73%	0.75%	8.03%	7.85%	7.99%	8.03%	8.24%	8.42%
24		7.98%	8.14%	8.43%	8.65%	8.88%	9.16%	2.52%	2.31%	2.24%	2.23%	2.24%	2.27%
25	MINERAL PRODUCTS	6.72%	6.87%	7.06%	7.31%	7.37%	7.68%	3.80%	3.86%	3.95%	4.11%	4.14%	4.21%
26		6.23%	6.30%	6.45%	6.67%	6.87%	6.91%	3.53%	3.66%	3.82%	4.06%	4.14%	4.35%
27		9.11%	11.11%	14.26%	19.12%	19.77%	20.44%	4.98%	5.09%	5.52%	5.84%	5.85%	5.90%
28	CHEMICAL PRODUCTS	1.44%	0.99%	0.65%	0.31%	0.32%	0.32%	9.75%	9.86%	10.04%	10.24%	10.56%	10.69%
29		0.63%	0.01%	-0.51%	-1.07%	-1.02%	-1.01%	9.87%	9.97%	10.15%	10.35%	10.47%	10.83%
30		0.65%	0.05%	-0.46%	-1.01%	-0.98%	-0.93%	9.33%	9.43%	9.61%	9.82%	10.22%	10.56%
31		0.66%	0.05%	-0.46%	-1.01%	-0.99%	-0.97%	9.64%	9.76%	9.95%	10.16%	10.53%	10.98%
32		0.62%	0.01%	-0.51%	-1.07%	-1.05%	-1.04%	9.89%	9.99%	10.17%	10.37%	10.76%	11.11%
33		0.62%	0.01%	-0.51%	-1.07%	-1.03%	-1.02%	9.89%	9.99%	10.17%	10.37%	10.66%	11.07%
34		0.63%	0.02%	-0.50%	-1.06%	-1.05%	-1.04%	9.78%	9.84%	9.98%	10.16%	10.44%	10.49%
35		0.66%	0.05%	-0.45%	-1.00%	-0.97%	-0.97%	8.32%	8.39%	8.58%	8.80%	9.02%	9.32%
36		0.70%	0.11%	-0.38%	-0.91%	-0.90%	-0.87%	9.07%	8.91%	8.83%	8.84%	9.15%	9.38%
37		0.62%	0.01%	-0.51%	-1.07%	-1.07%	-1.04%	9.89%	9.99%	10.17%	10.37%	10.87%	11.23%
38		0.79%	0.23%	-0.24%	-0.74%	-0.73%	-0.70%	9.29%	9.36%	9.51%	9.69%	10.16%	10.54%
39	PLASTICS	0.62%	0.01%	-0.51%	-1.07%	-1.03%	-0.98%	9.89%	9.99%	10.17%	10.37%	10.57%	10.98%
40		0.63%	0.01%	-0.51%	-1.07%	-1.06%	-1.02%	9.89%	9.99%	10.17%	10.37%	10.65%	11.18%
41	LEATHER GOODS	1.02%	0.91%	0.91%	0.83%	0.84%	0.85%	5.14%	4.70%	4.39%	4.18%	4.29%	4.47%
42		1.27%	1.21%	1.23%	1.18%	1.23%	1.24%	5.22%	4.83%	4.56%	4.39%	4.58%	4.73%
43		2.43%	2.28%	2.21%	2.19%	2.20%	2.24%	2.63%	2.46%	2.37%	2.36%	2.40%	2.40%
44	WOOD PRODUCTS	0.58%	0.08%	-0.31%	-0.75%	-0.72%	-0.69%	2.84%	2.59%	2.62%	2.59%	2.67%	2.80%
45		0.74%	0.61%	0.61%	0.55%	0.55%	0.57%	2.38%	2.08%	2.05%	1.96%	2.02%	2.02%
46		0.18%	-0.02%	-0.11%	-0.24%	-0.24%	-0.24%	2.32%	2.00%	1.97%	1.87%	1.87%	1.95%
47	PAPER	3.55%	3.48%	3.50%	3.47%	3.57%	3.57%	7.12%	6.90%	6.88%	6.88%	7.20%	7.49%
48		3.55%	3.48%	3.50%	3.47%	3.61%	3.72%	7.12%	6.90%	6.88%	6.88%	7.08%	7.31%
49		3.55%	3.48%	3.50%	3.47%	3.49%	3.52%	7.12%	6.90%	6.88%	6.88%	6.93%	7.27%

TRADE FORECASTING BETWEEN CHINA AND SOUTH KOREA (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	2.45%	2.36%	2.29%	2.18%	2.24%	2.35%	3.58%	3.28%	3.07%	2.92%	3.03%	3.18%
51		2.45%	2.36%	2.30%	2.19%	2.29%	2.36%	3.58%	3.28%	3.07%	2.92%	2.95%	3.02%
52		2.44%	2.35%	2.28%	2.16%	2.17%	2.20%	3.58%	3.28%	3.07%	2.92%	2.95%	3.01%
53		2.59%	2.52%	2.48%	2.42%	2.43%	2.46%	3.58%	3.29%	3.08%	2.92%	2.95%	3.02%
54		2.44%	2.34%	2.27%	2.16%	2.21%	2.21%	3.58%	3.28%	3.07%	2.92%	3.06%	3.14%
55		2.44%	2.34%	2.27%	2.16%	2.21%	2.27%	3.58%	3.28%	3.07%	2.92%	2.97%	3.07%
56		2.44%	2.34%	2.27%	2.16%	2.22%	2.27%	3.58%	3.28%	3.07%	2.92%	3.02%	3.05%
57		2.44%	2.34%	2.27%	2.16%	2.25%	2.30%	3.58%	3.28%	3.07%	2.92%	3.06%	3.17%
58		2.44%	2.34%	2.27%	2.16%	2.18%	2.23%	3.58%	3.28%	3.07%	2.92%	2.95%	3.07%
59		1.62%	1.31%	1.06%	0.77%	0.79%	0.81%	5.20%	4.98%	4.85%	4.80%	4.97%	4.99%
60		2.44%	2.34%	2.27%	2.16%	2.20%	2.22%	3.58%	3.28%	3.07%	2.92%	3.03%	3.10%
61		2.64%	2.62%	2.62%	2.60%	2.64%	2.68%	3.62%	3.34%	3.16%	3.09%	3.21%	3.25%
62		2.98%	3.06%	3.20%	3.32%	3.45%	3.58%	3.62%	3.34%	3.17%	3.11%	3.22%	3.35%
63	2.60%	2.54%	2.51%	2.45%	2.50%	2.50%	3.74%	3.45%	3.25%	3.10%	3.14%	3.22%	
64	FOOTWEAR	0.90%	0.80%	0.81%	0.72%	0.73%	0.74%	5.16%	4.72%	4.41%	4.19%	4.22%	4.39%
65		0.89%	0.36%	-0.08%	-0.54%	-0.53%	-0.52%	4.16%	3.94%	3.83%	3.84%	3.91%	4.06%
66		2.34%	2.36%	2.41%	2.43%	2.54%	2.54%	8.33%	7.90%	7.57%	7.35%	7.46%	7.67%
67		2.34%	2.36%	2.41%	2.43%	2.49%	2.54%	8.33%	7.90%	7.57%	7.35%	7.36%	7.68%
68	STONE & GLASS	3.62%	3.77%	3.94%	4.13%	4.16%	4.35%	5.07%	4.91%	4.80%	4.79%	4.83%	4.97%
69		3.62%	3.77%	3.94%	4.13%	4.15%	4.16%	5.07%	4.91%	4.80%	4.79%	4.82%	4.88%
70		3.51%	3.64%	3.80%	3.96%	4.09%	4.28%	5.01%	4.85%	4.75%	4.73%	4.96%	5.20%
71	PRECIOUS STONES	3.71%	3.69%	3.72%	3.77%	3.87%	3.97%	9.73%	9.54%	9.42%	9.34%	9.66%	9.91%
72	BASE METALS	5.31%	5.54%	5.78%	6.07%	6.20%	6.37%	5.69%	5.63%	5.56%	5.58%	5.75%	5.88%
73		4.63%	4.86%	5.09%	5.36%	5.56%	5.79%	5.79%	5.66%	5.55%	5.52%	5.55%	5.79%
74		3.41%	3.45%	3.52%	3.62%	3.77%	3.83%	9.81%	9.67%	9.61%	9.56%	9.59%	9.63%
75		4.03%	4.05%	4.10%	4.18%	4.30%	4.50%	10.40%	10.23%	10.15%	10.06%	10.21%	10.38%
76		4.03%	4.07%	4.15%	4.24%	4.26%	4.27%	9.68%	9.51%	9.43%	9.36%	9.49%	9.73%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		4.03%	4.05%	4.10%	4.18%	4.20%	4.32%	10.43%	10.26%	10.18%	10.08%	10.35%	10.35%
79		4.03%	4.05%	4.10%	4.18%	4.18%	4.34%	10.43%	10.26%	10.18%	10.08%	10.22%	10.29%
80		4.03%	4.05%	4.11%	4.18%	4.31%	4.50%	10.36%	10.19%	10.11%	10.02%	10.48%	10.85%
81		4.03%	4.04%	4.09%	4.16%	4.36%	4.53%	10.64%	10.47%	10.38%	10.29%	10.72%	10.93%
82		4.03%	4.24%	4.46%	4.68%	4.87%	5.09%	5.64%	5.30%	5.06%	4.90%	5.08%	5.12%
83		4.03%	4.24%	4.46%	4.68%	4.80%	4.85%	5.64%	5.30%	5.06%	4.90%	5.12%	5.23%
84	MACHINE	4.03%	4.19%	4.42%	4.61%	4.77%	4.90%	7.75%	7.45%	7.24%	7.08%	7.39%	7.71%
85		4.83%	4.88%	5.11%	5.18%	5.40%	5.61%	6.98%	6.69%	6.56%	6.43%	6.53%	6.59%
86	VEHICLES	2.48%	2.54%	2.63%	2.77%	2.82%	2.84%	9.85%	9.15%	8.62%	8.24%	8.38%	8.66%
87		2.48%	2.56%	2.65%	2.79%	2.93%	2.97%	7.53%	7.28%	7.09%	7.03%	7.20%	7.42%
88		2.82%	2.83%	2.93%	3.01%	3.01%	3.05%	9.87%	9.15%	8.61%	8.21%	8.42%	8.67%
89		3.01%	3.07%	3.24%	3.42%	3.55%	3.55%	10.02%	9.28%	8.73%	8.32%	8.54%	8.66%
90	CLOCKS & MUSICAL INST.	3.67%	3.86%	4.09%	4.32%	4.44%	4.60%	8.15%	7.84%	7.60%	7.42%	7.61%	7.97%
91		3.66%	3.86%	4.09%	4.32%	4.49%	4.65%	8.10%	7.79%	7.55%	7.37%	7.45%	7.73%
92		2.34%	2.36%	2.41%	2.43%	2.43%	2.52%	8.33%	7.90%	7.57%	7.35%	7.46%	7.66%
93	ARMS	3.67%	3.87%	4.10%	4.32%	4.43%	4.43%	8.04%	7.73%	7.49%	7.31%	7.35%	7.62%
94	MISC. ART.	3.34%	3.47%	3.64%	3.81%	3.85%	3.93%	8.00%	7.64%	7.35%	7.17%	7.20%	7.32%
95		2.34%	2.36%	2.41%	2.43%	2.51%	2.57%	8.33%	7.90%	7.57%	7.35%	7.39%	7.59%
96		2.31%	2.33%	2.38%	2.39%	2.48%	2.57%	8.26%	7.84%	7.50%	7.29%	7.61%	7.88%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	

TRADE FORECASTING BETWEEN CHINA AND U.S.

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	1.61%	1.56%	1.55%	1.58%	1.58%	1.63%	2.36%	2.10%	1.97%	1.59%	1.62%	1.67%
02		-4.44%	-4.09%	-3.79%	-3.45%	-3.38%	-3.23%	22.71%	22.28%	21.99%	21.33%	21.44%	22.04%
03		-0.56%	-0.42%	-0.23%	-0.02%	-0.02%	-0.02%	7.38%	7.00%	6.84%	6.34%	6.59%	6.65%
04		-2.73%	-2.50%	-2.33%	-2.11%	-2.04%	-1.95%	9.71%	9.56%	9.64%	9.42%	9.53%	9.72%
05		-0.12%	0.06%	0.20%	0.36%	0.37%	0.39%	8.22%	7.93%	7.81%	7.31%	7.59%	7.96%
06	VEGETABLE PRODUCTS	2.38%	2.33%	2.45%	2.31%	2.41%	2.49%	10.96%	10.98%	11.32%	11.39%	11.70%	12.01%
07		-0.89%	-0.90%	-0.67%	-0.59%	-0.58%	-0.57%	6.99%	6.71%	6.62%	6.27%	6.27%	6.46%
08		-1.04%	-1.17%	-0.92%	-0.97%	-0.92%	-0.91%	6.52%	6.35%	6.35%	6.17%	6.19%	6.50%
09		1.54%	1.44%	1.52%	1.34%	1.35%	1.41%	9.20%	9.04%	9.16%	9.00%	9.36%	9.77%
10		-1.53%	-1.61%	-1.70%	-1.87%	-1.86%	-1.77%	5.13%	4.87%	5.43%	5.46%	5.65%	5.66%
11		-0.64%	-0.48%	-0.29%	-0.06%	-0.06%	-0.06%	7.39%	7.01%	6.84%	6.34%	6.45%	6.75%
12		6.55%	6.67%	6.86%	6.98%	7.15%	7.44%	9.70%	9.68%	9.94%	9.93%	10.26%	10.72%
13		0.31%	0.50%	0.74%	0.97%	1.00%	1.02%	7.39%	7.01%	6.84%	6.34%	6.42%	6.73%
14		1.90%	2.11%	2.38%	2.56%	2.59%	2.63%	5.93%	5.98%	6.19%	6.14%	6.30%	6.48%
15		FATS & OILS	-2.82%	-2.67%	-2.31%	-2.13%	-2.09%	-2.06%	10.37%	10.11%	10.09%	9.73%	9.81%
16	PREPARED FOODSTUFFS	-4.49%	-4.22%	-3.94%	-3.64%	-3.48%	-3.42%	8.36%	8.10%	8.06%	7.70%	7.80%	8.01%
17		-4.33%	-4.10%	-3.95%	-3.75%	-3.66%	-3.58%	13.50%	13.39%	13.50%	13.31%	13.80%	14.15%
18		-0.53%	-0.40%	-0.20%	-0.01%	-0.01%	-0.01%	7.49%	7.12%	6.96%	6.48%	6.79%	7.06%
19		-0.71%	-0.55%	-0.35%	-0.13%	-0.13%	-0.12%	7.40%	7.02%	6.85%	6.35%	6.60%	6.64%
20		-0.71%	-0.55%	-0.35%	-0.13%	-0.12%	-0.12%	7.40%	7.02%	6.85%	6.35%	6.43%	6.67%
21		-1.01%	-0.85%	-0.64%	-0.41%	-0.39%	-0.38%	7.45%	7.07%	6.91%	6.41%	6.64%	6.92%
22		1.83%	1.90%	1.98%	2.13%	2.16%	2.22%	5.46%	5.18%	5.06%	4.66%	4.82%	4.85%
23		-2.97%	-2.92%	-2.60%	-2.53%	-2.48%	-2.43%	8.21%	7.92%	7.88%	7.49%	7.74%	7.88%
24		2.25%	2.22%	2.27%	2.25%	2.35%	2.40%	7.94%	7.97%	8.26%	8.30%	8.62%	8.65%
25		MINERAL PRODUCTS	7.49%	7.64%	7.81%	8.04%	8.32%	8.34%	5.17%	5.05%	5.03%	4.75%	4.85%
26	7.60%		7.74%	7.90%	8.12%	8.52%	8.57%	3.39%	3.54%	3.73%	3.73%	3.80%	3.90%
27	8.62%		9.28%	9.91%	10.55%	10.91%	10.93%	7.39%	7.66%	7.90%	7.94%	8.33%	8.58%
28	CHEMICAL PRODUCTS	2.70%	3.16%	3.58%	4.04%	4.04%	4.04%	9.51%	9.31%	9.22%	8.84%	9.29%	9.47%
29		2.60%	3.05%	3.46%	3.91%	4.04%	4.13%	9.54%	9.32%	9.23%	8.85%	8.98%	9.22%
30		2.57%	3.02%	3.43%	3.88%	3.95%	4.13%	9.41%	9.16%	9.04%	8.62%	8.69%	9.02%
31		2.92%	3.37%	3.77%	4.21%	4.23%	4.28%	9.50%	9.29%	9.20%	8.82%	8.86%	9.18%
32		2.60%	3.06%	3.46%	3.91%	3.97%	4.15%	9.54%	9.33%	9.24%	8.85%	9.17%	9.27%
33		2.60%	3.06%	3.46%	3.91%	4.04%	4.12%	9.54%	9.33%	9.24%	8.85%	9.01%	9.35%
34		2.58%	3.04%	3.44%	3.89%	4.05%	4.15%	8.97%	8.63%	8.43%	7.93%	8.25%	8.42%
35		2.16%	2.61%	3.01%	3.46%	3.51%	3.68%	9.12%	8.88%	8.79%	8.39%	8.77%	8.84%
36		2.32%	2.79%	3.20%	3.66%	3.83%	3.92%	7.93%	7.33%	6.89%	6.14%	6.28%	6.50%
37		2.60%	3.06%	3.46%	3.91%	3.99%	4.05%	9.54%	9.33%	9.24%	8.85%	8.96%	9.31%
38		2.38%	2.85%	3.26%	3.72%	3.80%	3.88%	9.40%	9.13%	9.00%	8.57%	8.65%	8.93%
39		PLASTICS	2.60%	3.06%	3.46%	3.91%	3.95%	4.02%	9.54%	9.33%	9.24%	8.85%	8.99%
40	2.59%		3.04%	3.44%	3.88%	3.98%	4.13%	9.54%	9.32%	9.23%	8.85%	8.88%	8.97%
41	LEATHER GOODS	-1.30%	-1.04%	-0.83%	-0.59%	-0.57%	-0.56%	3.52%	2.99%	2.63%	1.97%	1.98%	2.03%
42		-2.86%	-2.49%	-2.20%	-1.88%	-1.81%	-1.78%	4.98%	4.44%	4.08%	3.40%	3.43%	3.57%
43		1.61%	1.56%	1.55%	1.59%	1.64%	1.66%	2.36%	2.10%	1.97%	1.59%	1.67%	1.70%
44	WOOD PRODUCTS	0.79%	1.02%	1.28%	1.52%	1.53%	1.61%	5.16%	4.58%	4.22%	3.55%	3.60%	3.78%
45		1.04%	1.23%	1.47%	1.65%	1.70%	1.70%	5.09%	4.51%	4.14%	3.47%	3.53%	3.64%
46		-1.37%	-1.31%	-1.20%	-1.10%	-1.09%	-1.07%	5.09%	4.51%	4.14%	3.46%	3.52%	3.56%
47	PAPER	0.59%	0.87%	1.11%	1.40%	1.42%	1.45%	9.21%	8.84%	8.63%	8.13%	8.47%	8.81%
48		0.59%	0.87%	1.11%	1.40%	1.43%	1.43%	9.21%	8.84%	8.63%	8.13%	8.35%	8.46%
49		0.59%	0.87%	1.11%	1.40%	1.47%	1.52%	9.21%	8.84%	8.63%	8.13%	8.49%	8.75%

TRADE FORECASTING BETWEEN CHINA AND U.S. (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-0.96%	-0.56%	-0.32%	-0.02%	-0.02%	-0.02%	8.45%	7.88%	7.49%	6.77%	6.83%	6.94%
51		-0.85%	-0.46%	-0.24%	0.04%	0.05%	0.05%	8.47%	7.91%	7.52%	6.80%	7.07%	7.17%
52		3.45%	3.78%	4.06%	4.32%	4.53%	4.58%	8.37%	7.79%	7.40%	6.68%	6.95%	7.01%
53		5.95%	6.05%	6.18%	6.27%	6.28%	6.37%	8.37%	7.79%	7.40%	6.68%	6.90%	6.90%
54		-1.38%	-0.95%	-0.67%	-0.31%	-0.30%	-0.29%	8.37%	7.79%	7.40%	6.68%	6.97%	7.15%
55		-1.38%	-0.95%	-0.67%	-0.31%	-0.30%	-0.29%	8.37%	7.79%	7.40%	6.68%	7.00%	7.24%
56		-1.38%	-0.95%	-0.67%	-0.31%	-0.31%	-0.31%	8.37%	7.79%	7.40%	6.68%	6.84%	7.17%
57		-1.38%	-0.95%	-0.67%	-0.31%	-0.31%	-0.29%	8.37%	7.79%	7.40%	6.68%	7.01%	7.04%
58		-1.38%	-0.95%	-0.67%	-0.31%	-0.30%	-0.29%	8.37%	7.79%	7.40%	6.68%	6.74%	6.76%
59		0.92%	1.39%	1.78%	2.22%	2.33%	2.40%	8.08%	7.48%	7.05%	6.30%	6.61%	6.71%
60		-1.38%	-0.95%	-0.67%	-0.31%	-0.30%	-0.29%	8.37%	7.79%	7.40%	6.68%	6.95%	7.07%
61		-1.53%	-1.10%	-0.80%	-0.43%	-0.42%	-0.42%	7.91%	7.26%	6.89%	6.12%	6.14%	6.32%
62		-2.39%	-1.92%	-1.58%	-1.12%	-1.09%	-1.08%	7.88%	7.23%	6.85%	6.08%	6.36%	6.64%
63	-1.41%	-0.95%	-0.64%	-0.24%	-0.24%	-0.23%	8.43%	7.85%	7.45%	6.73%	6.83%	6.85%	
64	FOOTWEAR	-2.90%	-2.54%	-2.25%	-1.94%	-1.87%	-1.79%	3.53%	2.99%	2.63%	1.97%	2.05%	2.11%
65		2.51%	2.97%	3.38%	3.83%	3.90%	3.99%	7.95%	7.32%	6.96%	6.21%	6.37%	6.67%
66		-1.91%	-1.46%	-1.13%	-0.72%	-0.70%	-0.67%	7.66%	6.99%	6.48%	5.65%	5.84%	6.10%
67		-1.91%	-1.46%	-1.13%	-0.72%	-0.71%	-0.69%	7.66%	6.99%	6.48%	5.65%	5.82%	5.94%
68	STONE & GLASS	0.28%	0.73%	1.07%	1.51%	1.54%	1.54%	7.15%	6.77%	6.53%	6.01%	6.01%	6.28%
69		0.28%	0.73%	1.07%	1.51%	1.54%	1.60%	7.15%	6.77%	6.53%	6.01%	6.08%	6.27%
70		0.24%	0.69%	1.03%	1.47%	1.53%	1.56%	7.23%	6.83%	6.58%	6.05%	6.35%	6.41%
71	PRECIOUS STONES	3.38%	3.92%	4.39%	4.93%	5.16%	5.24%	7.99%	7.40%	6.96%	6.22%	6.38%	6.45%
72	BASE METALS	3.06%	3.76%	4.35%	5.07%	5.29%	5.37%	5.85%	5.53%	5.29%	4.84%	4.99%	5.00%
73		0.16%	0.80%	1.29%	1.93%	2.01%	2.03%	7.97%	7.39%	6.96%	6.26%	6.30%	6.45%
74		0.39%	0.87%	1.25%	1.76%	1.78%	1.79%	9.79%	9.53%	9.38%	9.00%	9.37%	9.66%
75		1.84%	2.49%	3.02%	3.68%	3.70%	3.75%	10.38%	10.17%	10.07%	9.75%	9.94%	10.29%
76		1.26%	1.90%	2.42%	3.06%	3.19%	3.23%	9.15%	8.71%	8.42%	7.88%	8.18%	8.35%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		1.87%	2.51%	3.05%	3.71%	3.79%	3.91%	10.48%	10.29%	10.21%	9.90%	9.92%	10.33%
79		1.87%	2.51%	3.05%	3.71%	3.88%	3.92%	10.48%	10.29%	10.21%	9.90%	10.11%	10.29%
80		1.81%	2.45%	2.99%	3.64%	3.80%	3.91%	10.26%	10.03%	9.91%	9.57%	9.79%	10.16%
81		2.07%	2.72%	3.26%	3.92%	3.96%	3.96%	11.60%	11.58%	11.63%	11.46%	11.61%	11.89%
82		-0.57%	0.00%	0.40%	0.94%	0.96%	0.97%	8.21%	7.57%	7.10%	6.35%	6.43%	6.73%
83		-0.57%	0.00%	0.40%	0.94%	0.96%	1.01%	8.21%	7.57%	7.10%	6.35%	6.46%	6.69%
84		MACHINE	-1.04%	-0.56%	-0.17%	0.30%	0.30%	0.31%	8.21%	7.61%	7.21%	6.50%	6.64%
85	0.02%		0.37%	0.73%	1.04%	1.05%	1.10%	6.65%	6.08%	5.74%	5.08%	5.28%	5.43%
86	VEHICLES	-2.71%	-2.30%	-1.96%	-1.48%	-1.45%	-1.42%	11.80%	11.35%	11.03%	10.48%	10.78%	10.81%
87		-1.59%	-1.19%	-0.90%	-0.46%	-0.44%	-0.42%	9.44%	9.06%	8.82%	8.32%	8.72%	8.86%
88		-2.75%	-2.34%	-2.00%	-1.52%	-1.51%	-1.49%	12.00%	11.54%	11.20%	10.63%	10.85%	11.12%
89		-2.75%	-2.34%	-2.00%	-1.52%	-1.52%	-1.49%	12.14%	11.68%	11.34%	10.76%	11.11%	11.15%
90	CLOCKS & MUSICAL INST.	-1.51%	-0.96%	-0.55%	-0.01%	-0.01%	-0.01%	9.75%	9.06%	8.55%	7.75%	7.94%	8.30%
91		-1.52%	-0.97%	-0.56%	-0.02%	-0.02%	-0.02%	9.59%	8.91%	8.41%	7.63%	7.76%	7.83%
92		-1.91%	-1.46%	-1.13%	-0.72%	-0.70%	-0.69%	7.66%	6.99%	6.48%	5.65%	5.93%	6.12%
93	ARMS	-1.50%	-0.94%	-0.54%	0.00%	0.00%	0.00%	9.70%	9.01%	8.50%	7.71%	7.75%	7.92%
94	MISC. ART.	-1.29%	-0.75%	-0.35%	0.17%	0.17%	0.18%	7.90%	7.24%	6.74%	5.93%	6.09%	6.33%
95		-1.91%	-1.46%	-1.13%	-0.72%	-0.72%	-0.69%	7.66%	6.99%	6.48%	5.65%	5.90%	6.02%
96		-2.00%	-1.56%	-1.23%	-0.83%	-0.82%	-0.79%	7.61%	6.94%	6.44%	5.61%	5.76%	5.94%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	

TRADE FORECASTING BETWEEN CHINA AND ASEAN

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	4.04%	4.11%	3.76%	3.85%	4.02%	4.08%	3.68%	3.71%	3.43%	3.53%	3.65%	3.66%
02		4.37%	4.82%	3.54%	3.77%	3.86%	4.05%	14.79%	14.12%	13.78%	13.23%	13.89%	14.13%
03		2.49%	2.62%	2.30%	2.44%	2.56%	2.60%	5.57%	5.54%	5.27%	5.29%	5.46%	5.49%
04		2.42%	2.55%	2.14%	2.27%	2.35%	2.39%	13.88%	14.10%	14.07%	14.36%	14.97%	15.40%
05		2.45%	2.58%	2.30%	2.46%	2.57%	2.63%	5.53%	5.51%	5.25%	5.27%	5.37%	5.41%
06	VEGETABLE PRODUCTS	6.96%	7.19%	6.69%	6.85%	7.08%	7.43%	7.72%	7.58%	7.74%	7.74%	7.76%	8.06%
07		2.40%	2.42%	2.09%	2.13%	2.15%	2.23%	1.91%	1.82%	1.82%	1.87%	1.95%	1.98%
08		2.39%	2.40%	2.07%	2.10%	2.20%	2.21%	1.20%	1.06%	1.09%	1.11%	1.13%	1.13%
09		6.68%	6.96%	6.21%	6.37%	6.62%	6.86%	7.43%	7.32%	7.41%	7.42%	7.45%	7.51%
10		0.73%	0.80%	0.39%	0.44%	0.45%	0.45%	11.35%	11.22%	10.29%	10.01%	10.01%	10.32%
11		2.57%	2.69%	2.33%	2.46%	2.51%	2.64%	5.47%	5.46%	5.18%	5.20%	5.43%	5.50%
12		4.39%	4.70%	4.24%	4.51%	4.52%	4.62%	7.52%	7.46%	7.59%	7.68%	7.98%	8.30%
13		6.68%	6.90%	6.45%	6.61%	6.76%	6.87%	5.60%	5.58%	5.30%	5.31%	5.31%	5.46%
14		6.58%	6.80%	6.34%	6.50%	6.73%	6.73%	7.73%	7.75%	7.87%	8.00%	8.15%	8.52%
15	FATS & OILS	1.90%	1.93%	1.37%	1.35%	1.41%	1.47%	10.11%	10.03%	9.94%	9.92%	10.07%	10.23%
16	PREPARED FOODSTUFFS	2.56%	2.68%	2.31%	2.44%	2.45%	2.56%	8.83%	8.73%	8.57%	8.50%	8.67%	8.90%
17		3.40%	3.63%	3.02%	3.17%	3.19%	3.34%	10.06%	10.16%	10.31%	10.54%	10.90%	11.04%
18		2.95%	3.11%	2.72%	2.87%	2.89%	3.03%	5.88%	5.85%	5.63%	5.65%	5.84%	5.97%
19		2.54%	2.66%	2.31%	2.44%	2.53%	2.64%	5.61%	5.59%	5.31%	5.32%	5.47%	5.49%
20		2.54%	2.66%	2.31%	2.44%	2.54%	2.57%	5.61%	5.59%	5.31%	5.32%	5.54%	5.72%
21		2.54%	2.66%	2.30%	2.43%	2.49%	2.55%	6.24%	6.29%	6.08%	6.17%	6.38%	6.64%
22		3.37%	3.41%	3.22%	3.31%	3.47%	3.49%	3.31%	3.40%	3.06%	3.17%	3.20%	3.35%
23		2.57%	2.65%	2.13%	2.18%	2.19%	2.19%	8.76%	8.73%	8.75%	8.81%	8.93%	9.19%
24		5.14%	5.30%	4.88%	5.02%	5.07%	5.27%	4.65%	4.71%	4.58%	4.70%	4.78%	4.84%
25	MINERAL PRODUCTS	8.02%	8.16%	8.17%	8.39%	8.70%	8.75%	5.86%	6.10%	5.60%	5.77%	6.00%	6.13%
26		8.03%	8.18%	8.18%	8.40%	8.73%	8.95%	5.51%	5.90%	5.33%	5.59%	5.71%	5.82%
27		11.45%	12.24%	12.33%	12.83%	13.18%	13.18%	8.31%	9.08%	9.04%	9.68%	10.02%	10.52%
28	CHEMICAL PRODUCTS	7.41%	7.70%	7.33%	7.53%	7.86%	7.87%	9.41%	9.67%	9.29%	9.45%	9.68%	9.95%
29		7.28%	7.56%	7.11%	7.28%	7.43%	7.62%	9.49%	9.69%	9.28%	9.40%	9.47%	9.80%
30		7.26%	7.53%	7.09%	7.26%	7.47%	7.77%	9.12%	9.29%	8.86%	8.95%	9.23%	9.39%
31		7.39%	7.65%	7.27%	7.45%	7.74%	8.09%	9.46%	9.66%	9.26%	9.38%	9.47%	9.48%
32		7.28%	7.56%	7.11%	7.28%	7.43%	7.47%	9.50%	9.69%	9.29%	9.40%	9.82%	10.24%
33		7.28%	7.56%	7.11%	7.28%	7.49%	7.79%	9.50%	9.69%	9.29%	9.40%	9.57%	9.86%
34		7.26%	7.53%	7.09%	7.26%	7.60%	7.89%	9.56%	9.74%	9.32%	9.42%	9.75%	9.91%
35		7.00%	7.28%	6.85%	7.03%	7.21%	7.41%	9.22%	9.42%	9.08%	9.23%	9.24%	9.46%
36		6.93%	7.21%	6.76%	6.93%	6.97%	7.18%	10.00%	10.07%	9.55%	9.56%	9.77%	9.98%
37		7.28%	7.56%	7.11%	7.28%	7.57%	7.64%	9.50%	9.69%	9.29%	9.40%	9.69%	10.11%
38		7.20%	7.47%	7.03%	7.20%	7.23%	7.31%	9.23%	9.40%	8.97%	9.06%	9.36%	9.61%
39	PLASTICS	7.28%	7.56%	7.11%	7.28%	7.38%	7.41%	9.50%	9.69%	9.29%	9.40%	9.42%	9.86%
40		7.12%	7.37%	6.91%	7.08%	7.40%	7.68%	9.49%	9.69%	9.28%	9.40%	9.42%	9.89%
41	LEATHER GOODS	2.53%	2.64%	1.98%	1.99%	2.05%	2.09%	7.56%	7.37%	6.68%	6.46%	6.49%	6.65%
42		2.62%	2.75%	2.08%	2.11%	2.20%	2.25%	7.66%	7.53%	6.91%	6.76%	7.10%	7.20%
43		4.04%	4.11%	3.76%	3.85%	3.94%	3.99%	2.99%	2.98%	2.65%	2.70%	2.75%	2.87%
44	WOOD PRODUCTS	6.64%	6.87%	6.42%	6.58%	6.87%	6.90%	4.63%	4.53%	4.19%	4.10%	4.20%	4.41%
45		6.77%	7.00%	6.54%	6.70%	6.80%	6.99%	4.26%	4.11%	3.75%	3.63%	3.64%	3.67%
46		1.44%	1.40%	1.04%	1.01%	1.03%	1.07%	4.25%	4.10%	3.74%	3.61%	3.74%	3.76%
47	PAPER	5.06%	5.21%	4.70%	4.79%	4.92%	5.08%	8.62%	8.74%	8.29%	8.37%	8.45%	8.52%
48		5.06%	5.21%	4.70%	4.79%	4.95%	4.97%	8.62%	8.74%	8.29%	8.37%	8.56%	8.80%
49		5.06%	5.21%	4.70%	4.79%	4.89%	5.12%	8.62%	8.74%	8.29%	8.37%	8.37%	8.38%

TRADE FORECASTING BETWEEN CHINA AND ASEAN (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	4.14%	4.31%	3.70%	3.74%	3.76%	3.92%	6.20%	6.08%	5.32%	5.09%	5.15%	5.33%
51		4.14%	4.32%	3.70%	3.74%	3.92%	4.09%	6.20%	6.08%	5.32%	5.09%	5.22%	5.38%
52		4.14%	4.31%	3.70%	3.74%	3.88%	3.96%	6.20%	6.08%	5.32%	5.09%	5.11%	5.13%
53		4.42%	4.62%	4.04%	4.12%	4.26%	4.26%	6.33%	6.23%	5.48%	5.27%	5.35%	5.55%
54		4.14%	4.31%	3.69%	3.73%	3.81%	3.99%	6.20%	6.08%	5.32%	5.08%	5.24%	5.28%
55		4.14%	4.31%	3.69%	3.73%	3.90%	4.07%	6.20%	6.08%	5.32%	5.08%	5.28%	5.51%
56		4.14%	4.31%	3.69%	3.73%	3.79%	3.80%	6.20%	6.08%	5.32%	5.08%	5.23%	5.23%
57		4.14%	4.31%	3.69%	3.73%	3.81%	3.98%	6.20%	6.08%	5.32%	5.08%	5.09%	5.13%
58		4.14%	4.31%	3.69%	3.73%	3.88%	3.90%	6.20%	6.08%	5.32%	5.08%	5.17%	5.23%
59		5.80%	6.04%	5.55%	5.70%	5.86%	6.14%	7.11%	7.06%	6.38%	6.23%	6.28%	6.57%
60		4.14%	4.31%	3.69%	3.73%	3.81%	4.00%	6.20%	6.08%	5.32%	5.08%	5.11%	5.34%
61		3.77%	3.98%	3.43%	3.55%	3.68%	3.74%	6.31%	6.22%	5.67%	5.57%	5.72%	6.00%
62		3.35%	3.61%	3.14%	3.34%	3.38%	3.54%	6.33%	6.25%	5.73%	5.64%	5.67%	5.91%
63	4.17%	4.35%	3.74%	3.80%	3.98%	4.01%	6.27%	6.15%	5.39%	5.17%	5.27%	5.27%	
64	FOOTWEAR	2.47%	2.58%	1.90%	1.92%	1.92%	1.95%	7.59%	7.40%	6.70%	6.48%	6.60%	6.71%
65		6.95%	7.24%	6.80%	6.98%	7.23%	7.24%	6.61%	6.56%	6.06%	6.00%	6.07%	6.32%
66		3.17%	3.34%	2.66%	2.72%	2.76%	2.80%	10.54%	10.48%	9.83%	9.73%	9.77%	10.11%
67		3.17%	3.34%	2.66%	2.72%	2.81%	2.85%	10.54%	10.48%	9.83%	9.73%	10.18%	10.29%
68	STONE & GLASS	4.15%	4.37%	3.84%	3.98%	3.98%	3.98%	6.68%	6.77%	6.37%	6.45%	6.46%	6.52%
69		4.15%	4.37%	3.84%	3.98%	4.14%	4.17%	6.68%	6.77%	6.37%	6.45%	6.67%	6.83%
70		4.15%	4.36%	3.83%	3.96%	4.11%	4.14%	6.64%	6.72%	6.29%	6.34%	6.35%	6.46%
71	PRECIOUS STONES	6.98%	7.24%	6.87%	7.09%	7.29%	7.39%	11.09%	11.12%	10.43%	10.37%	10.89%	11.24%
72	BASE METALS	6.26%	6.64%	6.42%	6.77%	7.07%	7.31%	7.16%	7.29%	6.50%	6.50%	6.53%	6.68%
73		4.66%	4.94%	4.42%	4.62%	4.84%	5.06%	7.45%	7.50%	6.77%	6.73%	7.04%	7.24%
74		6.41%	6.75%	6.06%	6.28%	6.33%	6.44%	9.99%	10.12%	9.46%	9.49%	9.96%	10.17%
75		6.65%	6.99%	6.27%	6.48%	6.72%	6.91%	11.19%	11.27%	10.54%	10.51%	10.73%	10.95%
76		6.38%	6.72%	6.02%	6.22%	6.44%	6.65%	10.20%	10.26%	9.59%	9.57%	9.70%	10.03%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		6.66%	7.00%	6.28%	6.49%	6.50%	6.55%	11.24%	11.32%	10.59%	10.56%	10.93%	10.99%
79		6.66%	7.00%	6.28%	6.49%	6.59%	6.78%	11.24%	11.32%	10.59%	10.56%	10.86%	11.14%
80		6.64%	6.97%	6.26%	6.47%	6.73%	7.04%	11.13%	11.20%	10.48%	10.46%	10.73%	11.02%
81		6.73%	7.07%	6.35%	6.56%	6.66%	6.86%	11.62%	11.70%	10.94%	10.90%	11.34%	11.34%
82		4.27%	4.50%	3.89%	4.02%	4.05%	4.17%	7.75%	7.69%	7.09%	7.02%	7.14%	7.21%
83		4.27%	4.50%	3.89%	4.02%	4.03%	4.12%	7.75%	7.69%	7.09%	7.02%	7.18%	7.32%
84	MACHINE	5.59%	5.74%	5.21%	5.28%	5.41%	5.53%	8.34%	8.22%	7.46%	7.31%	7.39%	7.69%
85		6.15%	6.22%	5.70%	5.69%	5.73%	5.85%	8.22%	8.15%	7.45%	7.31%	7.64%	7.85%
86	VEHICLES	3.99%	4.21%	3.46%	3.63%	3.65%	3.82%	10.48%	10.11%	9.21%	8.95%	9.19%	9.33%
87		3.68%	3.92%	3.45%	3.65%	3.82%	3.98%	8.91%	8.82%	8.09%	8.01%	8.29%	8.35%
88		4.07%	4.28%	3.51%	3.67%	3.72%	3.74%	10.50%	10.12%	9.21%	8.95%	9.26%	9.66%
89		4.06%	4.28%	3.50%	3.67%	3.79%	3.80%	10.54%	10.15%	9.24%	8.98%	8.98%	9.41%
90	CLOCKS & MUSICAL INST.	4.39%	4.68%	4.11%	4.31%	4.51%	4.62%	8.34%	8.18%	7.37%	7.21%	7.33%	7.44%
91		4.39%	4.67%	4.10%	4.30%	4.34%	4.52%	8.33%	8.17%	7.36%	7.19%	7.19%	7.41%
92		3.17%	3.34%	2.66%	2.72%	2.84%	2.88%	10.54%	10.48%	9.83%	9.73%	9.93%	10.39%
93	ARMS	4.39%	4.68%	4.10%	4.31%	4.41%	4.62%	8.32%	8.16%	7.36%	7.19%	7.25%	7.52%
94	MISC. ART.	4.22%	4.48%	3.90%	4.06%	4.23%	4.40%	9.41%	9.33%	8.64%	8.53%	8.93%	9.05%
95		3.17%	3.34%	2.66%	2.72%	2.74%	2.80%	10.54%	10.48%	9.83%	9.73%	9.74%	10.06%
96		3.16%	3.32%	2.65%	2.71%	2.83%	2.86%	10.49%	10.43%	9.79%	9.68%	9.85%	10.20%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	

TRADE FORECASTING BETWEEN CHINA AND EU-27

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	2.01%	1.88%	1.82%	1.81%	1.82%	1.90%	0.70%	0.77%	0.84%	0.97%	0.98%	1.02%
02		2.39%	2.10%	1.88%	1.67%	1.70%	1.75%	18.11%	18.63%	19.05%	19.63%	20.12%	20.14%
03		0.11%	-0.03%	0.00%	0.00%	0.00%	0.00%	4.89%	5.08%	5.21%	5.43%	5.68%	5.76%
04		-2.56%	-2.81%	-2.95%	-3.08%	-3.06%	-2.97%	9.34%	9.89%	10.38%	11.04%	11.06%	11.46%
05		-0.39%	-0.52%	-0.71%	-0.66%	-0.63%	-0.62%	4.71%	4.88%	5.00%	5.21%	5.25%	5.32%
06	VEGETABLE PRODUCTS	2.28%	2.02%	2.06%	1.89%	1.94%	2.03%	10.51%	10.90%	11.33%	11.83%	12.41%	12.74%
07		-0.03%	-0.18%	-0.17%	-0.20%	-0.20%	-0.19%	4.27%	4.35%	4.44%	4.64%	4.68%	4.88%
08		-0.12%	-0.28%	-0.23%	-0.26%	-0.25%	-0.24%	3.96%	3.98%	4.06%	4.24%	4.38%	4.54%
09		0.91%	0.62%	0.66%	0.49%	0.51%	0.53%	9.97%	10.36%	10.78%	11.28%	11.39%	11.66%
10		1.49%	1.39%	1.35%	1.35%	1.39%	1.46%	7.87%	8.15%	8.93%	9.36%	9.68%	10.08%
11		0.93%	0.81%	0.81%	0.80%	0.81%	0.82%	4.90%	5.09%	5.22%	5.45%	5.68%	5.80%
12		1.24%	0.97%	1.04%	0.91%	0.92%	0.95%	9.46%	9.84%	10.26%	10.73%	10.78%	11.02%
13		1.53%	1.39%	1.42%	1.37%	1.42%	1.47%	4.88%	5.08%	5.21%	5.45%	5.64%	5.79%
14		3.52%	3.34%	3.34%	3.19%	3.25%	3.29%	4.89%	5.14%	5.38%	5.74%	5.75%	5.82%
15	FATS & OILS	0.41%	0.17%	0.24%	0.12%	0.12%	0.12%	9.61%	9.95%	10.29%	10.70%	10.73%	11.00%
16	PREPARED FOODSTUFFS	-0.40%	-0.56%	-0.57%	-0.61%	-0.59%	-0.58%	6.14%	6.50%	6.82%	7.27%	7.46%	7.62%
17		-2.95%	-3.24%	-3.41%	-3.58%	-3.53%	-3.41%	11.45%	11.95%	12.36%	12.94%	13.35%	13.73%
18		0.09%	-0.07%	-0.07%	-0.11%	-0.11%	-0.11%	5.62%	5.87%	6.07%	6.38%	6.65%	6.95%
19		0.01%	-0.14%	-0.15%	-0.17%	-0.17%	-0.17%	4.93%	5.12%	5.25%	5.47%	5.74%	5.93%
20		0.01%	-0.14%	-0.15%	-0.17%	-0.17%	-0.17%	4.93%	5.12%	5.25%	5.47%	5.54%	5.80%
21		-0.55%	-0.71%	-0.73%	-0.77%	-0.76%	-0.75%	5.05%	5.26%	5.40%	5.65%	5.70%	5.87%
22		2.44%	2.34%	2.30%	2.30%	2.40%	2.47%	2.49%	2.71%	2.86%	3.12%	3.17%	3.22%
23		-0.47%	-0.71%	-0.57%	-0.67%	-0.67%	-0.65%	7.48%	7.89%	8.28%	8.78%	8.98%	9.27%
24		2.42%	2.32%	2.28%	2.28%	2.31%	2.32%	8.56%	9.05%	9.56%	10.14%	10.37%	10.51%
25	MINERAL PRODUCTS	7.38%	7.48%	7.61%	7.80%	7.86%	7.86%	3.13%	3.43%	3.68%	4.02%	4.17%	4.24%
26		7.57%	7.66%	7.78%	7.97%	8.25%	8.62%	1.37%	1.60%	1.82%	2.10%	2.13%	2.18%
27		6.51%	6.76%	7.08%	7.40%	7.75%	7.90%	7.26%	7.89%	8.42%	8.98%	9.10%	9.19%
28	CHEMICAL PRODUCTS	3.56%	3.40%	3.37%	3.26%	3.36%	3.48%	8.05%	8.37%	8.64%	8.99%	9.28%	9.45%
29		3.54%	3.38%	3.33%	3.22%	3.38%	3.49%	8.06%	8.38%	8.64%	9.00%	9.25%	9.71%
30		3.49%	3.33%	3.28%	3.17%	3.18%	3.33%	8.03%	8.31%	8.55%	8.87%	8.87%	9.12%
31		3.85%	3.71%	3.70%	3.63%	3.67%	3.81%	7.90%	8.23%	8.50%	8.86%	9.30%	9.41%
32		3.54%	3.38%	3.33%	3.22%	3.31%	3.31%	8.07%	8.38%	8.65%	9.00%	9.25%	9.40%
33		3.54%	3.38%	3.33%	3.22%	3.25%	3.26%	8.07%	8.38%	8.65%	9.00%	9.29%	9.61%
34		3.45%	3.28%	3.24%	3.13%	3.27%	3.38%	7.83%	8.07%	8.24%	8.50%	8.70%	9.03%
35		2.90%	2.76%	2.74%	2.66%	2.71%	2.80%	7.72%	8.04%	8.30%	8.66%	8.99%	9.01%
36		2.54%	2.38%	2.33%	2.22%	2.33%	2.37%	7.44%	7.52%	7.52%	7.62%	7.87%	8.07%
37		3.54%	3.38%	3.33%	3.22%	3.28%	3.37%	8.07%	8.38%	8.65%	9.00%	9.34%	9.44%
38		3.09%	2.93%	2.88%	2.78%	2.90%	2.96%	7.80%	8.10%	8.34%	8.68%	8.96%	9.09%
39	PLASTICS	3.54%	3.38%	3.33%	3.22%	3.36%	3.36%	8.07%	8.38%	8.65%	9.00%	9.15%	9.60%
40		3.54%	3.38%	3.34%	3.23%	3.36%	3.50%	8.03%	8.34%	8.61%	8.96%	9.09%	9.54%
41	LEATHER GOODS	-0.01%	-0.23%	-0.34%	-0.46%	-0.45%	-0.45%	7.13%	6.99%	6.82%	6.68%	6.98%	7.00%
42		-1.14%	-1.46%	-1.66%	-1.92%	-1.85%	-1.78%	7.09%	7.01%	6.88%	6.79%	6.91%	7.08%
43		2.03%	1.91%	1.85%	1.84%	1.90%	1.94%	0.70%	0.77%	0.84%	0.97%	1.02%	1.07%
44	WOOD PRODUCTS	1.43%	1.25%	1.22%	1.10%	1.12%	1.18%	2.60%	2.70%	2.74%	2.89%	3.01%	3.06%
45		1.89%	1.71%	1.70%	1.58%	1.62%	1.64%	2.52%	2.60%	2.64%	2.78%	2.90%	3.04%
46		-0.52%	-0.80%	-0.92%	-1.11%	-1.09%	-1.09%	2.42%	2.49%	2.52%	2.64%	2.76%	2.89%
47	PAPER	1.77%	1.52%	1.39%	1.21%	1.22%	1.25%	7.17%	7.48%	7.71%	8.07%	8.44%	8.53%
48		1.77%	1.52%	1.39%	1.21%	1.23%	1.27%	7.17%	7.48%	7.71%	8.07%	8.09%	8.37%
49		1.77%	1.52%	1.39%	1.21%	1.22%	1.26%	7.17%	7.48%	7.71%	8.07%	8.41%	8.59%

TRADE FORECASTING BETWEEN CHINA AND EU-27 (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-0.08%	-0.30%	-0.53%	-0.66%	-0.65%	-0.62%	7.71%	7.78%	7.78%	7.84%	8.18%	8.21%
51		-0.14%	-0.35%	-0.60%	-0.71%	-0.68%	-0.65%	7.70%	7.77%	7.77%	7.83%	7.97%	8.02%
52		0.34%	0.10%	-0.06%	-0.27%	-0.26%	-0.24%	7.72%	7.79%	7.79%	7.85%	7.93%	8.02%
53		2.69%	2.71%	2.81%	2.96%	3.07%	3.14%	7.72%	7.79%	7.79%	7.85%	7.94%	8.28%
54		0.24%	-0.01%	-0.19%	-0.42%	-0.40%	-0.38%	7.72%	7.79%	7.79%	7.85%	7.99%	8.01%
55		0.24%	-0.01%	-0.19%	-0.42%	-0.41%	-0.39%	7.72%	7.79%	7.79%	7.85%	8.07%	8.18%
56		0.24%	-0.01%	-0.19%	-0.42%	-0.40%	-0.38%	7.72%	7.79%	7.79%	7.85%	7.91%	8.12%
57		0.24%	-0.01%	-0.19%	-0.42%	-0.41%	-0.41%	7.72%	7.79%	7.79%	7.85%	8.24%	8.46%
58		0.24%	-0.01%	-0.19%	-0.42%	-0.41%	-0.41%	7.72%	7.79%	7.79%	7.85%	8.20%	8.37%
59		1.37%	1.17%	1.08%	0.93%	0.97%	0.99%	7.53%	7.61%	7.60%	7.67%	7.84%	8.08%
60		0.24%	-0.01%	-0.19%	-0.42%	-0.40%	-0.39%	7.72%	7.79%	7.79%	7.85%	8.19%	8.55%
61		-0.57%	-0.79%	-0.92%	-1.08%	-1.05%	-1.02%	6.68%	6.72%	6.67%	6.70%	6.86%	6.93%
62		-0.91%	-1.13%	-1.24%	-1.37%	-1.35%	-1.30%	6.64%	6.67%	6.62%	6.65%	6.84%	6.98%
63	0.17%	-0.08%	-0.26%	-0.48%	-0.45%	-0.45%	7.72%	7.80%	7.80%	7.86%	8.14%	8.36%	
64	FOOTWEAR	-1.84%	-2.23%	-2.47%	-2.79%	-2.79%	-2.67%	7.14%	7.00%	6.83%	6.69%	6.92%	7.09%
65		2.16%	2.02%	2.00%	1.92%	1.92%	1.92%	6.68%	6.72%	6.68%	6.72%	6.72%	7.01%
66		-0.40%	-0.68%	-0.86%	-1.10%	-1.08%	-1.03%	7.34%	7.39%	7.35%	7.40%	7.44%	7.61%
67		-0.40%	-0.68%	-0.86%	-1.10%	-1.09%	-1.06%	7.34%	7.39%	7.35%	7.40%	7.71%	7.95%
68	STONE & GLASS	0.94%	0.78%	0.67%	0.58%	0.60%	0.61%	6.11%	6.39%	6.58%	6.89%	7.08%	7.10%
69		0.94%	0.78%	0.67%	0.58%	0.59%	0.61%	6.11%	6.39%	6.58%	6.89%	6.95%	7.16%
70		0.93%	0.76%	0.65%	0.55%	0.56%	0.56%	6.17%	6.44%	6.63%	6.93%	7.21%	7.52%
71	PRECIOUS STONES	3.02%	2.94%	2.96%	2.98%	3.07%	3.14%	7.54%	7.61%	7.59%	7.67%	8.03%	8.04%
72	BASE METALS	3.49%	3.55%	3.64%	3.77%	3.81%	3.92%	4.52%	4.54%	4.51%	4.57%	4.80%	4.94%
73		1.80%	1.74%	1.73%	1.74%	1.82%	1.83%	6.30%	6.37%	6.37%	6.49%	6.53%	6.57%
74		1.07%	0.95%	0.87%	0.83%	0.85%	0.87%	8.27%	8.48%	8.63%	8.87%	8.90%	9.02%
75		2.97%	2.84%	2.81%	2.76%	2.82%	2.96%	8.74%	8.86%	8.93%	9.10%	9.42%	9.53%
76		2.50%	2.37%	2.33%	2.28%	2.34%	2.36%	7.76%	7.86%	7.89%	8.04%	8.37%	8.78%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		3.00%	2.86%	2.83%	2.78%	2.80%	2.93%	8.82%	8.94%	9.01%	9.18%	9.36%	9.61%
79		3.00%	2.86%	2.83%	2.78%	2.83%	2.83%	8.82%	8.94%	9.01%	9.18%	9.53%	9.68%
80		2.95%	2.81%	2.78%	2.73%	2.84%	2.95%	8.65%	8.77%	8.84%	9.00%	9.08%	9.40%
81		3.16%	3.03%	2.99%	2.95%	2.98%	3.08%	9.59%	9.71%	9.80%	9.96%	10.16%	10.16%
82		0.97%	0.83%	0.73%	0.63%	0.64%	0.65%	6.90%	6.97%	6.96%	7.07%	7.23%	7.55%
83		0.97%	0.83%	0.73%	0.63%	0.65%	0.67%	6.90%	6.97%	6.96%	7.07%	7.32%	7.59%
84	MACHINE	0.07%	-0.19%	-0.38%	-0.57%	-0.56%	-0.55%	6.74%	6.90%	6.97%	7.18%	7.24%	7.52%
85		0.54%	0.24%	0.06%	-0.18%	-0.18%	-0.17%	5.20%	5.32%	5.36%	5.53%	5.62%	5.63%
86	VEHICLES	-0.98%	-1.36%	-1.60%	-1.83%	-1.77%	-1.72%	9.90%	9.93%	9.92%	10.04%	10.48%	10.63%
87		0.10%	-0.08%	-0.22%	-0.31%	-0.30%	-0.30%	7.83%	8.02%	8.13%	8.38%	8.48%	8.57%
88		-1.07%	-1.47%	-1.72%	-1.96%	-1.91%	-1.87%	9.92%	9.95%	9.93%	10.05%	10.35%	10.38%
89		-1.08%	-1.47%	-1.72%	-1.96%	-1.87%	-1.85%	9.96%	9.99%	9.97%	10.09%	10.28%	10.79%
90	CLOCKS & MUSICAL INST.	0.00%	-0.25%	-0.44%	-0.62%	-0.60%	-0.59%	7.70%	7.86%	7.93%	8.14%	8.51%	8.86%
91		0.00%	-0.25%	-0.44%	-0.63%	-0.62%	-0.61%	7.68%	7.83%	7.89%	8.09%	8.34%	8.59%
92		-0.40%	-0.68%	-0.86%	-1.10%	-1.09%	-1.08%	7.34%	7.39%	7.35%	7.40%	7.50%	7.66%
93	ARMS	0.02%	-0.23%	-0.42%	-0.60%	-0.60%	-0.59%	7.65%	7.82%	7.88%	8.09%	8.28%	8.36%
94	MISC. ART.	-0.01%	-0.26%	-0.44%	-0.63%	-0.60%	-0.60%	7.37%	7.44%	7.41%	7.48%	7.52%	7.63%
95		-0.40%	-0.68%	-0.86%	-1.10%	-1.05%	-1.04%	7.34%	7.39%	7.35%	7.40%	7.41%	7.48%
96		-0.40%	-0.68%	-0.87%	-1.10%	-1.08%	-1.07%	7.34%	7.38%	7.34%	7.38%	7.40%	7.55%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	

TRADE FORECASTING BETWEEN JAPAN AND AUSTRALIA

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	-1.46%	-1.24%	-1.14%	-1.01%	-0.98%	-0.93%	1.51%	1.46%	1.76%	1.96%	1.97%	1.99%
02		-1.41%	-1.16%	-1.10%	-1.04%	-1.02%	-0.98%	0.22%	-0.37%	-0.48%	-0.68%	-0.67%	-0.64%
03		-2.43%	-2.19%	-2.05%	-1.94%	-1.91%	-1.90%	-0.61%	-0.95%	-0.82%	-0.85%	-0.84%	-0.82%
04		-0.70%	-0.34%	-0.16%	-0.04%	-0.04%	-0.04%	0.10%	-0.30%	-0.19%	-0.21%	-0.21%	-0.20%
05		-1.91%	-1.66%	-1.51%	-1.37%	-1.32%	-1.25%	1.08%	0.97%	1.25%	1.41%	1.41%	1.44%
06	VEGETABLE PRODUCTS	-4.08%	-4.16%	-3.99%	-4.05%	-3.95%	-3.80%	-0.62%	-1.24%	-1.22%	-1.54%	-1.47%	-1.42%
07		-3.51%	-3.36%	-3.25%	-3.20%	-3.06%	-3.04%	-0.66%	-0.99%	-0.86%	-0.89%	-0.88%	-0.87%
08		-3.86%	-3.77%	-3.62%	-3.55%	-3.42%	-3.42%	-0.66%	-0.99%	-0.86%	-0.89%	-0.88%	-0.88%
09		-3.94%	-3.98%	-3.81%	-3.87%	-3.70%	-3.57%	-0.65%	-1.10%	-1.01%	-1.16%	-1.16%	-1.10%
10		-0.80%	-0.48%	-0.03%	0.40%	0.41%	0.42%	-1.24%	-1.60%	-1.14%	-1.15%	-1.14%	-1.13%
11		-2.95%	-2.76%	-2.68%	-2.66%	-2.65%	-2.53%	-0.56%	-0.88%	-0.75%	-0.77%	-0.76%	-0.73%
12		-2.48%	-2.44%	-2.23%	-2.16%	-2.14%	-2.06%	-0.65%	-1.15%	-1.08%	-1.29%	-1.26%	-1.20%
13		-3.10%	-2.91%	-2.83%	-2.81%	-2.80%	-2.76%	-0.65%	-0.99%	-0.86%	-0.89%	-0.89%	-0.88%
14		-2.17%	-2.09%	-1.93%	-1.96%	-1.91%	-1.89%	-0.35%	-0.69%	-0.42%	-0.46%	-0.44%	-0.42%
15	FATS & OILS	-1.45%	-1.20%	-1.13%	-1.08%	-1.07%	-1.05%	-2.15%	-2.73%	-2.75%	-2.99%	-2.97%	-2.89%
16	PREPARED FOODSTUFFS	-3.73%	-3.61%	-3.57%	-3.62%	-3.58%	-3.53%	-0.64%	-0.98%	-0.86%	-0.89%	-0.88%	-0.86%
17		-2.73%	-2.77%	-2.54%	-2.61%	-2.49%	-2.45%	0.45%	0.00%	0.11%	0.08%	0.09%	0.09%
18		-3.23%	-3.06%	-2.97%	-2.97%	-2.83%	-2.71%	-0.66%	-1.00%	-0.87%	-0.90%	-0.90%	-0.88%
19		-3.12%	-2.93%	-2.84%	-2.83%	-2.72%	-2.59%	-0.66%	-0.99%	-0.86%	-0.89%	-0.86%	-0.85%
20		-3.12%	-2.93%	-2.84%	-2.83%	-2.79%	-2.73%	-0.66%	-0.99%	-0.86%	-0.89%	-0.87%	-0.85%
21		-2.29%	-2.03%	-1.90%	-1.83%	-1.75%	-1.71%	-0.63%	-0.97%	-0.84%	-0.87%	-0.87%	-0.83%
22		-1.27%	-1.07%	-1.06%	-1.02%	-1.00%	-0.96%	0.45%	0.30%	0.44%	0.51%	0.51%	0.53%
23		-3.52%	-3.40%	-3.32%	-3.35%	-3.28%	-3.28%	-0.76%	-1.11%	-0.94%	-0.98%	-0.96%	-0.96%
24		-1.79%	-1.63%	-1.57%	-1.54%	-1.49%	-1.48%	0.45%	0.29%	0.43%	0.49%	0.51%	0.52%
25	MINERAL PRODUCTS	-0.91%	-0.98%	-0.91%	-0.86%	-0.85%	-0.85%	-1.50%	-1.77%	-1.66%	-1.71%	-1.70%	-1.70%
26		-0.91%	-0.98%	-0.91%	-0.86%	-0.82%	-0.80%	-0.95%	-1.14%	-1.04%	-1.11%	-1.10%	-1.10%
27		-0.03%	0.20%	0.63%	0.77%	0.79%	0.82%	3.10%	3.38%	3.98%	4.42%	4.48%	4.58%
28	CHEMICAL PRODUCTS	0.94%	1.30%	1.61%	1.82%	1.84%	1.88%	-1.42%	-1.87%	-1.81%	-1.90%	-1.83%	-1.78%
29		-0.27%	0.14%	0.48%	0.69%	0.71%	0.72%	-2.17%	-2.79%	-2.89%	-3.17%	-3.10%	-3.02%
30		-0.38%	0.05%	0.40%	0.62%	0.64%	0.67%	-2.19%	-2.81%	-2.90%	-3.18%	-3.18%	-3.18%
31		-0.87%	-0.91%	-0.82%	-0.76%	-0.75%	-0.72%	-2.17%	-2.79%	-2.88%	-3.16%	-3.02%	-2.93%
32		-0.18%	0.23%	0.58%	0.78%	0.81%	0.83%	-2.17%	-2.79%	-2.89%	-3.17%	-3.11%	-2.99%
33		-0.18%	0.23%	0.58%	0.78%	0.82%	0.82%	-2.17%	-2.79%	-2.89%	-3.17%	-3.15%	-3.01%
34		-0.51%	-0.09%	0.25%	0.45%	0.46%	0.47%	-2.27%	-2.90%	-2.99%	-3.27%	-3.17%	-3.03%
35		-1.25%	-0.91%	-0.73%	-0.61%	-0.61%	-0.59%	-2.10%	-2.70%	-2.79%	-3.05%	-3.04%	-2.91%
36		-2.81%	-2.42%	-2.18%	-2.03%	-2.00%	-1.91%	-3.22%	-3.88%	-3.98%	-4.26%	-4.08%	-3.97%
37		-0.18%	0.23%	0.58%	0.78%	0.80%	0.83%	-2.17%	-2.79%	-2.89%	-3.17%	-3.15%	-3.06%
38		-0.37%	0.04%	0.38%	0.59%	0.59%	0.62%	-2.18%	-2.80%	-2.87%	-3.14%	-3.09%	-3.06%
39	PLASTICS	-0.18%	0.23%	0.58%	0.78%	0.81%	0.83%	-2.17%	-2.79%	-2.89%	-3.17%	-3.06%	-2.94%
40		-0.24%	0.17%	0.51%	0.71%	0.72%	0.72%	-2.17%	-2.79%	-2.89%	-3.17%	-3.05%	-2.94%
41	LEATHER GOODS	-7.25%	-7.08%	-7.04%	-7.06%	-6.80%	-6.48%	-8.94%	-9.59%	-9.63%	-9.87%	-9.78%	-9.57%
42		-7.90%	-7.74%	-7.79%	-7.93%	-7.64%	-7.52%	-6.33%	-7.19%	-7.45%	-7.88%	-7.63%	-7.31%
43		-3.97%	-3.87%	-3.88%	-3.87%	-3.87%	-3.77%	-0.25%	-0.39%	-0.25%	-0.18%	-0.18%	-0.18%
44	WOOD PRODUCTS	-3.16%	-3.14%	-3.18%	-3.30%	-3.26%	-3.23%	-2.10%	-2.69%	-2.77%	-3.03%	-2.99%	-2.86%
45		-3.14%	-3.13%	-3.16%	-3.29%	-3.22%	-3.20%	-1.48%	-1.81%	-1.75%	-1.85%	-1.81%	-1.79%
46		-3.46%	-3.48%	-3.56%	-3.74%	-3.69%	-3.51%	-1.68%	-2.02%	-1.98%	-2.09%	-1.99%	-1.93%
47	PAPER	-1.58%	-1.28%	-1.20%	-1.18%	-1.14%	-1.13%	-1.34%	-1.82%	-1.71%	-1.78%	-1.77%	-1.71%
48		-1.58%	-1.28%	-1.20%	-1.18%	-1.18%	-1.17%	-1.34%	-1.82%	-1.71%	-1.78%	-1.69%	-1.61%
49		-1.58%	-1.28%	-1.20%	-1.18%	-1.14%	-1.13%	-1.34%	-1.82%	-1.71%	-1.78%	-1.78%	-1.69%

TRADE FORECASTING BETWEEN JAPAN AND AUSTRALIA (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-6.88%	-6.51%	-6.24%	-6.09%	-5.99%	-5.90%	-6.03%	-6.68%	-6.80%	-7.09%	-6.77%	-6.72%
51		-6.61%	-6.21%	-5.92%	-5.75%	-5.57%	-5.30%	-6.03%	-6.68%	-6.80%	-7.09%	-7.00%	-6.73%
52		-5.81%	-5.63%	-5.39%	-5.24%	-4.98%	-4.77%	-6.03%	-6.68%	-6.80%	-7.09%	-6.79%	-6.77%
53		-2.54%	-2.52%	-2.29%	-2.15%	-2.07%	-1.97%	-6.03%	-6.68%	-6.80%	-7.09%	-7.09%	-6.80%
54		-8.81%	-8.69%	-8.64%	-8.71%	-8.36%	-8.20%	-6.03%	-6.68%	-6.80%	-7.09%	-7.06%	-6.87%
55		-8.81%	-8.69%	-8.64%	-8.71%	-8.30%	-8.00%	-6.03%	-6.68%	-6.80%	-7.09%	-7.04%	-6.80%
56		-8.81%	-8.69%	-8.64%	-8.71%	-8.37%	-8.19%	-6.03%	-6.68%	-6.80%	-7.09%	-6.89%	-6.72%
57		-8.81%	-8.69%	-8.64%	-8.71%	-8.61%	-8.50%	-6.03%	-6.68%	-6.80%	-7.09%	-6.84%	-6.69%
58		-8.81%	-8.69%	-8.64%	-8.71%	-8.71%	-8.52%	-6.03%	-6.68%	-6.80%	-7.09%	-6.97%	-6.64%
59		-5.58%	-5.24%	-5.04%	-4.92%	-4.87%	-4.78%	-3.86%	-4.51%	-4.59%	-4.85%	-4.70%	-4.58%
60		-8.81%	-8.69%	-8.64%	-8.71%	-8.48%	-8.41%	-6.03%	-6.68%	-6.80%	-7.09%	-6.93%	-6.81%
61		-8.43%	-8.26%	-8.21%	-8.27%	-8.12%	-8.03%	-6.26%	-6.89%	-6.99%	-7.26%	-6.97%	-6.76%
62		-7.57%	-7.30%	-7.28%	-7.33%	-7.25%	-7.18%	-6.75%	-7.34%	-7.39%	-7.61%	-7.58%	-7.33%
63	-8.64%	-8.50%	-8.45%	-8.51%	-8.15%	-7.92%	-4.07%	-4.68%	-4.66%	-4.84%	-4.73%	-4.68%	
64	FOOTWEAR	-9.17%	-9.07%	-9.10%	-9.27%	-9.00%	-8.93%	-9.00%	-9.65%	-9.70%	-9.95%	-9.86%	-9.65%
65		-0.99%	-0.54%	-0.17%	0.07%	0.07%	0.07%	-2.28%	-2.90%	-2.99%	-3.26%	-3.15%	-3.01%
66		-5.93%	-5.77%	-5.89%	-6.08%	-6.06%	-5.89%	-6.20%	-7.08%	-7.35%	-7.79%	-7.78%	-7.55%
67		-5.93%	-5.77%	-5.89%	-6.08%	-6.00%	-5.96%	-6.20%	-7.08%	-7.35%	-7.79%	-7.48%	-7.11%
68	STONE & GLASS	-2.81%	-2.50%	-2.36%	-2.28%	-2.20%	-2.09%	-2.34%	-2.82%	-2.76%	-2.86%	-2.85%	-2.82%
69		-2.81%	-2.50%	-2.36%	-2.28%	-2.26%	-2.23%	-2.34%	-2.82%	-2.76%	-2.86%	-2.76%	-2.62%
70		-2.95%	-2.64%	-2.49%	-2.41%	-2.31%	-2.29%	-2.37%	-2.85%	-2.78%	-2.88%	-2.83%	-2.75%
71	PRECIOUS STONES	-2.32%	-2.46%	-2.37%	-2.47%	-2.41%	-2.38%	-2.72%	-3.17%	-3.00%	-3.08%	-3.01%	-3.01%
72	BASE METALS	-0.62%	-0.30%	-0.02%	0.24%	0.24%	0.24%	-2.31%	-2.73%	-2.74%	-2.86%	-2.79%	-2.77%
73		-1.48%	-1.14%	-0.88%	-0.66%	-0.66%	-0.65%	-2.53%	-3.03%	-3.01%	-3.13%	-2.99%	-2.86%
74		-3.89%	-4.18%	-4.14%	-4.48%	-4.35%	-4.25%	-0.66%	-0.99%	-0.82%	-0.79%	-0.78%	-0.74%
75		-3.94%	-4.24%	-4.20%	-4.56%	-4.55%	-4.44%	-1.74%	-2.13%	-1.89%	-1.93%	-1.89%	-1.87%
76		-3.94%	-4.24%	-4.20%	-4.56%	-4.54%	-4.39%	-1.98%	-2.39%	-2.18%	-2.23%	-2.13%	-2.03%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		-3.94%	-4.24%	-4.20%	-4.56%	-4.35%	-4.23%	-1.73%	-2.12%	-1.87%	-1.92%	-1.89%	-1.83%
79		-3.94%	-4.24%	-4.20%	-4.56%	-4.33%	-4.16%	-1.73%	-2.12%	-1.87%	-1.92%	-1.86%	-1.86%
80		-3.94%	-4.24%	-4.20%	-4.56%	-4.37%	-4.26%	-1.76%	-2.14%	-1.90%	-1.95%	-1.94%	-1.86%
81		-3.94%	-4.24%	-4.20%	-4.56%	-4.41%	-4.29%	-1.66%	-2.04%	-1.79%	-1.84%	-1.80%	-1.80%
82		-3.65%	-3.30%	-3.17%	-3.12%	-3.01%	-3.00%	-3.34%	-3.93%	-3.89%	-4.00%	-3.85%	-3.71%
83		-3.65%	-3.30%	-3.17%	-3.12%	-3.10%	-3.06%	-3.34%	-3.93%	-3.89%	-4.00%	-3.90%	-3.89%
84	MACHINE	-2.79%	-2.47%	-2.32%	-2.23%	-2.18%	-2.11%	-1.99%	-2.53%	-2.40%	-2.48%	-2.41%	-2.33%
85		-4.10%	-3.81%	-3.68%	-3.68%	-3.57%	-3.40%	-4.17%	-4.86%	-4.77%	-4.94%	-4.83%	-4.81%
86	VEHICLES	-2.35%	-2.55%	-2.92%	-3.31%	-3.30%	-3.29%	-1.39%	-1.90%	-1.79%	-1.87%	-1.79%	-1.73%
87		-1.77%	-1.62%	-1.67%	-1.75%	-1.67%	-1.62%	-0.64%	-0.97%	-0.80%	-0.78%	-0.76%	-0.75%
88		-2.40%	-2.61%	-3.00%	-3.40%	-3.23%	-3.23%	-2.38%	-3.16%	-3.15%	-3.40%	-3.36%	-3.35%
89		-2.38%	-2.59%	-2.98%	-3.38%	-3.31%	-3.26%	-2.38%	-3.16%	-3.15%	-3.40%	-3.28%	-3.14%
90	CLOCKS & MUSICAL INST.	-4.52%	-4.29%	-4.24%	-4.30%	-4.19%	-4.03%	-2.18%	-2.84%	-2.77%	-2.92%	-2.78%	-2.75%
91		-4.57%	-4.33%	-4.28%	-4.33%	-4.19%	-4.05%	-2.18%	-2.83%	-2.77%	-2.92%	-2.86%	-2.82%
92		-5.93%	-5.77%	-5.89%	-6.08%	-5.99%	-5.81%	-6.20%	-7.08%	-7.35%	-7.79%	-7.50%	-7.32%
93	ARMS	-4.48%	-4.25%	-4.19%	-4.24%	-4.06%	-4.05%	-2.19%	-2.85%	-2.78%	-2.93%	-2.79%	-2.72%
94	MISC. ART.	-5.59%	-5.40%	-5.47%	-5.60%	-5.52%	-5.48%	-3.61%	-4.30%	-4.31%	-4.51%	-4.31%	-4.21%
95		-5.93%	-5.77%	-5.89%	-6.08%	-5.91%	-5.65%	-6.20%	-7.08%	-7.35%	-7.79%	-7.74%	-7.67%
96		-5.96%	-5.79%	-5.91%	-6.10%	-5.86%	-5.64%	-6.20%	-7.08%	-7.35%	-7.79%	-7.70%	-7.64%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	

TRADE FORECASTING BETWEEN JAPAN AND CHINA

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	-0.22%	-0.09%	-0.12%	-0.09%	-0.08%	-0.08%	1.99%	1.81%	1.77%	1.77%	1.81%	1.82%
02		10.47%	9.88%	9.10%	8.31%	8.36%	8.41%	-4.03%	-4.57%	-4.51%	-4.56%	-4.44%	-4.44%
03		2.58%	2.72%	2.71%	2.70%	2.73%	2.86%	0.01%	-0.24%	-0.19%	-0.19%	-0.19%	-0.18%
04		2.89%	3.03%	3.01%	3.02%	3.11%	3.23%	-1.72%	-2.07%	-2.04%	-2.07%	-2.06%	-2.05%
05		2.26%	2.42%	2.43%	2.45%	2.45%	2.50%	0.05%	-0.19%	-0.14%	-0.14%	-0.13%	-0.13%
06	VEGETABLE PRODUCTS	6.27%	6.34%	6.45%	6.50%	6.74%	6.80%	2.05%	1.42%	1.39%	1.03%	1.08%	1.09%
07		2.33%	2.43%	2.44%	2.46%	2.54%	2.63%	-0.10%	-0.35%	-0.29%	-0.30%	-0.29%	-0.29%
08		1.79%	1.86%	1.92%	1.98%	2.06%	2.14%	-0.24%	-0.52%	-0.42%	-0.46%	-0.45%	-0.44%
09		5.28%	5.38%	5.46%	5.50%	5.64%	5.68%	1.38%	0.86%	0.86%	0.60%	0.63%	0.65%
10		2.66%	2.80%	2.93%	3.13%	3.20%	3.21%	-4.36%	-4.92%	-4.36%	-4.51%	-4.45%	-4.31%
11		2.90%	3.01%	2.97%	2.93%	3.05%	3.19%	0.07%	-0.17%	-0.12%	-0.12%	-0.12%	-0.11%
12		5.90%	6.01%	6.12%	6.22%	6.27%	6.51%	2.17%	1.68%	1.74%	1.55%	1.59%	1.62%
13		2.93%	3.04%	3.01%	2.98%	3.02%	3.06%	0.10%	-0.15%	-0.10%	-0.10%	-0.10%	-0.10%
14		4.19%	4.29%	4.45%	4.51%	4.61%	4.77%	2.99%	2.61%	2.63%	2.48%	2.58%	2.70%
15	FATS & OILS	8.11%	7.87%	7.61%	7.22%	7.47%	7.81%	1.50%	1.08%	1.04%	0.87%	0.91%	0.94%
16	PREPARED FOODSTUFFS	7.79%	7.55%	7.11%	6.64%	6.86%	7.05%	-0.07%	-0.31%	-0.26%	-0.26%	-0.25%	-0.24%
17		5.85%	5.89%	6.28%	6.32%	6.37%	6.54%	-2.18%	-2.59%	-2.60%	-2.67%	-2.61%	-2.59%
18		3.08%	3.19%	3.16%	3.14%	3.26%	3.28%	0.08%	-0.18%	-0.14%	-0.16%	-0.15%	-0.14%
19		2.91%	3.03%	2.98%	2.95%	3.01%	3.12%	-0.03%	-0.27%	-0.22%	-0.22%	-0.21%	-0.21%
20		2.91%	3.03%	2.98%	2.95%	3.05%	3.13%	-0.03%	-0.27%	-0.22%	-0.22%	-0.22%	-0.21%
21		2.92%	3.03%	2.99%	2.95%	2.96%	3.11%	-0.08%	-0.33%	-0.28%	-0.28%	-0.27%	-0.27%
22		1.61%	1.79%	1.77%	1.81%	1.86%	1.89%	2.28%	2.14%	2.15%	2.19%	2.25%	2.27%
23		6.54%	6.46%	6.36%	6.13%	6.30%	6.36%	-0.62%	-0.90%	-0.80%	-0.83%	-0.81%	-0.79%
24		3.56%	3.75%	3.85%	3.96%	4.15%	4.30%	2.35%	2.11%	2.11%	2.06%	2.09%	2.13%
25	MINERAL PRODUCTS	1.16%	1.20%	1.27%	1.35%	1.36%	1.42%	4.10%	4.10%	4.30%	4.52%	4.54%	4.63%
26		0.45%	0.44%	0.54%	0.64%	0.66%	0.68%	5.86%	5.85%	6.00%	6.17%	6.43%	6.72%
27		3.37%	3.62%	3.94%	4.11%	4.14%	4.27%	8.20%	8.58%	9.02%	9.47%	9.82%	9.97%
28	CHEMICAL PRODUCTS	6.39%	6.53%	6.59%	6.62%	6.66%	6.98%	2.32%	1.94%	1.90%	1.77%	1.86%	1.94%
29		6.45%	6.58%	6.63%	6.66%	6.99%	7.10%	2.04%	1.59%	1.50%	1.31%	1.36%	1.36%
30		5.84%	5.98%	6.05%	6.09%	6.33%	6.61%	2.01%	1.57%	1.48%	1.29%	1.33%	1.35%
31		6.34%	6.47%	6.53%	6.56%	6.84%	7.17%	2.05%	1.61%	1.52%	1.34%	1.37%	1.38%
32		6.47%	6.60%	6.65%	6.68%	6.89%	7.05%	2.04%	1.59%	1.50%	1.31%	1.31%	1.33%
33		6.47%	6.60%	6.65%	6.68%	6.97%	7.28%	2.04%	1.59%	1.50%	1.31%	1.33%	1.34%
34		6.16%	6.29%	6.30%	6.30%	6.52%	6.84%	1.99%	1.54%	1.45%	1.27%	1.27%	1.28%
35		5.31%	5.46%	5.51%	5.54%	5.54%	5.80%	1.99%	1.55%	1.46%	1.28%	1.34%	1.40%
36		5.26%	5.38%	5.25%	5.17%	5.32%	5.38%	1.49%	1.05%	0.97%	0.80%	0.84%	0.88%
37		6.47%	6.60%	6.65%	6.68%	6.75%	6.80%	2.04%	1.59%	1.50%	1.31%	1.35%	1.38%
38		6.07%	6.19%	6.23%	6.25%	6.32%	6.62%	1.86%	1.43%	1.35%	1.18%	1.18%	1.20%
39	PLASTICS	6.47%	6.60%	6.65%	6.68%	6.94%	6.97%	2.04%	1.59%	1.50%	1.31%	1.36%	1.40%
40		6.43%	6.55%	6.61%	6.64%	6.94%	7.06%	2.04%	1.59%	1.50%	1.31%	1.32%	1.36%
41	LEATHER GOODS	2.10%	2.06%	1.81%	1.62%	1.69%	1.70%	-1.34%	-1.84%	-1.89%	-2.07%	-1.99%	-1.90%
42		2.38%	2.40%	2.19%	2.04%	2.07%	2.15%	-1.32%	-1.83%	-1.89%	-2.07%	-2.04%	-2.00%
43		-0.22%	-0.09%	-0.12%	-0.09%	-0.08%	-0.08%	1.99%	1.81%	1.77%	1.77%	1.77%	1.83%
44	WOOD PRODUCTS	2.80%	2.89%	2.91%	2.88%	3.02%	3.13%	1.19%	0.79%	0.73%	0.58%	0.59%	0.60%
45		2.74%	2.83%	2.85%	2.82%	2.94%	3.04%	-0.14%	-0.48%	-0.50%	-0.62%	-0.62%	-0.59%
46		2.71%	2.80%	2.82%	2.78%	2.89%	2.90%	-0.67%	-1.02%	-1.07%	-1.20%	-1.16%	-1.15%
47	PAPER	5.34%	5.48%	5.38%	5.34%	5.56%	5.62%	1.44%	1.09%	1.10%	1.02%	1.04%	1.06%
48		5.34%	5.48%	5.38%	5.34%	5.37%	5.61%	1.44%	1.09%	1.10%	1.02%	1.04%	1.08%
49		5.34%	5.48%	5.38%	5.34%	5.44%	5.56%	1.44%	1.09%	1.10%	1.02%	1.06%	1.08%

TRADE FORECASTING BETWEEN JAPAN AND CHINA (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	0.19%	0.11%	-0.07%	-0.22%	-0.21%	-0.21%	1.02%	0.66%	0.63%	0.52%	0.53%	0.54%
51		0.19%	0.11%	-0.07%	-0.22%	-0.22%	-0.22%	1.02%	0.66%	0.63%	0.52%	0.52%	0.54%
52		0.19%	0.11%	-0.06%	-0.22%	-0.22%	-0.22%	1.02%	0.66%	0.63%	0.52%	0.54%	0.54%
53		0.21%	0.13%	-0.03%	-0.19%	-0.18%	-0.17%	1.02%	0.66%	0.63%	0.52%	0.54%	0.55%
54		0.19%	0.11%	-0.07%	-0.22%	-0.22%	-0.21%	1.02%	0.66%	0.63%	0.52%	0.52%	0.53%
55		0.19%	0.11%	-0.07%	-0.22%	-0.22%	-0.21%	1.02%	0.66%	0.63%	0.52%	0.53%	0.54%
56		0.19%	0.11%	-0.07%	-0.22%	-0.22%	-0.21%	1.02%	0.66%	0.63%	0.52%	0.53%	0.54%
57		0.19%	0.11%	-0.07%	-0.22%	-0.21%	-0.21%	1.02%	0.66%	0.63%	0.52%	0.54%	0.56%
58		0.19%	0.11%	-0.07%	-0.22%	-0.22%	-0.21%	1.02%	0.66%	0.63%	0.52%	0.53%	0.56%
59		2.55%	2.63%	2.53%	2.47%	2.52%	2.64%	1.11%	0.71%	0.67%	0.53%	0.56%	0.58%
60		0.19%	0.11%	-0.07%	-0.22%	-0.22%	-0.21%	1.02%	0.66%	0.63%	0.52%	0.55%	0.56%
61		1.41%	1.53%	1.40%	1.32%	1.36%	1.42%	0.88%	0.52%	0.51%	0.41%	0.41%	0.41%
62		1.47%	1.60%	1.46%	1.39%	1.44%	1.44%	0.07%	-0.26%	-0.23%	-0.25%	-0.24%	-0.24%
63	0.33%	0.26%	0.09%	-0.06%	-0.06%	-0.05%	0.88%	0.51%	0.49%	0.39%	0.41%	0.43%	
64	FOOTWEAR	2.12%	2.08%	1.83%	1.63%	1.64%	1.69%	-1.62%	-2.17%	-2.23%	-2.44%	-2.42%	-2.39%
65		1.64%	1.78%	1.66%	1.60%	1.65%	1.73%	1.93%	1.50%	1.41%	1.23%	1.27%	1.28%
66		4.91%	5.02%	4.82%	4.71%	4.79%	4.88%	-1.34%	-1.85%	-1.92%	-2.10%	-2.06%	-2.01%
67		4.91%	5.02%	4.82%	4.71%	4.86%	5.06%	-1.34%	-1.85%	-1.92%	-2.10%	-2.00%	-1.97%
68	STONE & GLASS	3.42%	3.56%	3.52%	3.52%	3.65%	3.80%	0.60%	0.31%	0.33%	0.32%	0.33%	0.34%
69		3.42%	3.56%	3.52%	3.52%	3.58%	3.66%	0.60%	0.31%	0.33%	0.32%	0.32%	0.33%
70		3.24%	3.37%	3.34%	3.33%	3.46%	3.57%	0.62%	0.33%	0.34%	0.33%	0.34%	0.34%
71	PRECIOUS STONES	5.42%	5.48%	5.36%	5.26%	5.39%	5.59%	1.58%	1.25%	1.24%	1.20%	1.22%	1.22%
72	BASE METALS	4.09%	4.06%	3.98%	3.93%	4.06%	4.14%	1.81%	1.57%	1.57%	1.59%	1.65%	1.70%
73		4.31%	4.32%	4.15%	4.02%	4.19%	4.29%	1.10%	0.82%	0.85%	0.86%	0.88%	0.92%
74		6.61%	6.57%	6.59%	6.52%	6.59%	6.84%	0.75%	0.49%	0.51%	0.52%	0.53%	0.55%
75		7.30%	7.14%	7.14%	7.01%	7.14%	7.33%	2.09%	1.79%	1.77%	1.74%	1.78%	1.82%
76		6.15%	6.08%	6.03%	5.91%	6.02%	6.21%	1.79%	1.48%	1.48%	1.46%	1.46%	1.47%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		7.37%	7.20%	7.21%	7.07%	7.36%	7.56%	2.11%	1.80%	1.78%	1.75%	1.79%	1.83%
79		7.37%	7.20%	7.21%	7.07%	7.12%	7.47%	2.11%	1.80%	1.78%	1.75%	1.75%	1.80%
80		7.22%	7.06%	7.06%	6.93%	7.27%	7.35%	2.08%	1.78%	1.75%	1.72%	1.77%	1.82%
81		7.94%	7.71%	7.74%	7.59%	7.68%	7.84%	2.20%	1.90%	1.87%	1.83%	1.89%	1.98%
82		4.41%	4.44%	4.25%	4.11%	4.22%	4.31%	0.08%	-0.26%	-0.21%	-0.23%	-0.22%	-0.22%
83	4.41%	4.44%	4.25%	4.11%	4.20%	4.22%	0.08%	-0.26%	-0.21%	-0.23%	-0.21%	-0.21%	
84	MACHINE	4.00%	4.01%	3.82%	3.68%	3.84%	4.03%	-0.13%	-0.55%	-0.51%	-0.57%	-0.55%	-0.53%
85		3.70%	3.80%	3.67%	3.59%	3.74%	3.76%	0.46%	-0.10%	-0.08%	-0.27%	-0.26%	-0.24%
86	VEHICLES	7.60%	7.28%	6.80%	6.40%	6.62%	6.81%	-0.63%	-0.96%	-0.96%	-0.96%	-0.94%	-0.92%
87		5.28%	5.37%	5.23%	5.16%	5.28%	5.33%	-0.10%	-0.36%	-0.34%	-0.31%	-0.31%	-0.29%
88		7.45%	7.13%	6.65%	6.25%	6.51%	6.77%	-1.44%	-1.93%	-1.97%	-2.07%	-1.97%	-1.90%
89		7.78%	7.42%	6.91%	6.48%	6.49%	6.56%	-1.79%	-2.32%	-2.37%	-2.48%	-2.41%	-2.38%
90	CLOCKS & MUSICAL INST.	4.13%	4.10%	3.87%	3.69%	3.69%	3.77%	-0.34%	-0.73%	-0.69%	-0.72%	-0.70%	-0.69%
91		4.05%	4.01%	3.78%	3.60%	3.68%	3.77%	-0.33%	-0.73%	-0.69%	-0.72%	-0.70%	-0.67%
92		4.91%	5.02%	4.82%	4.71%	4.72%	4.83%	-1.34%	-1.85%	-1.92%	-2.10%	-2.07%	-2.05%
93	ARMS	4.13%	4.10%	3.87%	3.69%	3.77%	3.94%	-0.33%	-0.72%	-0.68%	-0.71%	-0.69%	-0.67%
94	MISC. ART.	4.72%	4.82%	4.62%	4.51%	4.59%	4.81%	-0.49%	-0.91%	-0.90%	-0.97%	-0.97%	-0.94%
95		4.91%	5.02%	4.82%	4.71%	4.79%	4.95%	-1.34%	-1.85%	-1.92%	-2.10%	-2.08%	-2.01%
96		4.85%	4.96%	4.77%	4.66%	4.80%	5.04%	-1.34%	-1.85%	-1.92%	-2.10%	-2.07%	-2.01%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

TRADE FORECASTING BETWEEN JAPAN AND SOUTH KOREA

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	-2.69%	-2.64%	-2.73%	-2.79%	-2.73%	-2.64%	-0.54%	-0.78%	-0.87%	-0.91%	-0.89%	-0.86%
02		-2.20%	-3.06%	-4.03%	-5.10%	-4.87%	-4.72%	-4.40%	-5.30%	-5.64%	-6.06%	-5.99%	-5.74%
03		-1.41%	-1.22%	-1.17%	-1.13%	-1.11%	-1.07%	-1.34%	-1.58%	-1.59%	-1.55%	-1.49%	-1.46%
04		0.14%	0.30%	0.27%	0.24%	0.25%	0.26%	-1.85%	-2.27%	-2.34%	-2.42%	-2.38%	-2.28%
05		-1.40%	-1.19%	-1.11%	-1.04%	-1.01%	-0.99%	-1.16%	-1.36%	-1.37%	-1.31%	-1.26%	-1.22%
06	VEGETABLE PRODUCTS	9.30%	8.62%	8.07%	7.40%	7.64%	7.70%	-6.72%	-7.48%	-7.73%	-8.15%	-8.03%	-8.00%
07		-0.14%	-0.25%	-0.39%	-0.52%	-0.52%	-0.51%	-2.36%	-2.76%	-2.85%	-2.93%	-2.78%	-2.69%
08		0.45%	0.23%	0.04%	-0.13%	-0.13%	-0.12%	-2.41%	-2.81%	-2.88%	-2.96%	-2.90%	-2.76%
09		5.05%	4.92%	4.77%	4.50%	4.65%	4.82%	-5.31%	-5.91%	-6.07%	-6.33%	-6.09%	-6.05%
10		11.71%	10.23%	8.58%	7.17%	7.43%	7.69%	0.00%	0.00%	-33.33%	0.00%	0.00%	0.00%
11		-1.27%	-1.14%	-1.17%	-1.20%	-1.17%	-1.12%	-2.20%	-2.59%	-2.67%	-2.75%	-2.66%	-2.53%
12		4.93%	4.82%	4.69%	4.45%	4.45%	4.57%	-3.75%	-4.18%	-4.24%	-4.36%	-4.29%	-4.19%
13		-1.45%	-1.34%	-1.38%	-1.44%	-1.40%	-1.39%	-2.20%	-2.60%	-2.68%	-2.75%	-2.72%	-2.70%
14		-0.43%	-0.28%	-0.05%	0.02%	0.02%	0.02%	1.23%	0.84%	0.89%	0.84%	0.86%	0.89%
15	FATS & OILS	-4.49%	-4.92%	-5.36%	-5.89%	-5.79%	-5.65%	-0.99%	-1.46%	-1.51%	-1.69%	-1.69%	-1.67%
16	PREPARED FOODSTUFFS	-1.49%	-1.43%	-1.51%	-1.62%	-1.58%	-1.58%	-2.39%	-2.81%	-2.90%	-2.99%	-2.96%	-2.82%
17		-0.59%	-0.49%	-0.31%	-0.30%	-0.29%	-0.28%	0.19%	-0.20%	-0.14%	-0.16%	-0.15%	-0.15%
18		-1.06%	-0.94%	-0.97%	-1.02%	-1.01%	-0.98%	-2.52%	-2.93%	-3.01%	-3.10%	-3.10%	-2.94%
19		-1.45%	-1.34%	-1.38%	-1.44%	-1.39%	-1.34%	-2.34%	-2.75%	-2.83%	-2.92%	-2.91%	-2.82%
20		-1.45%	-1.34%	-1.38%	-1.44%	-1.40%	-1.36%	-2.34%	-2.75%	-2.83%	-2.92%	-2.81%	-2.77%
21		-1.42%	-1.30%	-1.34%	-1.40%	-1.36%	-1.35%	-2.33%	-2.74%	-2.82%	-2.91%	-2.77%	-2.70%
22		-0.46%	-0.26%	-0.26%	-0.20%	-0.19%	-0.19%	0.08%	-0.14%	-0.20%	-0.17%	-0.17%	-0.17%
23		-1.47%	-1.40%	-1.45%	-1.54%	-1.52%	-1.47%	-1.98%	-2.46%	-2.50%	-2.67%	-2.59%	-2.46%
24		-0.16%	0.05%	0.06%	0.11%	0.12%	0.12%	-0.60%	-0.83%	-0.85%	-0.81%	-0.78%	-0.74%
25	MINERAL PRODUCTS	-0.69%	-0.60%	-0.49%	-0.39%	-0.37%	-0.37%	-0.76%	-0.99%	-0.96%	-0.90%	-0.89%	-0.86%
26		-0.77%	-0.80%	-0.72%	-0.62%	-0.61%	-0.58%	1.57%	1.51%	1.62%	1.75%	1.83%	1.90%
27		0.89%	1.12%	1.34%	1.52%	1.53%	1.57%	3.64%	3.77%	4.01%	4.29%	4.50%	4.59%
28	CHEMICAL PRODUCTS	-3.16%	-3.38%	-3.59%	-3.80%	-3.67%	-3.66%	-0.38%	-0.79%	-0.86%	-0.99%	-0.97%	-0.95%
29		-5.05%	-5.61%	-6.21%	-6.86%	-6.63%	-6.58%	-0.50%	-0.94%	-1.02%	-1.17%	-1.14%	-1.12%
30		-5.10%	-5.66%	-6.25%	-6.90%	-6.70%	-6.58%	-0.52%	-0.96%	-1.04%	-1.19%	-1.14%	-1.14%
31		-5.01%	-5.56%	-6.15%	-6.80%	-6.71%	-6.70%	-0.49%	-0.92%	-1.01%	-1.15%	-1.14%	-1.12%
32		-5.06%	-5.62%	-6.22%	-6.87%	-6.83%	-6.57%	-0.50%	-0.93%	-1.02%	-1.17%	-1.16%	-1.15%
33		-5.06%	-5.62%	-6.22%	-6.87%	-6.67%	-6.48%	-0.50%	-0.93%	-1.02%	-1.17%	-1.17%	-1.15%
34		-5.04%	-5.58%	-6.17%	-6.81%	-6.55%	-6.31%	-0.54%	-0.98%	-1.06%	-1.21%	-1.21%	-1.20%
35		-4.32%	-4.72%	-5.17%	-5.65%	-5.55%	-5.53%	-0.54%	-0.98%	-1.06%	-1.21%	-1.17%	-1.16%
36		-4.83%	-5.23%	-5.73%	-6.26%	-6.14%	-6.08%	-0.98%	-1.45%	-1.55%	-1.71%	-1.65%	-1.61%
37		-5.06%	-5.62%	-6.22%	-6.87%	-6.68%	-6.42%	-0.50%	-0.93%	-1.02%	-1.17%	-1.17%	-1.13%
38		-4.68%	-5.13%	-5.63%	-6.17%	-6.02%	-5.95%	-0.65%	-1.09%	-1.17%	-1.32%	-1.27%	-1.23%
39	PLASTICS	-5.06%	-5.62%	-6.22%	-6.87%	-6.71%	-6.38%	-0.50%	-0.93%	-1.02%	-1.17%	-1.12%	-1.09%
40		-5.06%	-5.62%	-6.22%	-6.87%	-6.69%	-6.61%	-0.50%	-0.93%	-1.02%	-1.17%	-1.13%	-1.13%
41	LEATHER GOODS	-7.36%	-7.36%	-7.54%	-7.74%	-7.40%	-7.27%	-5.67%	-6.25%	-6.39%	-6.53%	-6.21%	-6.12%
42		-5.78%	-5.70%	-5.87%	-6.04%	-6.04%	-5.84%	-5.16%	-6.04%	-6.46%	-6.91%	-6.70%	-6.64%
43		-2.69%	-2.64%	-2.73%	-2.79%	-2.73%	-2.62%	-0.54%	-0.78%	-0.87%	-0.91%	-0.89%	-0.87%
44	WOOD PRODUCTS	-3.72%	-3.92%	-4.18%	-4.48%	-4.43%	-4.35%	-0.74%	-1.16%	-1.22%	-1.34%	-1.34%	-1.31%
45		-2.40%	-2.30%	-2.30%	-2.37%	-2.34%	-2.23%	-1.06%	-1.44%	-1.37%	-1.40%	-1.33%	-1.29%
46		-2.46%	-2.38%	-2.38%	-2.46%	-2.45%	-2.43%	-2.31%	-2.75%	-2.72%	-2.82%	-2.76%	-2.72%
47	PAPER	-0.47%	-0.33%	-0.42%	-0.52%	-0.51%	-0.50%	-0.56%	-1.03%	-1.03%	-1.11%	-1.09%	-1.04%
48		-0.47%	-0.33%	-0.42%	-0.52%	-0.51%	-0.50%	-0.56%	-1.03%	-1.03%	-1.11%	-1.08%	-1.08%
49		-0.47%	-0.33%	-0.42%	-0.52%	-0.51%	-0.48%	-0.56%	-1.03%	-1.03%	-1.11%	-1.07%	-1.02%

TRADE FORECASTING BETWEEN JAPAN AND SOUTH KOREA (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-8.20%	-8.36%	-8.59%	-8.87%	-8.83%	-8.76%	-6.33%	-6.94%	-7.16%	-7.43%	-7.37%	-7.03%
51		-8.20%	-8.36%	-8.59%	-8.87%	-8.65%	-8.26%	-6.33%	-6.94%	-7.16%	-7.43%	-7.11%	-6.84%
52		-8.20%	-8.36%	-8.59%	-8.87%	-8.52%	-8.46%	-6.33%	-6.94%	-7.16%	-7.43%	-7.37%	-7.16%
53		-8.20%	-8.36%	-8.59%	-8.87%	-8.52%	-8.20%	-6.33%	-6.94%	-7.16%	-7.43%	-7.07%	-6.80%
54		-8.20%	-8.36%	-8.59%	-8.87%	-8.75%	-8.41%	-6.33%	-6.94%	-7.16%	-7.43%	-7.10%	-6.94%
55		-8.20%	-8.36%	-8.59%	-8.87%	-8.73%	-8.42%	-6.33%	-6.94%	-7.16%	-7.43%	-7.20%	-7.08%
56		-8.20%	-8.36%	-8.59%	-8.87%	-8.44%	-8.39%	-6.33%	-6.94%	-7.16%	-7.43%	-7.32%	-7.29%
57		-8.20%	-8.36%	-8.59%	-8.87%	-8.60%	-8.28%	-6.33%	-6.94%	-7.16%	-7.43%	-7.36%	-7.27%
58		-8.20%	-8.36%	-8.59%	-8.87%	-8.85%	-8.85%	-6.33%	-6.94%	-7.16%	-7.43%	-7.43%	-7.07%
59		-5.97%	-6.20%	-6.53%	-6.91%	-6.79%	-6.67%	-2.06%	-2.53%	-2.62%	-2.77%	-2.67%	-2.62%
60		-8.20%	-8.36%	-8.59%	-8.87%	-8.46%	-8.17%	-6.33%	-6.94%	-7.16%	-7.43%	-7.06%	-6.76%
61		-5.91%	-5.79%	-5.91%	-6.04%	-5.74%	-5.70%	-6.12%	-6.72%	-6.92%	-7.15%	-7.09%	-6.81%
62		-5.61%	-5.47%	-5.58%	-5.70%	-5.67%	-5.66%	-5.96%	-6.57%	-6.76%	-6.95%	-6.77%	-6.43%
63	-6.90%	-6.91%	-6.99%	-7.09%	-7.01%	-6.71%	-4.81%	-5.37%	-5.50%	-5.69%	-5.45%	-5.29%	
64	FOOTWEAR	-7.39%	-7.39%	-7.57%	-7.77%	-7.62%	-7.24%	-7.08%	-7.87%	-8.14%	-8.47%	-8.27%	-7.97%
65		-5.37%	-5.53%	-5.85%	-6.19%	-5.97%	-5.78%	-0.81%	-1.24%	-1.31%	-1.45%	-1.42%	-1.38%
66		-4.22%	-4.17%	-4.41%	-4.64%	-4.43%	-4.25%	-4.75%	-5.68%	-6.15%	-6.65%	-6.44%	-6.32%
67		-4.22%	-4.17%	-4.41%	-4.64%	-4.41%	-4.40%	-4.75%	-5.68%	-6.15%	-6.65%	-6.52%	-6.39%
68	STONE & GLASS	-1.29%	-1.04%	-0.95%	-0.88%	-0.86%	-0.83%	-2.21%	-2.64%	-2.75%	-2.86%	-2.75%	-2.69%
69		-1.29%	-1.04%	-0.95%	-0.88%	-0.85%	-0.85%	-2.21%	-2.64%	-2.75%	-2.86%	-2.86%	-2.73%
70		-1.39%	-1.13%	-1.04%	-0.97%	-0.94%	-0.94%	-2.23%	-2.65%	-2.76%	-2.87%	-2.82%	-2.80%
71	PRECIOUS STONES	-1.74%	-1.83%	-1.83%	-1.95%	-1.88%	-1.80%	-1.20%	-1.66%	-1.81%	-1.98%	-1.89%	-1.87%
72	BASE METALS	0.16%	0.36%	0.53%	0.69%	0.72%	0.74%	-1.59%	-1.87%	-1.93%	-1.95%	-1.93%	-1.85%
73		-0.40%	-0.15%	0.00%	0.14%	0.15%	0.15%	-1.81%	-2.13%	-2.19%	-2.23%	-2.13%	-2.13%
74		-0.68%	-0.68%	-0.63%	-0.69%	-0.68%	-0.66%	-0.57%	-0.96%	-1.05%	-1.15%	-1.14%	-1.10%
75		-1.02%	-1.13%	-1.08%	-1.18%	-1.15%	-1.13%	-0.52%	-0.94%	-1.07%	-1.25%	-1.19%	-1.18%
76		-1.09%	-1.07%	-1.00%	-1.04%	-0.99%	-0.99%	-0.89%	-1.31%	-1.42%	-1.59%	-1.52%	-1.50%
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78		-1.02%	-1.13%	-1.08%	-1.19%	-1.15%	-1.12%	-0.51%	-0.93%	-1.06%	-1.24%	-1.18%	-1.13%
79		-1.02%	-1.13%	-1.08%	-1.19%	-1.14%	-1.12%	-0.51%	-0.93%	-1.06%	-1.24%	-1.18%	-1.14%
80		-1.02%	-1.13%	-1.07%	-1.17%	-1.13%	-1.08%	-0.54%	-0.96%	-1.09%	-1.27%	-1.21%	-1.20%
81		-0.99%	-1.16%	-1.11%	-1.24%	-1.18%	-1.18%	-0.41%	-0.83%	-0.96%	-1.14%	-1.12%	-1.09%
82		-1.25%	-0.93%	-0.81%	-0.71%	-0.70%	-0.67%	-3.84%	-4.40%	-4.49%	-4.62%	-4.46%	-4.41%
83		-1.25%	-0.93%	-0.81%	-0.71%	-0.70%	-0.68%	-3.84%	-4.40%	-4.49%	-4.62%	-4.54%	-4.35%
84	MACHINE	-1.78%	-1.53%	-1.44%	-1.39%	-1.33%	-1.27%	-2.07%	-2.66%	-2.75%	-2.93%	-2.89%	-2.76%
85		-1.88%	-1.62%	-1.52%	-1.46%	-1.42%	-1.36%	-2.45%	-3.09%	-3.17%	-3.38%	-3.31%	-3.28%
86	VEHICLES	0.45%	0.52%	0.42%	0.31%	0.33%	0.34%	-1.64%	-2.44%	-2.74%	-3.04%	-2.98%	-2.83%
87		-0.21%	0.04%	0.08%	0.11%	0.12%	0.12%	-0.79%	-1.19%	-1.25%	-1.30%	-1.25%	-1.24%
88		0.41%	0.38%	0.23%	0.06%	0.06%	0.06%	-2.04%	-2.99%	-3.39%	-3.81%	-3.79%	-3.74%
89		0.76%	0.71%	0.53%	0.33%	0.33%	0.34%	-2.00%	-2.96%	-3.36%	-3.78%	-3.71%	-3.57%
90	CLOCKS & MUSICAL INST.	-1.89%	-1.65%	-1.57%	-1.52%	-1.47%	-1.45%	-2.03%	-2.61%	-2.71%	-2.89%	-2.75%	-2.61%
91		-1.89%	-1.65%	-1.57%	-1.52%	-1.51%	-1.45%	-2.03%	-2.61%	-2.71%	-2.89%	-2.86%	-2.80%
92		-4.22%	-4.17%	-4.41%	-4.64%	-4.57%	-4.34%	-4.75%	-5.68%	-6.15%	-6.65%	-6.52%	-6.28%
93	ARMS	-1.86%	-1.61%	-1.53%	-1.48%	-1.46%	-1.43%	-2.04%	-2.62%	-2.72%	-2.90%	-2.83%	-2.75%
94	MISC. ART.	-2.84%	-2.67%	-2.70%	-2.74%	-2.64%	-2.64%	-2.78%	-3.42%	-3.60%	-3.84%	-3.66%	-3.61%
95		-4.22%	-4.17%	-4.41%	-4.64%	-4.56%	-4.43%	-4.75%	-5.68%	-6.15%	-6.65%	-6.35%	-6.13%
96		-4.24%	-4.18%	-4.42%	-4.65%	-4.59%	-4.57%	-4.75%	-5.68%	-6.15%	-6.65%	-6.54%	-6.44%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	

TRADE FORECASTING BETWEEN JAPAN AND U.S.

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	-2.99%	-2.82%	-2.85%	-2.83%	-2.76%	-2.71%	0.68%	0.40%	0.32%	-0.02%	-0.02%	-0.02%
02		-8.07%	-7.96%	-8.18%	-8.33%	-8.19%	-7.82%	2.75%	1.99%	1.81%	1.27%	1.30%	1.34%
03		-3.96%	-3.66%	-3.56%	-3.44%	-3.41%	-3.35%	1.09%	0.64%	0.53%	0.07%	0.08%	0.08%
04		-2.69%	-2.16%	-2.00%	-1.74%	-1.71%	-1.70%	0.94%	0.38%	0.22%	-0.30%	-0.30%	-0.29%
05		-3.63%	-3.34%	-3.25%	-3.13%	-3.06%	-2.94%	1.35%	0.98%	0.90%	0.50%	0.52%	0.54%
06	VEGETABLE PRODUCTS	-3.42%	-3.41%	-3.41%	-3.60%	-3.57%	-3.41%	0.06%	-0.53%	-0.52%	-0.95%	-0.93%	-0.92%
07		-4.14%	-4.01%	-3.95%	-3.93%	-3.81%	-3.79%	0.74%	0.22%	0.08%	-0.43%	-0.41%	-0.39%
08		-4.16%	-4.09%	-4.04%	-4.05%	-3.88%	-3.73%	0.65%	0.18%	0.06%	-0.38%	-0.38%	-0.36%
09		-3.76%	-3.85%	-3.94%	-4.24%	-4.18%	-3.98%	0.45%	-0.11%	-0.20%	-0.68%	-0.66%	-0.65%
10		-1.95%	-1.87%	-1.89%	-1.88%	-1.86%	-1.78%	-2.81%	-3.42%	-3.10%	-3.38%	-3.32%	-3.23%
11		-3.08%	-2.78%	-2.69%	-2.57%	-2.49%	-2.38%	0.84%	0.32%	0.16%	-0.35%	-0.35%	-0.34%
12		-2.23%	-2.25%	-2.28%	-2.45%	-2.40%	-2.39%	0.51%	0.01%	0.01%	-0.39%	-0.38%	-0.37%
13		-3.55%	-3.23%	-3.06%	-2.90%	-2.78%	-2.78%	0.78%	0.24%	0.09%	-0.44%	-0.43%	-0.42%
14		-2.89%	-2.56%	-2.29%	-2.12%	-2.05%	-1.99%	-0.03%	-0.47%	-0.31%	-0.67%	-0.64%	-0.63%
15	FATS & OILS	-6.65%	-6.58%	-6.62%	-6.77%	-6.44%	-6.29%	-0.50%	-1.13%	-1.22%	-1.77%	-1.71%	-1.69%
16	PREPARED FOODSTUFFS	-7.76%	-7.67%	-7.82%	-7.95%	-7.81%	-7.48%	0.81%	0.26%	0.10%	-0.44%	-0.43%	-0.41%
17		-2.63%	-2.08%	-1.87%	-1.61%	-1.60%	-1.58%	2.09%	1.48%	1.37%	0.90%	0.90%	0.90%
18		-4.05%	-3.80%	-3.73%	-3.66%	-3.61%	-3.55%	0.77%	0.23%	0.07%	-0.46%	-0.45%	-0.44%
19		-4.09%	-3.79%	-3.69%	-3.58%	-3.48%	-3.41%	0.78%	0.24%	0.08%	-0.45%	-0.43%	-0.41%
20		-4.09%	-3.79%	-3.69%	-3.58%	-3.41%	-3.25%	0.78%	0.24%	0.08%	-0.45%	-0.44%	-0.43%
21		-3.98%	-3.67%	-3.56%	-3.43%	-3.41%	-3.36%	0.78%	0.24%	0.09%	-0.44%	-0.43%	-0.41%
22		-1.68%	-1.41%	-1.38%	-1.28%	-1.23%	-1.21%	1.52%	1.20%	1.08%	0.69%	0.71%	0.74%
23		-5.59%	-5.46%	-5.39%	-5.45%	-5.28%	-5.22%	0.18%	-0.35%	-0.34%	-0.82%	-0.78%	-0.76%
24		-1.73%	-1.48%	-1.45%	-1.35%	-1.29%	-1.29%	1.48%	1.15%	1.04%	0.66%	0.66%	0.69%
25	MINERAL PRODUCTS	-0.78%	-0.74%	-0.62%	-0.51%	-0.50%	-0.48%	-0.04%	-0.57%	-0.74%	-1.22%	-1.17%	-1.13%
26		-0.64%	-0.63%	-0.52%	-0.41%	-0.41%	-0.40%	0.06%	-0.35%	-0.47%	-0.86%	-0.83%	-0.82%
27		1.99%	2.45%	2.95%	3.28%	3.40%	3.49%	4.23%	4.37%	4.60%	4.56%	4.69%	4.90%
28	CHEMICAL PRODUCTS	-2.84%	-2.35%	-2.03%	-1.70%	-1.66%	-1.61%	-0.37%	-1.01%	-1.27%	-1.86%	-1.81%	-1.78%
29		-3.12%	-2.64%	-2.34%	-2.02%	-2.02%	-1.99%	-0.73%	-1.45%	-1.77%	-2.45%	-2.38%	-2.32%
30		-3.15%	-2.66%	-2.36%	-2.04%	-1.96%	-1.92%	-0.74%	-1.46%	-1.78%	-2.46%	-2.40%	-2.34%
31		-3.00%	-2.54%	-2.25%	-1.94%	-1.86%	-1.82%	-0.72%	-1.45%	-1.77%	-2.44%	-2.35%	-2.26%
32		-3.12%	-2.64%	-2.34%	-2.02%	-1.95%	-1.87%	-0.73%	-1.45%	-1.77%	-2.45%	-2.40%	-2.34%
33		-3.12%	-2.64%	-2.34%	-2.02%	-1.97%	-1.94%	-0.73%	-1.45%	-1.77%	-2.45%	-2.42%	-2.32%
34		-3.25%	-2.76%	-2.46%	-2.14%	-2.07%	-2.00%	-0.90%	-1.63%	-1.95%	-2.63%	-2.51%	-2.42%
35		-3.26%	-2.81%	-2.55%	-2.28%	-2.26%	-2.25%	-0.65%	-1.36%	-1.67%	-2.33%	-2.24%	-2.17%
36		-4.44%	-3.91%	-3.62%	-3.29%	-3.17%	-3.08%	-2.29%	-3.11%	-3.48%	-4.21%	-4.13%	-4.05%
37		-3.12%	-2.64%	-2.34%	-2.02%	-1.97%	-1.89%	-0.73%	-1.45%	-1.77%	-2.45%	-2.39%	-2.31%
38		-3.30%	-2.80%	-2.50%	-2.18%	-2.15%	-2.09%	-0.67%	-1.42%	-1.74%	-2.42%	-2.38%	-2.34%
39	PLASTICS	-3.12%	-2.64%	-2.34%	-2.02%	-1.99%	-1.90%	-0.73%	-1.45%	-1.77%	-2.45%	-2.40%	-2.39%
40		-3.08%	-2.62%	-2.32%	-2.02%	-1.92%	-1.91%	-0.73%	-1.45%	-1.77%	-2.45%	-2.33%	-2.21%
41	LEATHER GOODS	-9.87%	-9.46%	-9.35%	-9.18%	-8.76%	-8.51%	-7.92%	-8.68%	-8.98%	-9.63%	-9.53%	-9.49%
42		-9.24%	-8.77%	-8.70%	-8.53%	-8.43%	-8.42%	-5.01%	-6.12%	-6.71%	-7.71%	-7.34%	-7.29%
43		-4.25%	-4.14%	-4.19%	-4.20%	-4.11%	-4.09%	0.68%	0.40%	0.32%	-0.02%	-0.02%	-0.02%
44	WOOD PRODUCTS	-3.04%	-2.70%	-2.45%	-2.27%	-2.18%	-2.08%	0.00%	-0.69%	-1.01%	-1.67%	-1.63%	-1.63%
45		-2.93%	-2.60%	-2.34%	-2.16%	-2.11%	-2.02%	0.78%	0.12%	-0.20%	-0.85%	-0.83%	-0.80%
46		-4.20%	-3.96%	-3.86%	-3.81%	-3.79%	-3.66%	0.77%	0.10%	-0.24%	-0.90%	-0.89%	-0.85%
47	PAPER	-3.45%	-2.98%	-2.84%	-2.62%	-2.49%	-2.44%	0.79%	0.15%	-0.05%	-0.62%	-0.61%	-0.60%
48		-3.45%	-2.98%	-2.84%	-2.62%	-2.50%	-2.42%	0.79%	0.15%	-0.05%	-0.62%	-0.59%	-0.56%
49		-3.45%	-2.98%	-2.84%	-2.62%	-2.56%	-2.45%	0.79%	0.15%	-0.05%	-0.62%	-0.59%	-0.59%

TRADE FORECASTING BETWEEN JAPAN AND U.S. (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-11.67%	-11.37%	-11.28%	-11.14%	-10.59%	-10.39%	-1.89%	-2.76%	-3.14%	-3.93%	-3.75%	-3.56%
51		-11.67%	-11.37%	-11.28%	-11.14%	-10.95%	-10.80%	-1.89%	-2.76%	-3.14%	-3.93%	-3.76%	-3.73%
52		-9.71%	-9.34%	-9.13%	-8.91%	-8.80%	-8.47%	-1.89%	-2.76%	-3.14%	-3.93%	-3.74%	-3.62%
53		-3.44%	-3.39%	-3.35%	-3.39%	-3.36%	-3.32%	-1.89%	-2.76%	-3.14%	-3.93%	-3.77%	-3.68%
54		-11.67%	-11.37%	-11.28%	-11.14%	-10.67%	-10.55%	-1.89%	-2.76%	-3.14%	-3.93%	-3.77%	-3.72%
55		-11.67%	-11.37%	-11.28%	-11.14%	-10.69%	-10.42%	-1.89%	-2.76%	-3.14%	-3.93%	-3.74%	-3.64%
56		-11.67%	-11.37%	-11.28%	-11.14%	-10.92%	-10.91%	-1.89%	-2.76%	-3.14%	-3.93%	-3.91%	-3.83%
57		-11.67%	-11.37%	-11.28%	-11.14%	-10.83%	-10.37%	-1.89%	-2.76%	-3.14%	-3.93%	-3.82%	-3.73%
58		-11.67%	-11.37%	-11.28%	-11.14%	-10.67%	-10.61%	-1.89%	-2.76%	-3.14%	-3.93%	-3.92%	-3.81%
59		-5.58%	-5.02%	-4.73%	-4.38%	-4.37%	-4.36%	-2.56%	-3.42%	-3.81%	-4.57%	-4.50%	-4.43%
60		-11.67%	-11.37%	-11.28%	-11.14%	-10.64%	-10.27%	-1.89%	-2.76%	-3.14%	-3.93%	-3.89%	-3.77%
61		-10.57%	-10.10%	-9.99%	-9.78%	-9.61%	-9.52%	-1.87%	-2.77%	-3.14%	-3.95%	-3.95%	-3.75%
62		-10.40%	-9.90%	-9.79%	-9.58%	-9.57%	-9.45%	-1.85%	-2.79%	-3.14%	-3.97%	-3.97%	-3.95%
63	-9.62%	-9.13%	-8.90%	-8.58%	-8.20%	-7.86%	-1.29%	-2.17%	-2.53%	-3.29%	-3.20%	-3.15%	
64	FOOTWEAR	-10.93%	-10.54%	-10.47%	-10.33%	-9.91%	-9.47%	-8.37%	-9.21%	-9.58%	-10.32%	-9.85%	-9.62%
65		-4.43%	-3.87%	-3.52%	-3.14%	-3.06%	-2.99%	-0.83%	-1.58%	-1.90%	-2.59%	-2.52%	-2.49%
66		-8.15%	-7.68%	-7.65%	-7.49%	-7.47%	-7.46%	-5.06%	-6.18%	-6.79%	-7.81%	-7.42%	-7.39%
67	-8.15%	-7.68%	-7.65%	-7.49%	-7.47%	-7.24%	-5.06%	-6.18%	-6.79%	-7.81%	-7.46%	-7.37%	
68	STONE & GLASS	-4.47%	-3.92%	-3.65%	-3.32%	-3.16%	-3.05%	-0.24%	-0.90%	-1.13%	-1.71%	-1.68%	-1.67%
69		-4.47%	-3.92%	-3.65%	-3.32%	-3.17%	-3.16%	-0.24%	-0.90%	-1.13%	-1.71%	-1.64%	-1.59%
70		-4.51%	-3.96%	-3.69%	-3.36%	-3.25%	-3.21%	-0.26%	-0.92%	-1.15%	-1.73%	-1.71%	-1.67%
71	PRECIOUS STONES	-4.44%	-3.96%	-3.58%	-3.19%	-3.10%	-3.07%	-3.21%	-4.00%	-4.31%	-4.95%	-4.71%	-4.67%
72	BASE METALS	-1.87%	-1.25%	-0.79%	-0.23%	-0.22%	-0.22%	-1.34%	-1.86%	-2.08%	-2.55%	-2.50%	-2.47%
73		-5.72%	-5.07%	-4.75%	-4.31%	-4.25%	-4.23%	-1.11%	-1.89%	-2.18%	-2.81%	-2.81%	-2.71%
74		-3.01%	-2.51%	-2.13%	-1.76%	-1.73%	-1.72%	1.68%	1.10%	0.93%	0.43%	0.45%	0.45%
75		-3.14%	-2.66%	-2.13%	-1.67%	-1.63%	-1.58%	0.04%	-0.38%	-0.45%	-0.78%	-0.76%	-0.75%
76		-3.67%	-3.13%	-2.64%	-2.18%	-2.09%	-2.05%	-0.69%	-1.31%	-1.48%	-1.96%	-1.95%	-1.88%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		-3.12%	-2.64%	-2.11%	-1.65%	-1.64%	-1.58%	0.09%	-0.32%	-0.38%	-0.71%	-0.67%	-0.66%
79		-3.12%	-2.64%	-2.11%	-1.65%	-1.61%	-1.60%	0.09%	-0.32%	-0.38%	-0.71%	-0.69%	-0.66%
80		-3.17%	-2.68%	-2.16%	-1.70%	-1.67%	-1.66%	-0.02%	-0.46%	-0.54%	-0.88%	-0.87%	-0.84%
81		-2.95%	-2.48%	-1.94%	-1.49%	-1.44%	-1.43%	0.56%	0.28%	0.27%	0.02%	0.02%	0.03%
82		-5.77%	-5.11%	-4.81%	-4.39%	-4.25%	-4.21%	-1.44%	-2.29%	-2.59%	-3.26%	-3.15%	-3.08%
83		-5.77%	-5.11%	-4.81%	-4.39%	-4.23%	-4.09%	-1.44%	-2.29%	-2.59%	-3.26%	-3.22%	-3.08%
84	MACHINE	-6.45%	-5.90%	-5.66%	-5.33%	-5.13%	-5.12%	-0.05%	-0.87%	-1.15%	-1.80%	-1.77%	-1.69%
85		-6.52%	-5.95%	-5.70%	-5.38%	-5.22%	-5.02%	-1.64%	-2.56%	-2.85%	-3.57%	-3.49%	-3.42%
86	VEHICLES	-4.80%	-4.49%	-4.48%	-4.35%	-4.20%	-4.11%	0.74%	0.08%	-0.09%	-0.61%	-0.61%	-0.60%
87		-4.27%	-3.87%	-3.79%	-3.59%	-3.48%	-3.47%	1.64%	1.06%	0.88%	0.38%	0.40%	0.41%
88		-4.81%	-4.50%	-4.50%	-4.37%	-4.16%	-4.11%	0.28%	-0.43%	-0.61%	-1.15%	-1.10%	-1.08%
89		-4.81%	-4.50%	-4.50%	-4.37%	-4.30%	-4.12%	0.28%	-0.43%	-0.61%	-1.14%	-1.12%	-1.11%
90	CLOCKS & MUSICAL INST.	-6.81%	-6.23%	-5.97%	-5.62%	-5.55%	-5.53%	-0.38%	-1.31%	-1.65%	-2.39%	-2.35%	-2.28%
91		-6.81%	-6.23%	-5.97%	-5.62%	-5.53%	-5.45%	-0.37%	-1.30%	-1.64%	-2.38%	-2.33%	-2.30%
92	-8.15%	-7.68%	-7.65%	-7.49%	-7.14%	-7.13%	-5.06%	-6.18%	-6.79%	-7.81%	-7.71%	-7.45%	
93	ARMS	-6.79%	-6.20%	-5.95%	-5.59%	-5.43%	-5.43%	-0.39%	-1.32%	-1.66%	-2.39%	-2.28%	-2.21%
94	MISC. ART.	-7.34%	-6.81%	-6.65%	-6.38%	-6.19%	-6.06%	-2.26%	-3.20%	-3.58%	-4.35%	-4.28%	-4.16%
95		-8.15%	-7.68%	-7.65%	-7.49%	-7.33%	-7.27%	-5.06%	-6.18%	-6.79%	-7.81%	-7.53%	-7.23%
96		-8.16%	-7.69%	-7.65%	-7.50%	-7.50%	-7.21%	-5.06%	-6.18%	-6.79%	-7.81%	-7.72%	-7.54%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	

TRADE FORECASTING BETWEEN JAPAN AND ASEAN

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	-2.08%	-1.83%	-2.18%	-2.12%	-2.11%	-2.02%	-0.14%	-0.18%	-0.52%	-0.50%	-0.48%	-0.46%
02		-0.21%	-0.26%	-2.21%	-2.80%	-2.75%	-2.63%	-2.91%	-3.64%	-3.68%	-3.93%	-3.82%	-3.68%
03		-0.82%	-0.51%	-0.92%	-0.86%	-0.83%	-0.82%	-0.51%	-0.69%	-0.92%	-0.95%	-0.94%	-0.93%
04		-0.54%	-0.22%	-0.67%	-0.62%	-0.60%	-0.58%	-0.01%	-0.30%	-0.54%	-0.60%	-0.58%	-0.56%
05		-0.75%	-0.42%	-0.79%	-0.70%	-0.68%	-0.67%	-0.36%	-0.53%	-0.74%	-0.76%	-0.73%	-0.70%
06	VEGETABLE PRODUCTS	1.53%	1.90%	1.35%	1.50%	1.51%	1.59%	-3.14%	-3.83%	-4.00%	-4.45%	-4.28%	-4.13%
07		-0.53%	-0.21%	-0.75%	-0.63%	-0.61%	-0.58%	-0.74%	-0.93%	-1.17%	-1.20%	-1.19%	-1.17%
08		-0.35%	-0.02%	-0.60%	-0.45%	-0.45%	-0.43%	-1.05%	-1.24%	-1.44%	-1.47%	-1.47%	-1.40%
09		0.54%	0.85%	0.06%	0.08%	0.08%	0.08%	-1.62%	-1.99%	-2.18%	-2.35%	-2.24%	-2.17%
10		1.34%	1.68%	0.73%	0.77%	0.77%	0.78%	-5.27%	-5.89%	-5.10%	-5.23%	-5.16%	-5.03%
11		-0.88%	-0.58%	-1.03%	-0.99%	-0.97%	-0.93%	-0.54%	-0.72%	-0.97%	-1.00%	-0.99%	-0.98%
12		1.12%	1.46%	0.63%	0.68%	0.71%	0.73%	-2.09%	-2.54%	-2.70%	-2.94%	-2.85%	-2.72%
13		0.70%	1.08%	0.67%	0.83%	0.85%	0.90%	-0.61%	-0.80%	-1.05%	-1.09%	-1.03%	-1.03%
14		1.58%	1.97%	1.56%	1.74%	1.78%	1.83%	-0.63%	-0.99%	-1.15%	-1.34%	-1.29%	-1.27%
15	FATS & OILS	0.13%	0.31%	-0.62%	-0.75%	-0.73%	-0.70%	-1.22%	-1.58%	-1.98%	-2.18%	-2.11%	-2.09%
16	PREPARED FOODSTUFFS	-0.63%	-0.46%	-1.48%	-1.68%	-1.63%	-1.59%	-0.89%	-1.11%	-1.35%	-1.40%	-1.36%	-1.36%
17		0.79%	1.09%	0.70%	0.78%	0.81%	0.85%	-0.06%	-0.42%	-0.56%	-0.64%	-0.63%	-0.63%
18		-0.79%	-0.49%	-0.96%	-0.92%	-0.91%	-0.89%	-0.65%	-0.84%	-1.09%	-1.13%	-1.08%	-1.04%
19		-0.88%	-0.59%	-1.03%	-0.99%	-0.97%	-0.97%	-0.61%	-0.80%	-1.05%	-1.08%	-1.08%	-1.03%
20		-0.88%	-0.59%	-1.03%	-0.99%	-0.96%	-0.92%	-0.61%	-0.80%	-1.05%	-1.08%	-1.08%	-1.08%
21		-0.88%	-0.58%	-1.03%	-0.99%	-0.99%	-0.98%	-0.59%	-0.79%	-1.04%	-1.07%	-1.06%	-1.03%
22		-0.53%	-0.28%	-0.53%	-0.48%	-0.47%	-0.46%	0.86%	0.86%	0.54%	0.62%	0.64%	0.64%
23		0.39%	0.66%	-0.02%	-0.01%	-0.01%	-0.01%	-0.87%	-1.13%	-1.28%	-1.34%	-1.30%	-1.26%
24		0.40%	0.67%	0.10%	0.14%	0.14%	0.14%	0.72%	0.70%	0.40%	0.47%	0.49%	0.50%
25	MINERAL PRODUCTS	-0.28%	-0.28%	-0.29%	-0.19%	-0.19%	-0.19%	0.67%	0.71%	0.29%	0.42%	0.42%	0.44%
26		-0.27%	-0.27%	-0.27%	-0.17%	-0.16%	-0.16%	2.39%	2.56%	2.01%	2.17%	2.19%	2.26%
27		3.91%	4.36%	4.05%	4.14%	4.21%	4.22%	5.60%	6.19%	5.97%	6.48%	6.67%	6.80%
28	CHEMICAL PRODUCTS	1.47%	1.77%	1.35%	1.43%	1.44%	1.49%	-0.16%	-0.39%	-0.91%	-1.00%	-1.00%	-0.95%
29		1.41%	1.71%	1.19%	1.23%	1.28%	1.31%	-0.69%	-1.03%	-1.63%	-1.85%	-1.81%	-1.78%
30		1.28%	1.59%	1.07%	1.13%	1.18%	1.19%	-0.74%	-1.08%	-1.68%	-1.90%	-1.86%	-1.83%
31		1.07%	1.32%	0.91%	0.96%	0.99%	1.01%	-0.68%	-1.02%	-1.62%	-1.83%	-1.75%	-1.68%
32		1.42%	1.73%	1.20%	1.25%	1.30%	1.33%	-0.69%	-1.03%	-1.63%	-1.85%	-1.79%	-1.72%
33		1.42%	1.73%	1.20%	1.25%	1.30%	1.35%	-0.69%	-1.03%	-1.63%	-1.85%	-1.79%	-1.73%
34		1.10%	1.41%	0.88%	0.93%	0.96%	0.97%	-0.74%	-1.08%	-1.68%	-1.90%	-1.84%	-1.76%
35		0.42%	0.73%	0.26%	0.31%	0.32%	0.32%	-0.69%	-1.02%	-1.60%	-1.81%	-1.81%	-1.77%
36		-0.97%	-0.65%	-1.30%	-1.29%	-1.29%	-1.27%	-1.16%	-1.56%	-2.18%	-2.43%	-2.36%	-2.35%
37		1.42%	1.73%	1.20%	1.25%	1.26%	1.30%	-0.69%	-1.03%	-1.63%	-1.85%	-1.76%	-1.71%
38		1.17%	1.48%	0.95%	1.00%	1.01%	1.05%	-0.81%	-1.15%	-1.74%	-1.94%	-1.88%	-1.84%
39	PLASTICS	1.42%	1.73%	1.20%	1.25%	1.29%	1.33%	-0.69%	-1.03%	-1.63%	-1.85%	-1.79%	-1.76%
40		1.51%	1.86%	1.40%	1.51%	1.58%	1.59%	-0.69%	-1.03%	-1.63%	-1.85%	-1.85%	-1.78%
41	LEATHER GOODS	-5.83%	-5.62%	-6.43%	-6.53%	-6.45%	-6.13%	-4.60%	-5.11%	-5.69%	-5.98%	-5.70%	-5.65%
42		-5.19%	-4.95%	-5.76%	-5.87%	-5.79%	-5.77%	-3.01%	-3.61%	-4.34%	-4.73%	-4.64%	-4.42%
43		-2.08%	-1.83%	-2.18%	-2.12%	-2.10%	-2.08%	-0.14%	-0.18%	-0.52%	-0.50%	-0.48%	-0.46%
44	WOOD PRODUCTS	0.36%	0.71%	0.35%	0.49%	0.50%	0.50%	-1.07%	-1.40%	-1.90%	-2.11%	-2.01%	-1.98%
45		0.84%	1.21%	0.84%	1.01%	1.01%	1.02%	-1.55%	-1.87%	-2.22%	-2.42%	-2.38%	-2.31%
46		-1.31%	-1.08%	-1.42%	-1.42%	-1.38%	-1.34%	-1.68%	-1.99%	-2.36%	-2.56%	-2.47%	-2.35%
47	PAPER	0.47%	0.75%	0.19%	0.16%	0.16%	0.17%	0.49%	0.31%	-0.11%	-0.14%	-0.13%	-0.13%
48		0.47%	0.75%	0.19%	0.16%	0.16%	0.17%	0.49%	0.31%	-0.11%	-0.14%	-0.13%	-0.13%
49		0.47%	0.75%	0.19%	0.16%	0.16%	0.17%	0.49%	0.31%	-0.11%	-0.14%	-0.14%	-0.13%

TRADE FORECASTING BETWEEN JAPAN AND ASEAN (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-6.69%	-6.61%	-7.34%	-7.48%	-7.31%	-7.06%	-4.00%	-4.45%	-5.17%	-5.52%	-5.32%	-5.17%
51		-6.69%	-6.61%	-7.34%	-7.48%	-7.32%	-7.05%	-4.00%	-4.45%	-5.17%	-5.52%	-5.32%	-5.15%
52		-6.67%	-6.60%	-7.32%	-7.47%	-7.39%	-7.25%	-4.00%	-4.45%	-5.17%	-5.52%	-5.40%	-5.19%
53		-6.29%	-6.19%	-6.86%	-6.95%	-6.84%	-6.74%	-3.99%	-4.45%	-5.17%	-5.52%	-5.38%	-5.17%
54		-6.69%	-6.61%	-7.34%	-7.48%	-7.41%	-7.22%	-4.00%	-4.45%	-5.17%	-5.52%	-5.30%	-5.14%
55		-6.69%	-6.61%	-7.34%	-7.48%	-7.48%	-7.14%	-4.00%	-4.45%	-5.17%	-5.52%	-5.43%	-5.30%
56		-6.69%	-6.61%	-7.34%	-7.48%	-7.21%	-6.97%	-4.00%	-4.45%	-5.17%	-5.52%	-5.46%	-5.33%
57		-6.69%	-6.61%	-7.34%	-7.48%	-7.21%	-6.89%	-4.00%	-4.45%	-5.17%	-5.52%	-5.40%	-5.38%
58		-6.69%	-6.61%	-7.34%	-7.48%	-7.16%	-7.01%	-4.00%	-4.45%	-5.17%	-5.52%	-5.45%	-5.43%
59		-3.13%	-2.84%	-3.48%	-3.47%	-3.33%	-3.21%	-2.32%	-2.73%	-3.37%	-3.64%	-3.59%	-3.50%
60		-6.69%	-6.61%	-7.34%	-7.48%	-7.44%	-7.31%	-4.00%	-4.45%	-5.17%	-5.52%	-5.29%	-5.19%
61		-5.22%	-4.91%	-5.57%	-5.60%	-5.52%	-5.28%	-4.01%	-4.46%	-5.15%	-5.49%	-5.37%	-5.14%
62		-5.12%	-4.80%	-5.46%	-5.49%	-5.46%	-5.21%	-4.07%	-4.53%	-5.07%	-5.33%	-5.27%	-5.09%
63	-5.87%	-5.71%	-6.39%	-6.46%	-6.42%	-6.24%	-3.50%	-3.94%	-4.63%	-4.93%	-4.84%	-4.70%	
64	FOOTWEAR	-5.93%	-5.72%	-6.55%	-6.66%	-6.43%	-6.42%	-4.99%	-5.56%	-6.19%	-6.53%	-6.48%	-6.46%
65		-3.65%	-3.26%	-3.80%	-3.72%	-3.67%	-3.55%	-0.82%	-1.16%	-1.75%	-1.97%	-1.87%	-1.84%
66		-3.37%	-3.16%	-4.08%	-4.26%	-4.24%	-4.05%	-2.76%	-3.38%	-4.12%	-4.53%	-4.53%	-4.51%
67		-3.37%	-3.16%	-4.08%	-4.26%	-4.25%	-4.14%	-2.76%	-3.38%	-4.12%	-4.53%	-4.44%	-4.25%
68	STONE & GLASS	-0.74%	-0.42%	-0.99%	-0.97%	-0.93%	-0.91%	-0.97%	-1.17%	-1.56%	-1.59%	-1.59%	-1.56%
69		-0.74%	-0.42%	-0.99%	-0.97%	-0.95%	-0.91%	-0.97%	-1.17%	-1.56%	-1.59%	-1.58%	-1.55%
70		-0.84%	-0.51%	-1.08%	-1.06%	-1.01%	-0.98%	-1.01%	-1.21%	-1.60%	-1.64%	-1.59%	-1.54%
71	PRECIOUS STONES	0.25%	0.43%	-0.16%	-0.14%	-0.14%	-0.13%	0.04%	-0.21%	-0.92%	-1.07%	-1.04%	-1.03%
72	BASE METALS	1.15%	1.50%	1.19%	1.42%	1.49%	1.50%	-0.24%	-0.34%	-1.07%	-1.12%	-1.11%	-1.07%
73		-1.01%	-0.68%	-1.31%	-1.29%	-1.29%	-1.26%	-0.84%	-1.02%	-1.65%	-1.71%	-1.63%	-1.61%
74		1.40%	1.60%	0.98%	1.00%	1.02%	1.05%	0.27%	0.11%	-0.48%	-0.52%	-0.52%	-0.51%
75		1.55%	1.70%	1.01%	1.01%	1.02%	1.06%	0.35%	0.14%	-0.57%	-0.70%	-0.66%	-0.65%
76		1.28%	1.45%	0.77%	0.77%	0.80%	0.80%	0.01%	-0.20%	-0.87%	-0.98%	-0.96%	-0.95%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		1.56%	1.71%	1.02%	1.02%	1.06%	1.09%	0.36%	0.15%	-0.56%	-0.69%	-0.67%	-0.65%
79		1.56%	1.71%	1.02%	1.02%	1.06%	1.08%	0.36%	0.15%	-0.56%	-0.69%	-0.68%	-0.65%
80		1.54%	1.69%	1.00%	1.00%	1.05%	1.09%	0.33%	0.12%	-0.59%	-0.71%	-0.68%	-0.67%
81		1.63%	1.78%	1.08%	1.08%	1.12%	1.16%	0.46%	0.26%	-0.48%	-0.61%	-0.59%	-0.59%
82		-1.22%	-0.90%	-1.57%	-1.57%	-1.51%	-1.47%	-2.05%	-2.36%	-2.77%	-2.83%	-2.72%	-2.70%
83		-1.22%	-0.90%	-1.57%	-1.57%	-1.51%	-1.44%	-2.05%	-2.36%	-2.77%	-2.83%	-2.77%	-2.75%
84	MACHINE	-1.16%	-0.83%	-1.46%	-1.43%	-1.43%	-1.39%	-1.79%	-2.23%	-2.83%	-3.00%	-2.94%	-2.85%
85		-1.18%	-0.82%	-1.41%	-1.38%	-1.32%	-1.26%	-1.91%	-2.41%	-3.01%	-3.26%	-3.11%	-3.00%
86	VEHICLES	1.49%	1.68%	0.79%	0.68%	0.70%	0.74%	-1.44%	-1.98%	-2.64%	-2.85%	-2.78%	-2.66%
87		0.56%	0.93%	0.53%	0.63%	0.64%	0.64%	0.02%	-0.15%	-0.67%	-0.68%	-0.66%	-0.64%
88		1.53%	1.66%	0.58%	0.41%	0.41%	0.42%	-1.82%	-2.48%	-3.19%	-3.46%	-3.46%	-3.31%
89		1.81%	1.91%	0.81%	0.62%	0.64%	0.64%	-1.82%	-2.47%	-3.18%	-3.46%	-3.30%	-3.24%
90	CLOCKS & MUSICAL INST.	-1.25%	-0.94%	-1.62%	-1.60%	-1.58%	-1.55%	-1.96%	-2.41%	-3.03%	-3.21%	-3.17%	-3.08%
91		-1.28%	-0.96%	-1.64%	-1.62%	-1.55%	-1.50%	-1.96%	-2.41%	-3.03%	-3.20%	-3.20%	-3.16%
92		-3.37%	-3.16%	-4.08%	-4.26%	-4.17%	-4.04%	-2.76%	-3.38%	-4.12%	-4.53%	-4.48%	-4.31%
93	ARMS	-1.24%	-0.92%	-1.60%	-1.59%	-1.58%	-1.51%	-1.96%	-2.41%	-3.02%	-3.20%	-3.17%	-3.03%
94	MISC. ART.	-2.64%	-2.38%	-3.19%	-3.29%	-3.24%	-3.20%	-2.17%	-2.66%	-3.30%	-3.54%	-3.52%	-3.36%
95		-3.37%	-3.16%	-4.08%	-4.26%	-4.25%	-4.08%	-2.76%	-3.38%	-4.12%	-4.53%	-4.30%	-4.28%
96		-3.39%	-3.19%	-4.10%	-4.29%	-4.17%	-4.05%	-2.76%	-3.38%	-4.12%	-4.53%	-4.37%	-4.18%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	

TRADE FORECASTING BETWEEN JAPAN AND EU-27

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	-3.72%	-3.64%	-3.72%	-3.74%	-3.67%	-3.52%	-1.18%	-1.15%	-1.04%	-0.89%	-0.86%	-0.82%
02		-7.44%	-8.22%	-9.06%	-9.99%	-9.55%	-9.20%	-1.62%	-1.77%	-1.43%	-1.16%	-1.12%	-1.09%
03		-3.39%	-3.37%	-3.46%	-3.58%	-3.45%	-3.32%	-0.60%	-0.56%	-0.43%	-0.27%	-0.26%	-0.25%
04		-1.15%	-1.09%	-1.24%	-1.35%	-1.30%	-1.27%	-1.03%	-1.04%	-0.88%	-0.70%	-0.68%	-0.68%
05		-3.34%	-3.31%	-3.38%	-3.48%	-3.39%	-3.29%	-0.40%	-0.35%	-0.24%	-0.08%	-0.08%	-0.08%
06	VEGETABLE PRODUCTS	-4.52%	-4.75%	-4.86%	-5.13%	-4.96%	-4.92%	-0.71%	-0.99%	-0.94%	-1.02%	-1.01%	-0.96%
07		-3.58%	-3.55%	-3.58%	-3.64%	-3.51%	-3.45%	-1.07%	-1.06%	-0.92%	-0.75%	-0.74%	-0.72%
08		-3.74%	-3.70%	-3.67%	-3.67%	-3.57%	-3.41%	-1.17%	-1.18%	-1.06%	-0.90%	-0.89%	-0.87%
09		-4.37%	-4.55%	-4.66%	-4.90%	-4.71%	-4.60%	-0.75%	-0.99%	-0.92%	-0.96%	-0.92%	-0.89%
10		-1.82%	-1.79%	-1.82%	-1.78%	-1.76%	-1.71%	-2.22%	-2.48%	-2.22%	-2.22%	-2.22%	-2.18%
11		-2.45%	-2.37%	-2.44%	-2.50%	-2.41%	-2.30%	-1.00%	-0.98%	-0.84%	-0.66%	-0.65%	-0.64%
12		-4.50%	-4.71%	-4.82%	-5.08%	-5.04%	-4.97%	-0.48%	-0.68%	-0.58%	-0.58%	-0.57%	-0.55%
13		-3.34%	-3.32%	-3.41%	-3.53%	-3.37%	-3.30%	-1.02%	-1.02%	-0.88%	-0.72%	-0.69%	-0.66%
14		-2.81%	-2.91%	-2.88%	-3.05%	-2.95%	-2.95%	-0.95%	-1.09%	-1.00%	-0.92%	-0.87%	-0.84%
15		FATS & OILS	-5.88%	-6.36%	-6.73%	-7.29%	-7.05%	-6.80%	-1.93%	-2.10%	-2.03%	-1.98%	-1.89%
16	PREPARED FOODSTUFFS	-6.47%	-7.01%	-7.60%	-8.24%	-8.01%	-7.96%	-1.11%	-1.11%	-0.94%	-0.75%	-0.73%	-0.73%
17		-1.17%	-1.11%	-1.24%	-1.35%	-1.32%	-1.31%	-0.82%	-0.86%	-0.76%	-0.59%	-0.59%	-0.57%
18		-3.52%	-3.52%	-3.61%	-3.74%	-3.59%	-3.53%	-0.98%	-1.00%	-0.87%	-0.73%	-0.70%	-0.70%
19		-3.42%	-3.41%	-3.50%	-3.62%	-3.54%	-3.53%	-1.02%	-1.00%	-0.86%	-0.69%	-0.66%	-0.64%
20		-3.42%	-3.41%	-3.50%	-3.62%	-3.47%	-3.34%	-1.02%	-1.00%	-0.86%	-0.69%	-0.67%	-0.64%
21		-2.88%	-2.84%	-2.94%	-3.05%	-2.98%	-2.98%	-1.02%	-1.00%	-0.86%	-0.69%	-0.69%	-0.66%
22		-1.37%	-1.25%	-1.32%	-1.34%	-1.30%	-1.27%	-0.76%	-0.66%	-0.53%	-0.33%	-0.33%	-0.31%
23		-5.38%	-5.75%	-6.01%	-6.44%	-6.41%	-6.24%	-0.91%	-0.88%	-0.67%	-0.48%	-0.48%	-0.46%
24		-1.42%	-1.30%	-1.37%	-1.39%	-1.39%	-1.33%	-0.74%	-0.73%	-0.62%	-0.49%	-0.48%	-0.46%
25		MINERAL PRODUCTS	-1.41%	-1.44%	-1.41%	-1.39%	-1.36%	-1.36%	-1.17%	-1.17%	-1.00%	-0.81%	-0.78%
26	-0.86%		-0.91%	-0.87%	-0.83%	-0.82%	-0.79%	-0.93%	-0.94%	-0.82%	-0.67%	-0.64%	-0.61%
27	0.47%		0.67%	0.88%	1.01%	1.06%	1.08%	2.32%	2.79%	3.22%	3.71%	3.84%	3.97%
28	CHEMICAL PRODUCTS	-2.16%	-2.27%	-2.40%	-2.62%	-2.49%	-2.48%	-2.12%	-2.33%	-2.31%	-2.30%	-2.22%	-2.16%
29		-2.25%	-2.38%	-2.52%	-2.75%	-2.75%	-2.63%	-2.26%	-2.50%	-2.50%	-2.52%	-2.48%	-2.37%
30		-2.31%	-2.44%	-2.58%	-2.80%	-2.73%	-2.67%	-2.27%	-2.51%	-2.51%	-2.53%	-2.48%	-2.48%
31		-2.24%	-2.36%	-2.50%	-2.73%	-2.72%	-2.64%	-2.26%	-2.50%	-2.50%	-2.51%	-2.51%	-2.40%
32		-2.25%	-2.38%	-2.52%	-2.75%	-2.74%	-2.69%	-2.26%	-2.50%	-2.50%	-2.52%	-2.43%	-2.40%
33		-2.25%	-2.38%	-2.52%	-2.75%	-2.71%	-2.63%	-2.26%	-2.50%	-2.50%	-2.52%	-2.49%	-2.39%
34		-2.39%	-2.51%	-2.66%	-2.89%	-2.82%	-2.74%	-2.40%	-2.64%	-2.65%	-2.67%	-2.59%	-2.59%
35		-2.18%	-2.26%	-2.40%	-2.59%	-2.55%	-2.52%	-2.24%	-2.48%	-2.48%	-2.49%	-2.37%	-2.26%
36		-3.64%	-3.75%	-3.94%	-4.18%	-3.99%	-3.79%	-3.47%	-3.78%	-3.83%	-3.90%	-3.76%	-3.70%
37		-2.25%	-2.38%	-2.52%	-2.75%	-2.66%	-2.56%	-2.26%	-2.50%	-2.50%	-2.52%	-2.48%	-2.41%
38		-2.42%	-2.54%	-2.69%	-2.91%	-2.91%	-2.76%	-2.26%	-2.49%	-2.47%	-2.46%	-2.36%	-2.28%
39	PLASTICS	-2.25%	-2.38%	-2.52%	-2.75%	-2.75%	-2.63%	-2.26%	-2.50%	-2.50%	-2.52%	-2.47%	-2.40%
40		-2.25%	-2.37%	-2.52%	-2.74%	-2.66%	-2.60%	-2.26%	-2.50%	-2.50%	-2.52%	-2.51%	-2.39%
41	LEATHER GOODS	-9.83%	-10.08%	-10.46%	-10.86%	-10.64%	-10.55%	-5.48%	-5.99%	-6.12%	-6.35%	-6.25%	-6.08%
42		-9.50%	-9.73%	-10.10%	-10.50%	-10.26%	-10.17%	-5.50%	-6.00%	-6.20%	-6.46%	-6.35%	-6.24%
43		-3.96%	-3.89%	-3.96%	-4.00%	-3.95%	-3.80%	-1.18%	-1.15%	-1.04%	-0.89%	-0.87%	-0.85%
44	WOOD PRODUCTS	-3.39%	-3.43%	-3.51%	-3.69%	-3.54%	-3.44%	-2.10%	-2.28%	-2.27%	-2.26%	-2.23%	-2.21%
45		-3.41%	-3.45%	-3.52%	-3.69%	-3.61%	-3.45%	-1.57%	-1.65%	-1.61%	-1.54%	-1.53%	-1.53%
46		-3.49%	-3.53%	-3.61%	-3.79%	-3.72%	-3.68%	-1.86%	-1.89%	-1.87%	-1.79%	-1.72%	-1.70%
47	PAPER	-2.28%	-2.34%	-2.57%	-2.81%	-2.72%	-2.63%	-1.26%	-1.28%	-1.07%	-0.85%	-0.81%	-0.80%
48		-2.28%	-2.34%	-2.57%	-2.81%	-2.77%	-2.64%	-1.26%	-1.28%	-1.07%	-0.85%	-0.84%	-0.82%
49		-2.28%	-2.34%	-2.57%	-2.81%	-2.81%	-2.71%	-1.26%	-1.28%	-1.07%	-0.85%	-0.82%	-0.81%

TRADE FORECASTING BETWEEN JAPAN AND EU-27 (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-10.20%	-10.49%	-10.82%	-11.19%	-10.97%	-10.66%	-2.55%	-2.83%	-2.87%	-2.95%	-2.93%	-2.84%
51		-10.19%	-10.48%	-10.81%	-11.18%	-10.78%	-10.30%	-2.55%	-2.83%	-2.87%	-2.95%	-2.93%	-2.79%
52		-10.20%	-10.50%	-10.82%	-11.19%	-11.18%	-10.85%	-2.55%	-2.83%	-2.87%	-2.95%	-2.83%	-2.71%
53		-9.43%	-9.63%	-9.84%	-10.06%	-9.57%	-9.57%	-2.55%	-2.83%	-2.86%	-2.95%	-2.89%	-2.75%
54		-10.22%	-10.52%	-10.85%	-11.23%	-10.92%	-10.73%	-2.55%	-2.83%	-2.87%	-2.95%	-2.85%	-2.76%
55		-10.22%	-10.52%	-10.85%	-11.23%	-10.76%	-10.39%	-2.55%	-2.83%	-2.87%	-2.95%	-2.86%	-2.83%
56		-10.22%	-10.52%	-10.85%	-11.23%	-11.13%	-10.69%	-2.55%	-2.83%	-2.87%	-2.95%	-2.86%	-2.85%
57		-10.22%	-10.52%	-10.85%	-11.23%	-10.92%	-10.68%	-2.55%	-2.83%	-2.87%	-2.95%	-2.95%	-2.81%
58		-10.22%	-10.52%	-10.85%	-11.23%	-10.77%	-10.74%	-2.55%	-2.83%	-2.87%	-2.95%	-2.95%	-2.88%
59		-5.52%	-5.60%	-5.76%	-5.97%	-5.92%	-5.79%	-3.49%	-3.81%	-3.86%	-3.95%	-3.85%	-3.79%
60		-10.22%	-10.52%	-10.85%	-11.23%	-10.72%	-10.20%	-2.55%	-2.83%	-2.87%	-2.95%	-2.95%	-2.95%
61		-9.09%	-9.21%	-9.53%	-9.85%	-9.57%	-9.39%	-2.92%	-3.23%	-3.28%	-3.38%	-3.27%	-3.17%
62		-9.04%	-9.16%	-9.47%	-9.80%	-9.54%	-9.41%	-3.31%	-3.64%	-3.71%	-3.84%	-3.82%	-3.66%
63	-9.17%	-9.40%	-9.68%	-10.00%	-9.79%	-9.47%	-2.51%	-2.75%	-2.71%	-2.71%	-2.59%	-2.49%	
64	FOOTWEAR	-9.91%	-10.16%	-10.55%	-10.96%	-10.90%	-10.37%	-5.64%	-6.18%	-6.33%	-6.60%	-6.31%	-6.23%
65		-6.97%	-6.98%	-7.14%	-7.31%	-7.27%	-7.26%	-2.38%	-2.63%	-2.64%	-2.67%	-2.62%	-2.58%
66		-6.73%	-6.94%	-7.39%	-7.84%	-7.76%	-7.52%	-5.56%	-6.07%	-6.28%	-6.54%	-6.53%	-6.36%
67		-6.73%	-6.94%	-7.39%	-7.84%	-7.45%	-7.27%	-5.56%	-6.07%	-6.28%	-6.54%	-6.31%	-6.19%
68	STONE & GLASS	-3.80%	-3.83%	-4.01%	-4.20%	-4.08%	-4.06%	-1.69%	-1.74%	-1.57%	-1.40%	-1.37%	-1.31%
69		-3.80%	-3.83%	-4.01%	-4.20%	-4.15%	-4.11%	-1.69%	-1.74%	-1.57%	-1.40%	-1.37%	-1.35%
70		-3.89%	-3.92%	-4.10%	-4.28%	-4.22%	-4.00%	-1.70%	-1.75%	-1.59%	-1.42%	-1.40%	-1.35%
71	PRECIOUS STONES	-4.03%	-4.22%	-4.37%	-4.61%	-4.50%	-4.50%	-4.04%	-4.38%	-4.45%	-4.53%	-4.51%	-4.49%
72	BASE METALS	-1.57%	-1.53%	-1.51%	-1.49%	-1.45%	-1.42%	-2.75%	-2.95%	-2.97%	-2.96%	-2.96%	-2.95%
73		-4.11%	-4.15%	-4.32%	-4.50%	-4.41%	-4.25%	-2.68%	-2.87%	-2.75%	-2.64%	-2.54%	-2.46%
74		-1.93%	-1.93%	-2.05%	-2.19%	-2.10%	-2.09%	-1.22%	-1.19%	-0.97%	-0.72%	-0.71%	-0.71%
75		-2.06%	-2.34%	-2.38%	-2.61%	-2.57%	-2.56%	-1.64%	-1.80%	-1.75%	-1.69%	-1.61%	-1.58%
76		-2.60%	-2.81%	-2.88%	-3.10%	-2.99%	-2.87%	-2.13%	-2.30%	-2.22%	-2.14%	-2.07%	-2.02%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		-2.04%	-2.32%	-2.36%	-2.59%	-2.58%	-2.54%	-1.61%	-1.77%	-1.73%	-1.66%	-1.61%	-1.57%
79		-2.04%	-2.32%	-2.36%	-2.59%	-2.53%	-2.50%	-1.61%	-1.77%	-1.73%	-1.66%	-1.62%	-1.54%
80		-2.09%	-2.37%	-2.41%	-2.64%	-2.56%	-2.52%	-1.67%	-1.84%	-1.79%	-1.72%	-1.70%	-1.68%
81		-1.84%	-2.15%	-2.18%	-2.42%	-2.41%	-2.40%	-1.36%	-1.52%	-1.50%	-1.44%	-1.42%	-1.41%
82		-4.25%	-4.28%	-4.47%	-4.68%	-4.62%	-4.50%	-2.85%	-3.05%	-2.94%	-2.82%	-2.70%	-2.58%
83		-4.25%	-4.28%	-4.47%	-4.68%	-4.67%	-4.56%	-2.85%	-3.05%	-2.94%	-2.82%	-2.73%	-2.64%
84	MACHINE	-4.93%	-5.08%	-5.36%	-5.65%	-5.52%	-5.26%	-2.52%	-2.67%	-2.49%	-2.31%	-2.25%	-2.14%
85		-5.17%	-5.34%	-5.62%	-5.95%	-5.83%	-5.62%	-3.70%	-3.94%	-3.80%	-3.71%	-3.67%	-3.67%
86	VEHICLES	-2.89%	-3.26%	-3.72%	-4.18%	-4.04%	-3.85%	-2.02%	-2.25%	-2.14%	-2.04%	-1.96%	-1.87%
87		-2.03%	-2.00%	-2.16%	-2.31%	-2.21%	-2.17%	-1.29%	-1.27%	-1.06%	-0.81%	-0.77%	-0.77%
88		-3.19%	-3.68%	-4.24%	-4.82%	-4.81%	-4.80%	-2.20%	-2.48%	-2.40%	-2.34%	-2.33%	-2.29%
89		-3.17%	-3.66%	-4.23%	-4.80%	-4.66%	-4.63%	-2.20%	-2.48%	-2.40%	-2.34%	-2.33%	-2.32%
90	CLOCKS & MUSICAL INST.	-5.37%	-5.56%	-5.87%	-6.20%	-6.14%	-6.01%	-2.43%	-2.58%	-2.40%	-2.22%	-2.22%	-2.12%
91		-5.44%	-5.62%	-5.93%	-6.26%	-6.06%	-6.02%	-2.43%	-2.57%	-2.39%	-2.22%	-2.15%	-2.10%
92		-6.73%	-6.94%	-7.39%	-7.84%	-7.58%	-7.53%	-5.56%	-6.07%	-6.28%	-6.54%	-6.27%	-5.97%
93	ARMS	-5.34%	-5.52%	-5.83%	-6.16%	-6.09%	-5.94%	-2.43%	-2.58%	-2.40%	-2.22%	-2.15%	-2.14%
94	MISC. ART.	-6.03%	-6.22%	-6.58%	-6.96%	-6.78%	-6.50%	-3.75%	-4.02%	-3.98%	-3.94%	-3.85%	-3.70%
95		-6.73%	-6.94%	-7.39%	-7.84%	-7.83%	-7.56%	-5.56%	-6.07%	-6.28%	-6.54%	-6.38%	-6.37%
96		-6.83%	-7.04%	-7.49%	-7.93%	-7.73%	-7.59%	-5.56%	-6.07%	-6.28%	-6.54%	-6.31%	-6.20%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	

TRADE FORECASTING BETWEEN SOUTH KOREA AND AUSTRALIA

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.63%	0.63%	0.81%	1.03%	1.08%	1.11%	-0.92%	-1.02%	-0.94%	-0.85%	-0.82%	-0.82%
02		-0.06%	-0.02%	0.21%	0.46%	0.47%	0.47%	6.88%	6.42%	6.12%	5.76%	5.94%	6.14%
03		-1.93%	-2.07%	-2.04%	-2.01%	-1.92%	-1.86%	1.44%	1.29%	1.43%	1.44%	1.44%	1.50%
04		0.16%	0.15%	0.30%	0.41%	0.42%	0.44%	3.70%	3.57%	3.63%	3.62%	3.66%	3.82%
05		-0.08%	-0.10%	0.08%	0.29%	0.30%	0.31%	2.29%	2.38%	2.80%	3.16%	3.21%	3.34%
06	VEGETABLE PRODUCTS	-2.04%	-2.03%	-1.71%	-1.49%	-1.45%	-1.40%	13.02%	12.23%	11.89%	11.33%	11.68%	11.84%
07		-3.57%	-3.62%	-3.42%	-3.30%	-3.25%	-3.23%	1.77%	1.61%	1.73%	1.72%	1.76%	1.77%
08		-5.06%	-5.05%	-4.72%	-4.52%	-4.36%	-4.35%	2.46%	2.26%	2.34%	2.30%	2.33%	2.42%
09		-6.87%	-7.22%	-7.18%	-7.31%	-7.13%	-6.99%	3.04%	2.95%	3.15%	3.20%	3.29%	3.36%
10		-6.60%	-7.25%	-7.77%	-8.14%	-7.83%	-7.73%	7.33%	6.54%	6.81%	6.41%	6.73%	7.03%
11		-0.93%	-1.05%	-1.03%	-0.98%	-0.98%	-0.96%	1.44%	1.29%	1.43%	1.44%	1.45%	1.45%
12		-6.63%	-6.97%	-6.92%	-7.04%	-6.97%	-6.85%	4.64%	4.55%	4.77%	4.80%	4.96%	5.17%
13		1.02%	0.97%	1.11%	1.21%	1.23%	1.27%	1.45%	1.30%	1.43%	1.44%	1.47%	1.53%
14		1.83%	1.77%	1.91%	2.00%	2.10%	2.15%	2.17%	2.05%	2.42%	2.49%	2.61%	2.63%
15		FATS & OILS	-0.07%	-0.03%	0.20%	0.44%	0.46%	0.48%	-3.16%	-3.77%	-4.09%	-4.53%	-4.53%
16	PREPARED FOODSTUFFS	-2.31%	-2.50%	-2.50%	-2.55%	-2.44%	-2.41%	1.50%	1.35%	1.48%	1.49%	1.50%	1.55%
17		0.76%	0.59%	0.68%	0.71%	0.73%	0.74%	4.29%	4.14%	4.17%	4.15%	4.27%	4.44%
18		-2.93%	-3.08%	-3.01%	-2.99%	-2.86%	-2.81%	1.49%	1.34%	1.48%	1.49%	1.54%	1.60%
19		-2.01%	-2.16%	-2.14%	-2.12%	-2.07%	-2.03%	1.45%	1.30%	1.43%	1.44%	1.45%	1.49%
20		-2.01%	-2.16%	-2.14%	-2.12%	-2.06%	-2.05%	1.45%	1.30%	1.43%	1.44%	1.50%	1.54%
21		-1.01%	-1.08%	-0.98%	-0.91%	-0.90%	-0.90%	1.58%	1.44%	1.57%	1.58%	1.66%	1.73%
22		0.34%	0.23%	0.21%	0.27%	0.28%	0.29%	1.22%	1.17%	1.33%	1.43%	1.46%	1.52%
23		0.49%	0.38%	0.55%	0.60%	0.61%	0.62%	1.50%	1.35%	1.49%	1.50%	1.54%	1.60%
24		0.01%	-0.09%	-0.08%	0.00%	0.00%	0.00%	1.40%	1.35%	1.52%	1.64%	1.69%	1.74%
25		MINERAL PRODUCTS	2.30%	2.39%	2.53%	2.72%	2.74%	2.81%	-0.42%	-0.61%	-0.51%	-0.52%	-0.51%
26	2.30%		2.39%	2.53%	2.72%	2.80%	2.88%	-3.26%	-3.95%	-4.37%	-4.92%	-4.87%	-4.66%
27	1.89%		2.22%	2.49%	3.09%	3.17%	3.26%	2.32%	2.54%	3.07%	3.45%	3.49%	3.52%
28	CHEMICAL PRODUCTS	3.23%	3.58%	3.99%	4.33%	4.52%	4.75%	-2.46%	-2.99%	-3.21%	-3.51%	-3.34%	-3.27%
29		3.10%	3.51%	3.98%	4.37%	4.45%	4.59%	-3.59%	-4.38%	-4.89%	-5.53%	-5.33%	-5.10%
30		3.00%	3.41%	3.89%	4.28%	4.28%	4.30%	-3.63%	-4.41%	-4.91%	-5.55%	-5.39%	-5.35%
31		2.45%	2.60%	2.80%	3.03%	3.11%	3.22%	-3.60%	-4.39%	-4.90%	-5.55%	-5.47%	-5.40%
32		3.11%	3.52%	3.99%	4.38%	4.41%	4.50%	-3.60%	-4.39%	-4.90%	-5.55%	-5.46%	-5.40%
33		3.11%	3.52%	3.99%	4.38%	4.56%	4.73%	-3.60%	-4.39%	-4.90%	-5.55%	-5.40%	-5.33%
34		3.08%	3.49%	3.96%	4.34%	4.38%	4.48%	-3.59%	-4.38%	-4.89%	-5.53%	-5.47%	-5.42%
35		1.55%	1.78%	2.14%	2.44%	2.54%	2.64%	-2.61%	-3.24%	-3.57%	-4.00%	-3.91%	-3.80%
36		2.72%	3.10%	3.56%	3.94%	4.04%	4.06%	-3.50%	-4.24%	-4.70%	-5.29%	-5.10%	-4.87%
37		3.11%	3.52%	3.99%	4.38%	4.53%	4.55%	-3.60%	-4.39%	-4.90%	-5.55%	-5.54%	-5.44%
38		3.03%	3.43%	3.90%	4.28%	4.46%	4.63%	-3.27%	-4.00%	-4.43%	-4.99%	-4.93%	-4.70%
39	PLASTICS	3.11%	3.52%	3.99%	4.38%	4.48%	4.69%	-3.60%	-4.39%	-4.90%	-5.55%	-5.32%	-5.16%
40		2.73%	3.00%	3.38%	3.68%	3.79%	3.79%	-3.60%	-4.39%	-4.90%	-5.55%	-5.38%	-5.20%
41	LEATHER GOODS	-5.63%	-5.82%	-5.84%	-5.94%	-5.81%	-5.58%	-6.55%	-6.78%	-6.76%	-6.89%	-6.73%	-6.43%
42		-6.20%	-6.45%	-6.54%	-6.72%	-6.62%	-6.53%	-4.37%	-4.66%	-4.72%	-4.90%	-4.87%	-4.82%
43		-0.51%	-0.66%	-0.69%	-0.68%	-0.66%	-0.65%	-0.92%	-1.03%	-0.94%	-0.86%	-0.84%	-0.82%
44	WOOD PRODUCTS	0.70%	0.68%	0.88%	1.00%	1.00%	1.00%	-2.35%	-2.86%	-3.06%	-3.37%	-3.21%	-3.16%
45		1.17%	1.13%	1.30%	1.40%	1.43%	1.49%	-0.36%	-0.51%	-0.33%	-0.31%	-0.30%	-0.30%
46		-1.78%	-1.83%	-1.60%	-1.54%	-1.51%	-1.49%	-0.36%	-0.51%	-0.33%	-0.31%	-0.31%	-0.31%
47	PAPER	0.48%	0.43%	0.57%	0.62%	0.64%	0.64%	1.00%	0.83%	0.94%	0.91%	0.93%	0.96%
48		0.48%	0.43%	0.57%	0.62%	0.64%	0.65%	1.00%	0.83%	0.94%	0.91%	0.96%	0.98%
49		0.48%	0.43%	0.57%	0.62%	0.64%	0.67%	1.00%	0.83%	0.94%	0.91%	0.91%	0.96%

TRADE FORECASTING BETWEEN SOUTH KOREA AND AUSTRALIA (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-5.59%	-5.65%	-5.61%	-5.68%	-5.57%	-5.46%	-4.34%	-4.60%	-4.58%	-4.63%	-4.43%	-4.32%
51		-5.59%	-5.65%	-5.61%	-5.67%	-5.51%	-5.42%	-4.22%	-4.43%	-4.36%	-4.32%	-4.12%	-4.10%
52		-3.36%	-3.34%	-3.20%	-3.12%	-3.00%	-2.88%	-4.72%	-5.12%	-5.29%	-5.59%	-5.44%	-5.20%
53		-0.75%	-0.77%	-0.63%	-0.53%	-0.51%	-0.49%	-4.72%	-5.12%	-5.29%	-5.59%	-5.43%	-5.17%
54		-5.59%	-5.65%	-5.62%	-5.68%	-5.53%	-5.49%	-4.72%	-5.12%	-5.29%	-5.59%	-5.49%	-5.31%
55		-5.59%	-5.65%	-5.62%	-5.68%	-5.51%	-5.37%	-4.72%	-5.12%	-5.29%	-5.59%	-5.39%	-5.37%
56		-5.59%	-5.65%	-5.62%	-5.68%	-5.51%	-5.49%	-4.72%	-5.12%	-5.29%	-5.59%	-5.48%	-5.21%
57		-5.59%	-5.65%	-5.62%	-5.68%	-5.41%	-5.18%	-4.72%	-5.12%	-5.29%	-5.59%	-5.58%	-5.38%
58		-5.59%	-5.65%	-5.62%	-5.68%	-5.40%	-5.25%	-4.72%	-5.12%	-5.29%	-5.59%	-5.34%	-5.27%
59		-1.03%	-0.69%	-0.25%	0.14%	0.15%	0.15%	-3.51%	-3.97%	-4.17%	-4.50%	-4.42%	-4.27%
60		-5.59%	-5.65%	-5.62%	-5.68%	-5.54%	-5.46%	-4.72%	-5.12%	-5.29%	-5.59%	-5.44%	-5.31%
61		-5.58%	-5.65%	-5.62%	-5.68%	-5.62%	-5.43%	-4.55%	-4.88%	-4.98%	-5.19%	-4.94%	-4.74%
62		-5.51%	-5.61%	-5.61%	-5.65%	-5.38%	-5.27%	-4.33%	-4.55%	-4.56%	-4.68%	-4.62%	-4.49%
63	-5.36%	-5.41%	-5.36%	-5.41%	-5.29%	-5.10%	-4.05%	-4.38%	-4.45%	-4.65%	-4.58%	-4.37%	
64	FOOTWEAR	-6.50%	-6.74%	-6.83%	-7.00%	-6.72%	-6.54%	-6.55%	-6.79%	-6.77%	-6.89%	-6.66%	-6.49%
65		2.93%	3.34%	3.82%	4.22%	4.22%	4.30%	-3.72%	-4.42%	-4.85%	-5.40%	-5.23%	-5.22%
66		-3.06%	-3.39%	-3.66%	-3.96%	-3.87%	-3.81%	-2.81%	-3.22%	-3.39%	-3.67%	-3.52%	-3.41%
67		-3.06%	-3.39%	-3.66%	-3.96%	-3.87%	-3.77%	-2.81%	-3.22%	-3.39%	-3.67%	-3.59%	-3.42%
68	STONE & GLASS	-0.91%	-0.89%	-0.81%	-0.74%	-0.72%	-0.72%	0.57%	0.50%	0.72%	0.80%	0.81%	0.81%
69		-0.91%	-0.89%	-0.81%	-0.74%	-0.71%	-0.68%	0.57%	0.50%	0.72%	0.80%	0.84%	0.85%
70		-1.28%	-1.24%	-1.15%	-1.08%	-1.06%	-1.03%	0.30%	0.23%	0.44%	0.53%	0.54%	0.55%
71	PRECIOUS STONES	0.33%	0.29%	0.38%	0.38%	0.40%	0.41%	-0.15%	-0.25%	0.03%	0.06%	0.06%	0.07%
72	BASE METALS	0.90%	1.22%	1.55%	1.88%	1.95%	2.03%	1.02%	1.03%	1.25%	1.39%	1.39%	1.43%
73		0.79%	1.10%	1.42%	1.74%	1.83%	1.87%	0.93%	0.91%	1.13%	1.26%	1.29%	1.30%
74		-1.25%	-1.43%	-1.45%	-1.68%	-1.65%	-1.61%	1.49%	1.47%	1.71%	1.81%	1.84%	1.93%
75		-1.64%	-1.89%	-1.96%	-2.28%	-2.23%	-2.16%	0.19%	0.13%	0.45%	0.50%	0.51%	0.52%
76		-1.64%	-1.89%	-1.96%	-2.28%	-2.19%	-2.12%	0.24%	0.18%	0.49%	0.55%	0.58%	0.60%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		-1.64%	-1.89%	-1.96%	-2.28%	-2.26%	-2.25%	0.18%	0.12%	0.45%	0.50%	0.52%	0.52%
79		-1.64%	-1.89%	-1.96%	-2.28%	-2.27%	-2.22%	0.18%	0.12%	0.45%	0.50%	0.51%	0.53%
80		-1.64%	-1.89%	-1.96%	-2.28%	-2.27%	-2.20%	0.19%	0.13%	0.45%	0.51%	0.52%	0.54%
81		-1.64%	-1.89%	-1.96%	-2.28%	-2.22%	-2.16%	0.17%	0.11%	0.43%	0.49%	0.51%	0.51%
82		-2.35%	-2.34%	-2.26%	-2.22%	-2.15%	-2.14%	0.58%	0.52%	0.74%	0.85%	0.85%	0.88%
83		-2.35%	-2.34%	-2.26%	-2.22%	-2.15%	-2.05%	0.58%	0.52%	0.74%	0.85%	0.88%	0.91%
84	MACHINE	-0.16%	-0.12%	-0.03%	0.00%	0.00%	0.00%	0.66%	0.59%	0.85%	0.95%	0.99%	1.03%
85		-0.63%	-0.60%	-0.45%	-0.45%	-0.43%	-0.42%	-1.00%	-1.13%	-0.86%	-0.79%	-0.78%	-0.75%
86	VEHICLES	0.06%	-0.18%	-0.32%	-0.44%	-0.44%	-0.42%	1.86%	1.81%	2.02%	2.11%	2.17%	2.21%
87		0.43%	0.47%	0.55%	0.66%	0.68%	0.71%	1.74%	1.73%	1.94%	2.05%	2.14%	2.19%
88		-0.21%	-0.62%	-0.90%	-1.17%	-1.16%	-1.12%	2.14%	1.93%	2.13%	2.12%	2.20%	2.22%
89		-0.16%	-0.57%	-0.86%	-1.13%	-1.12%	-1.09%	2.37%	2.14%	2.34%	2.32%	2.40%	2.50%
90	CLOCKS & MUSICAL INST.	-0.81%	-0.81%	-0.77%	-0.81%	-0.79%	-0.77%	1.66%	1.56%	1.79%	1.87%	1.94%	1.94%
91		-0.86%	-0.87%	-0.82%	-0.86%	-0.82%	-0.78%	1.66%	1.56%	1.79%	1.87%	1.96%	1.98%
92		-3.06%	-3.39%	-3.66%	-3.96%	-3.93%	-3.91%	-2.81%	-3.22%	-3.39%	-3.67%	-3.64%	-3.58%
93	ARMS	-0.82%	-0.83%	-0.78%	-0.82%	-0.82%	-0.79%	1.63%	1.53%	1.76%	1.84%	1.93%	1.99%
94	MISC. ART.	-1.31%	-1.33%	-1.28%	-1.28%	-1.28%	-1.22%	0.04%	-0.12%	0.03%	0.05%	0.05%	0.05%
95		-3.06%	-3.39%	-3.66%	-3.96%	-3.80%	-3.70%	-2.81%	-3.22%	-3.39%	-3.67%	-3.53%	-3.44%
96		-3.21%	-3.53%	-3.79%	-4.08%	-4.04%	-3.95%	-2.82%	-3.23%	-3.40%	-3.68%	-3.56%	-3.50%
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

TRADE FORECASTING BETWEEN SOUTH KOREA AND CHINA

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	3.15%	3.00%	2.94%	2.96%	2.97%	3.09%	1.61%	1.46%	1.38%	1.37%	1.39%	1.44%
02		14.40%	13.87%	13.40%	13.03%	13.68%	13.79%	1.51%	1.02%	0.68%	0.29%	0.29%	0.30%
03		3.54%	3.36%	3.31%	3.34%	3.41%	3.44%	2.09%	2.04%	2.10%	2.14%	2.23%	2.23%
04		4.87%	4.72%	4.73%	4.82%	4.97%	5.06%	1.56%	1.47%	1.47%	1.47%	1.50%	1.50%
05		3.17%	3.02%	3.01%	3.06%	3.09%	3.13%	1.99%	1.94%	2.01%	2.06%	2.07%	2.11%
06	VEGETABLE PRODUCTS	3.17%	2.88%	2.81%	2.73%	2.76%	2.77%	18.31%	17.50%	17.10%	16.49%	16.92%	17.66%
07		2.58%	2.47%	2.54%	2.63%	2.70%	2.76%	3.20%	3.00%	3.04%	2.96%	3.08%	3.20%
08		0.81%	0.79%	1.02%	1.20%	1.24%	1.29%	4.31%	3.92%	3.93%	3.71%	3.80%	3.93%
09		3.45%	3.17%	3.10%	3.03%	3.09%	3.21%	15.31%	14.97%	14.92%	14.64%	15.37%	15.43%
10		3.86%	3.63%	3.47%	3.41%	3.45%	3.62%	3.83%	3.49%	3.20%	2.93%	2.97%	3.08%
11		4.09%	3.85%	3.76%	3.74%	3.81%	3.83%	2.25%	2.20%	2.25%	2.30%	2.38%	2.46%
12		4.44%	4.24%	4.17%	4.16%	4.25%	4.41%	16.67%	16.13%	15.93%	15.51%	15.73%	16.10%
13		4.15%	3.91%	3.82%	3.80%	3.93%	4.12%	2.22%	2.17%	2.24%	2.28%	2.34%	2.41%
14		9.48%	9.32%	9.51%	9.58%	9.64%	9.67%	4.90%	5.04%	5.43%	5.63%	5.86%	6.01%
15		FATS & OILS	10.31%	10.09%	10.22%	10.20%	10.51%	11.02%	0.94%	0.45%	0.08%	-0.36%	-0.34%
16	PREPARED FOODSTUFFS	6.24%	6.09%	6.08%	6.12%	6.24%	6.34%	2.14%	2.09%	2.14%	2.17%	2.26%	2.27%
17		10.62%	10.62%	10.83%	11.05%	11.17%	11.68%	0.17%	0.08%	0.14%	0.16%	0.16%	0.17%
18		4.07%	3.83%	3.74%	3.71%	3.84%	3.85%	3.68%	3.76%	3.98%	4.16%	4.37%	4.57%
19		4.12%	3.88%	3.79%	3.76%	3.88%	4.07%	2.15%	2.10%	2.16%	2.20%	2.30%	2.41%
20		4.12%	3.88%	3.79%	3.76%	3.90%	3.90%	2.15%	2.10%	2.16%	2.20%	2.25%	2.35%
21		4.13%	3.89%	3.80%	3.78%	3.85%	4.04%	2.14%	2.09%	2.14%	2.19%	2.25%	2.36%
22		2.82%	2.67%	2.62%	2.68%	2.75%	2.76%	3.35%	3.33%	3.37%	3.45%	3.48%	3.56%
23		8.08%	7.92%	8.06%	8.12%	8.50%	8.55%	1.75%	1.66%	1.78%	1.80%	1.84%	1.91%
24		2.78%	2.60%	2.54%	2.56%	2.63%	2.76%	6.32%	6.46%	6.71%	6.93%	7.00%	7.35%
25		MINERAL PRODUCTS	3.90%	3.96%	4.05%	4.22%	4.33%	4.38%	5.98%	6.08%	6.23%	6.44%	6.68%
26	3.58%		3.71%	3.87%	4.09%	4.23%	4.23%	5.16%	5.14%	5.20%	5.34%	5.56%	5.62%
27	4.94%		4.94%	5.27%	5.45%	5.51%	5.64%	7.74%	8.09%	8.45%	8.84%	9.06%	9.13%
28	CHEMICAL PRODUCTS	9.83%	9.93%	10.11%	10.32%	10.72%	10.92%	1.63%	1.21%	0.90%	0.60%	0.61%	0.61%
29		9.97%	10.08%	10.25%	10.46%	10.50%	10.89%	0.73%	0.13%	-0.38%	-0.92%	-0.92%	-0.88%
30		9.53%	9.63%	9.81%	10.02%	10.18%	10.32%	0.76%	0.17%	-0.33%	-0.87%	-0.87%	-0.84%
31		9.71%	9.83%	10.02%	10.23%	10.68%	11.04%	0.75%	0.15%	-0.35%	-0.90%	-0.86%	-0.85%
32		9.99%	10.10%	10.27%	10.47%	10.60%	10.87%	0.73%	0.13%	-0.38%	-0.93%	-0.92%	-0.90%
33		9.99%	10.10%	10.27%	10.47%	10.53%	10.93%	0.73%	0.13%	-0.38%	-0.93%	-0.91%	-0.90%
34		9.83%	9.88%	10.00%	10.17%	10.60%	10.82%	0.74%	0.15%	-0.36%	-0.90%	-0.86%	-0.84%
35		8.59%	8.67%	8.85%	9.07%	9.16%	9.30%	0.76%	0.17%	-0.33%	-0.86%	-0.85%	-0.84%
36		9.02%	8.81%	8.68%	8.65%	9.00%	9.42%	0.88%	0.34%	-0.11%	-0.60%	-0.58%	-0.56%
37		9.99%	10.10%	10.27%	10.47%	10.50%	10.71%	0.73%	0.13%	-0.38%	-0.93%	-0.93%	-0.90%
38		9.34%	9.41%	9.55%	9.72%	10.00%	10.27%	0.88%	0.33%	-0.13%	-0.63%	-0.61%	-0.60%
39	PLASTICS	9.99%	10.10%	10.27%	10.47%	10.67%	10.82%	0.73%	0.13%	-0.38%	-0.93%	-0.92%	-0.90%
40		9.99%	10.09%	10.27%	10.47%	10.62%	11.08%	0.73%	0.13%	-0.38%	-0.92%	-0.89%	-0.87%
41	LEATHER GOODS	5.34%	4.91%	4.61%	4.40%	4.56%	4.62%	0.86%	0.75%	0.76%	0.66%	0.67%	0.70%
42		5.55%	5.16%	4.90%	4.73%	4.93%	5.11%	1.39%	1.33%	1.37%	1.33%	1.35%	1.37%
43		3.15%	3.00%	2.94%	2.96%	2.98%	3.03%	1.61%	1.46%	1.38%	1.37%	1.37%	1.40%
44	WOOD PRODUCTS	3.62%	3.40%	3.45%	3.45%	3.49%	3.52%	0.76%	0.21%	-0.25%	-0.75%	-0.74%	-0.71%
45		3.24%	2.97%	2.98%	2.93%	3.01%	3.05%	1.97%	1.95%	2.10%	2.17%	2.20%	2.25%
46		3.15%	2.87%	2.87%	2.81%	2.86%	2.89%	-0.07%	-0.32%	-0.43%	-0.60%	-0.58%	-0.56%
47	PAPER	7.43%	7.22%	7.21%	7.23%	7.23%	7.59%	3.47%	3.39%	3.39%	3.35%	3.40%	3.47%
48		7.43%	7.22%	7.21%	7.23%	7.26%	7.56%	3.47%	3.39%	3.39%	3.35%	3.36%	3.46%
49		7.43%	7.22%	7.21%	7.23%	7.49%	7.68%	3.47%	3.39%	3.39%	3.35%	3.41%	3.51%

TRADE FORECASTING BETWEEN SOUTH KOREA AND CHINA (Cont'd)

HS-2	SECTION	IMPORT						EXPORT						
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020	
50	TEXTILES AND TEXTILE ARTICLES	3.71%	3.42%	3.22%	3.07%	3.08%	3.11%	2.40%	2.30%	2.23%	2.11%	2.14%	2.19%	
51		3.71%	3.42%	3.22%	3.07%	3.19%	3.25%	2.40%	2.30%	2.23%	2.11%	2.16%	2.27%	
52		3.71%	3.42%	3.22%	3.07%	3.12%	3.15%	2.41%	2.32%	2.25%	2.13%	2.15%	2.17%	
53		3.71%	3.42%	3.22%	3.07%	3.21%	3.26%	2.87%	2.86%	2.89%	2.91%	3.01%	3.02%	
54		3.71%	3.42%	3.22%	3.07%	3.21%	3.33%	2.40%	2.30%	2.23%	2.11%	2.19%	2.30%	
55		3.71%	3.42%	3.22%	3.07%	3.15%	3.16%	2.40%	2.30%	2.23%	2.11%	2.12%	2.22%	
56		3.71%	3.42%	3.22%	3.07%	3.18%	3.20%	2.40%	2.30%	2.23%	2.11%	2.21%	2.30%	
57		3.71%	3.42%	3.22%	3.07%	3.08%	3.11%	2.40%	2.30%	2.23%	2.11%	2.13%	2.19%	
58		3.71%	3.42%	3.22%	3.07%	3.08%	3.19%	2.40%	2.30%	2.23%	2.11%	2.16%	2.21%	
59		5.87%	5.64%	5.51%	5.46%	5.65%	5.81%	1.68%	1.39%	1.15%	0.89%	0.89%	0.90%	
60		3.71%	3.42%	3.22%	3.07%	3.13%	3.22%	2.40%	2.30%	2.23%	2.11%	2.17%	2.24%	
61		3.74%	3.46%	3.29%	3.23%	3.30%	3.41%	2.79%	2.82%	2.88%	2.94%	3.08%	3.13%	
62		3.74%	3.47%	3.30%	3.24%	3.38%	3.49%	2.97%	3.05%	3.18%	3.31%	3.35%	3.45%	
63		3.97%	3.69%	3.49%	3.36%	3.52%	3.53%	2.55%	2.49%	2.46%	2.39%	2.39%	2.45%	
64	FOOTWEAR	5.35%	4.92%	4.61%	4.41%	4.54%	4.67%	0.86%	0.75%	0.75%	0.66%	0.69%	0.71%	
65		4.28%	4.07%	3.96%	3.98%	4.00%	4.07%	1.43%	1.05%	0.77%	0.47%	0.48%	0.49%	
66		8.44%	8.02%	7.69%	7.49%	7.71%	7.90%	2.33%	2.35%	2.40%	2.41%	2.51%	2.53%	
67		8.44%	8.02%	7.69%	7.49%	7.79%	7.79%	2.33%	2.35%	2.40%	2.41%	2.44%	2.48%	
68	STONE & GLASS	5.33%	5.18%	5.08%	5.07%	5.18%	5.36%	3.58%	3.73%	3.90%	4.08%	4.10%	4.10%	
69		5.33%	5.18%	5.08%	5.07%	5.16%	5.30%	3.58%	3.73%	3.90%	4.08%	4.17%	4.19%	
70		5.28%	5.13%	5.03%	5.02%	5.26%	5.27%	3.45%	3.57%	3.71%	3.86%	4.05%	4.18%	
71	PRECIOUS STONES	9.50%	9.27%	9.13%	9.04%	9.40%	9.59%	3.63%	3.62%	3.64%	3.69%	3.85%	3.87%	
72	BASE METALS	5.74%	5.67%	5.61%	5.63%	5.84%	5.84%	5.30%	5.54%	5.78%	6.06%	6.29%	6.51%	
73		5.90%	5.75%	5.64%	5.60%	5.79%	5.94%	4.69%	4.91%	5.15%	5.41%	5.48%	5.48%	
74		10.12%	9.97%	9.89%	9.83%	9.89%	9.97%	3.23%	3.28%	3.34%	3.45%	3.51%	3.64%	
75		10.37%	10.21%	10.12%	10.03%	10.22%	10.60%	4.03%	4.05%	4.10%	4.17%	4.29%	4.42%	
76		9.51%	9.35%	9.27%	9.20%	9.62%	10.04%	4.02%	4.06%	4.13%	4.22%	4.42%	4.63%	
77		---	---	---	---	---	---	---	---	---	---	---	---	
78		10.41%	10.24%	10.16%	10.07%	10.08%	10.44%	4.03%	4.05%	4.10%	4.17%	4.36%	4.41%	
79		10.41%	10.24%	10.16%	10.07%	10.40%	10.52%	4.03%	4.05%	4.10%	4.17%	4.24%	4.32%	
80		10.32%	10.16%	10.08%	9.99%	10.22%	10.57%	4.03%	4.05%	4.10%	4.17%	4.35%	4.56%	
81		10.68%	10.51%	10.42%	10.32%	10.48%	10.73%	4.03%	4.04%	4.09%	4.16%	4.26%	4.35%	
82		5.76%	5.43%	5.18%	5.03%	5.13%	5.26%	3.99%	4.19%	4.41%	4.62%	4.74%	4.83%	
83		5.76%	5.43%	5.18%	5.03%	5.24%	5.51%	3.99%	4.19%	4.41%	4.62%	4.78%	4.78%	
84		MACHINE	7.85%	7.55%	7.35%	7.19%	7.34%	7.68%	3.99%	4.14%	4.37%	4.56%	4.73%	4.73%
85			7.08%	6.79%	6.66%	6.53%	6.61%	6.88%	4.78%	4.82%	5.04%	5.12%	5.32%	5.36%
86	VEHICLES	9.92%	9.22%	8.69%	8.31%	8.60%	8.73%	2.56%	2.62%	2.72%	2.87%	2.93%	2.98%	
87		7.72%	7.45%	7.26%	7.17%	7.43%	7.64%	2.40%	2.48%	2.56%	2.69%	2.77%	2.88%	
88		9.86%	9.15%	8.62%	8.23%	8.61%	8.66%	2.92%	2.95%	3.09%	3.22%	3.25%	3.40%	
89		10.08%	9.34%	8.79%	8.38%	8.71%	8.79%	3.01%	3.06%	3.24%	3.41%	3.43%	3.51%	
90	CLOCKS & MUSICAL INST.	8.22%	7.91%	7.68%	7.50%	7.71%	7.79%	3.65%	3.84%	4.07%	4.29%	4.46%	4.59%	
91		8.18%	7.87%	7.63%	7.46%	7.76%	7.80%	3.64%	3.84%	4.06%	4.29%	4.40%	4.47%	
92		8.44%	8.02%	7.69%	7.49%	7.86%	7.89%	2.33%	2.35%	2.40%	2.41%	2.43%	2.45%	
93	ARMS	8.13%	7.82%	7.59%	7.42%	7.72%	8.02%	3.65%	3.85%	4.07%	4.30%	4.41%	4.63%	
94	MISC. ART.	8.20%	7.83%	7.54%	7.36%	7.50%	7.87%	3.18%	3.30%	3.45%	3.60%	3.73%	3.78%	
95		8.44%	8.02%	7.69%	7.49%	7.75%	8.13%	2.33%	2.35%	2.40%	2.41%	2.43%	2.43%	
96		8.39%	7.97%	7.64%	7.44%	7.74%	7.83%	2.31%	2.32%	2.37%	2.39%	2.43%	2.54%	
97	ARTS	---	---	---	---	---	---	---	---	---	---	---		

TRADE FORECASTING BETWEEN SOUTH KOREA AND JAPAN

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	-0.53%	-0.78%	-0.86%	-0.89%	-0.87%	-0.85%	-2.92%	-2.87%	-2.97%	-3.02%	-2.96%	-2.88%
02		-4.33%	-5.22%	-5.54%	-5.95%	-5.89%	-5.87%	-2.27%	-3.12%	-4.09%	-5.16%	-5.14%	-5.02%
03		-1.42%	-1.68%	-1.72%	-1.70%	-1.64%	-1.59%	-1.51%	-1.32%	-1.27%	-1.23%	-1.17%	-1.13%
04		-1.84%	-2.26%	-2.33%	-2.40%	-2.29%	-2.26%	0.12%	0.29%	0.25%	0.23%	0.24%	0.24%
05		-1.23%	-1.47%	-1.49%	-1.46%	-1.40%	-1.37%	-1.51%	-1.29%	-1.21%	-1.14%	-1.08%	-1.06%
06	VEGETABLE PRODUCTS	-6.70%	-7.45%	-7.71%	-8.12%	-8.07%	-7.89%	8.78%	8.10%	7.55%	6.89%	7.20%	7.50%
07		-2.37%	-2.78%	-2.86%	-2.94%	-2.88%	-2.77%	-0.93%	-1.00%	-1.12%	-1.24%	-1.22%	-1.21%
08		-2.45%	-2.85%	-2.92%	-3.00%	-2.87%	-2.86%	-0.58%	-0.77%	-0.92%	-1.07%	-1.05%	-1.02%
09		-5.07%	-5.65%	-5.80%	-6.03%	-5.95%	-5.77%	4.96%	4.79%	4.60%	4.30%	4.34%	4.46%
10		-0.82%	-1.02%	-1.09%	-1.06%	-1.04%	-1.02%	3.28%	2.91%	2.40%	1.93%	1.96%	2.00%
11		-2.18%	-2.58%	-2.65%	-2.72%	-2.72%	-2.66%	-1.35%	-1.23%	-1.27%	-1.31%	-1.29%	-1.26%
12		-4.22%	-4.68%	-4.75%	-4.88%	-4.79%	-4.55%	4.91%	4.76%	4.59%	4.31%	4.47%	4.59%
13		-2.23%	-2.63%	-2.70%	-2.78%	-2.76%	-2.71%	-1.52%	-1.42%	-1.46%	-1.52%	-1.46%	-1.40%
14		0.85%	0.45%	0.50%	0.43%	0.44%	0.46%	-0.19%	0.00%	0.27%	0.37%	0.39%	0.40%
15		FATS & OILS	-1.09%	-1.57%	-1.62%	-1.81%	-1.76%	-1.70%	-4.52%	-4.95%	-5.40%	-5.94%	-5.65%
16	PREPARED FOODSTUFFS	-2.40%	-2.82%	-2.91%	-3.00%	-2.91%	-2.82%	-1.56%	-1.51%	-1.60%	-1.71%	-1.63%	-1.62%
17		0.03%	-0.39%	-0.36%	-0.39%	-0.38%	-0.37%	-2.32%	-2.33%	-2.05%	-2.09%	-2.04%	-1.97%
18		-2.49%	-2.90%	-2.99%	-3.07%	-3.05%	-3.02%	-1.11%	-1.00%	-1.03%	-1.09%	-1.04%	-1.02%
19		-2.34%	-2.75%	-2.84%	-2.92%	-2.88%	-2.85%	-1.53%	-1.42%	-1.46%	-1.53%	-1.48%	-1.48%
20		-2.34%	-2.75%	-2.84%	-2.92%	-2.87%	-2.87%	-1.53%	-1.42%	-1.46%	-1.53%	-1.51%	-1.49%
21		-2.34%	-2.74%	-2.83%	-2.91%	-2.84%	-2.75%	-1.49%	-1.38%	-1.42%	-1.48%	-1.45%	-1.38%
22		0.10%	-0.13%	-0.18%	-0.15%	-0.15%	-0.15%	-0.50%	-0.30%	-0.30%	-0.25%	-0.24%	-0.23%
23		-1.94%	-2.44%	-2.47%	-2.67%	-2.55%	-2.45%	-1.55%	-1.47%	-1.54%	-1.63%	-1.58%	-1.51%
24		-0.38%	-0.61%	-0.64%	-0.60%	-0.58%	-0.58%	-0.13%	0.07%	0.07%	0.11%	0.12%	0.12%
25		MINERAL PRODUCTS	-0.65%	-0.87%	-0.83%	-0.76%	-0.74%	-0.73%	-0.86%	-0.78%	-0.69%	-0.61%	-0.59%
26	1.59%		1.54%	1.64%	1.78%	1.81%	1.83%	-1.03%	-1.08%	-1.04%	-0.98%	-0.95%	-0.93%
27	3.12%		3.21%	3.44%	3.69%	3.81%	3.86%	1.03%	1.26%	1.49%	1.66%	1.69%	1.78%
28	CHEMICAL PRODUCTS	-0.48%	-0.91%	-0.98%	-1.12%	-1.12%	-1.09%	-2.77%	-2.94%	-3.09%	-3.25%	-3.09%	-2.98%
29		-0.54%	-0.98%	-1.07%	-1.22%	-1.19%	-1.15%	-4.98%	-5.53%	-6.12%	-6.77%	-6.46%	-6.42%
30		-0.56%	-1.00%	-1.08%	-1.24%	-1.20%	-1.15%	-5.04%	-5.58%	-6.17%	-6.81%	-6.59%	-6.36%
31		-0.53%	-0.97%	-1.05%	-1.20%	-1.18%	-1.13%	-4.95%	-5.50%	-6.08%	-6.72%	-6.39%	-6.16%
32		-0.54%	-0.98%	-1.06%	-1.22%	-1.19%	-1.14%	-4.99%	-5.54%	-6.13%	-6.78%	-6.64%	-6.47%
33		-0.54%	-0.98%	-1.06%	-1.22%	-1.22%	-1.20%	-4.99%	-5.54%	-6.13%	-6.78%	-6.74%	-6.64%
34		-0.58%	-1.02%	-1.11%	-1.26%	-1.26%	-1.22%	-4.97%	-5.51%	-6.09%	-6.72%	-6.45%	-6.42%
35		-0.58%	-1.02%	-1.11%	-1.26%	-1.24%	-1.21%	-4.27%	-4.67%	-5.11%	-5.59%	-5.50%	-5.29%
36		-1.01%	-1.48%	-1.59%	-1.75%	-1.74%	-1.70%	-4.79%	-5.18%	-5.68%	-6.20%	-6.01%	-5.76%
37		-0.54%	-0.98%	-1.06%	-1.22%	-1.17%	-1.13%	-4.99%	-5.54%	-6.13%	-6.78%	-6.63%	-6.38%
38		-0.69%	-1.13%	-1.21%	-1.36%	-1.32%	-1.31%	-4.62%	-5.08%	-5.57%	-6.11%	-5.89%	-5.80%
39	PLASTICS	-0.54%	-0.98%	-1.06%	-1.22%	-1.20%	-1.16%	-4.99%	-5.54%	-6.13%	-6.78%	-6.51%	-6.29%
40		-0.54%	-0.98%	-1.06%	-1.22%	-1.18%	-1.13%	-4.99%	-5.54%	-6.13%	-6.78%	-6.58%	-6.46%
41	LEATHER GOODS	-5.29%	-5.83%	-5.93%	-6.04%	-5.82%	-5.74%	-7.39%	-7.39%	-7.57%	-7.78%	-7.69%	-7.50%
42		-5.16%	-6.04%	-6.46%	-6.91%	-6.56%	-6.53%	-5.95%	-5.88%	-6.05%	-6.22%	-5.98%	-5.93%
43		-0.53%	-0.78%	-0.86%	-0.89%	-0.89%	-0.86%	-2.92%	-2.87%	-2.97%	-3.02%	-2.91%	-2.89%
44	WOOD PRODUCTS	-0.71%	-1.14%	-1.20%	-1.33%	-1.32%	-1.30%	-3.60%	-3.77%	-4.00%	-4.28%	-4.24%	-4.17%
45		-0.90%	-1.27%	-1.19%	-1.21%	-1.18%	-1.14%	-2.57%	-2.50%	-2.51%	-2.60%	-2.60%	-2.60%
46		-2.33%	-2.77%	-2.73%	-2.81%	-2.77%	-2.72%	-2.65%	-2.60%	-2.62%	-2.73%	-2.59%	-2.55%
47	PAPER	-0.57%	-1.05%	-1.04%	-1.12%	-1.07%	-1.04%	-0.53%	-0.41%	-0.51%	-0.61%	-0.59%	-0.59%
48		-0.57%	-1.05%	-1.04%	-1.12%	-1.08%	-1.07%	-0.53%	-0.41%	-0.51%	-0.61%	-0.59%	-0.59%
49		-0.57%	-1.05%	-1.04%	-1.12%	-1.08%	-1.05%	-0.53%	-0.41%	-0.51%	-0.61%	-0.59%	-0.58%

TRADE FORECASTING BETWEEN SOUTH KOREA AND JAPAN (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-6.32%	-6.93%	-7.15%	-7.42%	-7.24%	-7.14%	-8.22%	-8.38%	-8.62%	-8.90%	-8.76%	-8.46%
51		-6.32%	-6.93%	-7.15%	-7.42%	-7.31%	-7.01%	-8.22%	-8.38%	-8.62%	-8.90%	-8.85%	-8.55%
52		-6.32%	-6.93%	-7.15%	-7.42%	-7.23%	-7.00%	-8.22%	-8.38%	-8.62%	-8.90%	-8.79%	-8.62%
53		-6.32%	-6.92%	-7.14%	-7.42%	-7.27%	-6.94%	-8.19%	-8.35%	-8.58%	-8.85%	-8.81%	-8.64%
54		-6.32%	-6.93%	-7.15%	-7.42%	-7.39%	-7.19%	-8.22%	-8.38%	-8.62%	-8.90%	-8.68%	-8.37%
55		-6.32%	-6.93%	-7.15%	-7.42%	-7.16%	-6.85%	-8.22%	-8.38%	-8.62%	-8.90%	-8.89%	-8.60%
56		-6.32%	-6.93%	-7.15%	-7.42%	-7.14%	-7.01%	-8.22%	-8.38%	-8.62%	-8.90%	-8.54%	-8.43%
57		-6.32%	-6.93%	-7.15%	-7.42%	-7.33%	-7.05%	-8.22%	-8.38%	-8.62%	-8.90%	-8.70%	-8.47%
58		-6.32%	-6.93%	-7.15%	-7.42%	-7.08%	-6.89%	-8.22%	-8.38%	-8.62%	-8.90%	-8.54%	-8.25%
59		-2.06%	-2.54%	-2.63%	-2.78%	-2.67%	-2.54%	-6.04%	-6.26%	-6.59%	-6.95%	-6.61%	-6.33%
60		-6.32%	-6.93%	-7.15%	-7.42%	-7.07%	-6.92%	-8.22%	-8.38%	-8.62%	-8.90%	-8.45%	-8.38%
61		-6.09%	-6.70%	-6.89%	-7.12%	-6.97%	-6.85%	-5.92%	-5.80%	-5.93%	-6.05%	-5.79%	-5.77%
62		-5.95%	-6.56%	-6.74%	-6.93%	-6.92%	-6.60%	-5.64%	-5.50%	-5.62%	-5.74%	-5.53%	-5.29%
63	-4.77%	-5.32%	-5.45%	-5.64%	-5.58%	-5.57%	-7.01%	-7.03%	-7.12%	-7.24%	-7.19%	-6.96%	
64	FOOTWEAR	-7.08%	-7.86%	-8.13%	-8.46%	-8.16%	-7.90%	-7.42%	-7.42%	-7.60%	-7.81%	-7.62%	-7.50%
65		-0.89%	-1.32%	-1.39%	-1.53%	-1.52%	-1.48%	-5.39%	-5.52%	-5.82%	-6.14%	-5.83%	-5.71%
66		-4.76%	-5.68%	-6.16%	-6.66%	-6.38%	-6.11%	-4.24%	-4.19%	-4.43%	-4.66%	-4.49%	-4.41%
67		-4.76%	-5.68%	-6.16%	-6.66%	-6.50%	-6.45%	-4.24%	-4.19%	-4.43%	-4.66%	-4.52%	-4.42%
68	STONE & GLASS	-2.25%	-2.68%	-2.79%	-2.90%	-2.84%	-2.71%	-1.34%	-1.09%	-1.01%	-0.94%	-0.94%	-0.93%
69		-2.25%	-2.68%	-2.79%	-2.90%	-2.86%	-2.85%	-1.34%	-1.09%	-1.01%	-0.94%	-0.93%	-0.89%
70		-2.26%	-2.69%	-2.80%	-2.91%	-2.91%	-2.83%	-1.45%	-1.20%	-1.11%	-1.04%	-0.99%	-0.96%
71	PRECIOUS STONES	-1.04%	-1.49%	-1.63%	-1.81%	-1.77%	-1.71%	-1.78%	-1.87%	-1.87%	-1.99%	-1.96%	-1.95%
72	BASE METALS	-1.63%	-1.92%	-1.97%	-2.00%	-1.90%	-1.82%	0.16%	0.36%	0.52%	0.69%	0.70%	0.73%
73		-1.91%	-2.24%	-2.30%	-2.34%	-2.34%	-2.27%	-0.46%	-0.21%	-0.06%	0.08%	0.08%	0.08%
74		-0.55%	-0.95%	-1.05%	-1.16%	-1.12%	-1.10%	-0.67%	-0.66%	-0.61%	-0.67%	-0.67%	-0.65%
75		-0.53%	-0.95%	-1.08%	-1.26%	-1.21%	-1.18%	-1.02%	-1.13%	-1.07%	-1.18%	-1.13%	-1.10%
76		-0.89%	-1.32%	-1.43%	-1.59%	-1.55%	-1.52%	-1.10%	-1.07%	-1.00%	-1.04%	-0.99%	-0.95%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		-0.52%	-0.94%	-1.07%	-1.24%	-1.23%	-1.20%	-1.02%	-1.13%	-1.08%	-1.18%	-1.15%	-1.09%
79		-0.52%	-0.94%	-1.07%	-1.24%	-1.20%	-1.15%	-1.02%	-1.13%	-1.08%	-1.18%	-1.13%	-1.08%
80		-0.55%	-0.97%	-1.10%	-1.27%	-1.22%	-1.21%	-1.03%	-1.13%	-1.07%	-1.17%	-1.12%	-1.12%
81		-0.42%	-0.84%	-0.97%	-1.15%	-1.13%	-1.11%	-0.99%	-1.16%	-1.11%	-1.24%	-1.20%	-1.17%
82		-3.85%	-4.41%	-4.50%	-4.63%	-4.44%	-4.41%	-1.27%	-0.95%	-0.84%	-0.74%	-0.71%	-0.69%
83		-3.85%	-4.41%	-4.50%	-4.63%	-4.43%	-4.33%	-1.27%	-0.95%	-0.84%	-0.74%	-0.72%	-0.70%
84	MACHINE	-2.10%	-2.69%	-2.78%	-2.97%	-2.94%	-2.87%	-1.77%	-1.53%	-1.44%	-1.38%	-1.36%	-1.34%
85		-2.50%	-3.14%	-3.22%	-3.44%	-3.34%	-3.21%	-1.92%	-1.67%	-1.57%	-1.53%	-1.45%	-1.41%
86	VEHICLES	-1.90%	-2.81%	-3.18%	-3.56%	-3.52%	-3.51%	0.59%	0.60%	0.46%	0.31%	0.31%	0.32%
87		-0.94%	-1.40%	-1.50%	-1.58%	-1.55%	-1.50%	-0.19%	0.05%	0.08%	0.10%	0.11%	0.11%
88		-2.02%	-2.97%	-3.37%	-3.79%	-3.74%	-3.72%	0.60%	0.55%	0.39%	0.20%	0.21%	0.22%
89		-2.01%	-2.97%	-3.37%	-3.78%	-3.62%	-3.58%	0.75%	0.69%	0.51%	0.32%	0.33%	0.33%
90	CLOCKS & MUSICAL INST.	-2.03%	-2.61%	-2.71%	-2.89%	-2.77%	-2.77%	-1.90%	-1.67%	-1.59%	-1.55%	-1.51%	-1.47%
91		-2.03%	-2.61%	-2.71%	-2.89%	-2.88%	-2.74%	-1.91%	-1.67%	-1.60%	-1.55%	-1.54%	-1.50%
92		-4.76%	-5.68%	-6.16%	-6.66%	-6.56%	-6.27%	-4.24%	-4.19%	-4.43%	-4.66%	-4.44%	-4.25%
93	ARMS	-2.05%	-2.63%	-2.73%	-2.91%	-2.83%	-2.76%	-1.87%	-1.63%	-1.55%	-1.50%	-1.46%	-1.46%
94	MISC. ART.	-2.78%	-3.43%	-3.60%	-3.83%	-3.83%	-3.65%	-2.84%	-2.67%	-2.70%	-2.74%	-2.66%	-2.59%
95		-4.76%	-5.68%	-6.16%	-6.66%	-6.50%	-6.24%	-4.24%	-4.19%	-4.43%	-4.66%	-4.58%	-4.50%
96		-4.76%	-5.69%	-6.16%	-6.66%	-6.57%	-6.30%	-4.26%	-4.21%	-4.45%	-4.68%	-4.68%	-4.55%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

TRADE FORECASTING BETWEEN SOUTH KOREA AND U.S.

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	-0.62%	-0.74%	-0.79%	-0.77%	-0.77%	-0.76%	1.92%	1.67%	1.55%	1.18%	1.19%	1.23%
02		-4.36%	-4.22%	-4.18%	-3.99%	-3.85%	-3.80%	8.52%	7.75%	7.13%	6.10%	6.18%	6.34%
03		-2.90%	-2.93%	-2.87%	-2.74%	-2.62%	-2.54%	2.83%	2.54%	2.43%	1.99%	2.03%	2.13%
04		-1.77%	-1.58%	-1.44%	-1.20%	-1.19%	-1.18%	4.96%	4.58%	4.38%	3.87%	3.96%	4.14%
05		-2.44%	-2.44%	-2.37%	-2.23%	-2.18%	-2.15%	2.79%	2.56%	2.50%	2.12%	2.15%	2.15%
06	VEGETABLE PRODUCTS	-4.49%	-4.60%	-4.52%	-4.51%	-4.48%	-4.39%	15.27%	14.51%	14.13%	13.44%	13.83%	14.01%
07		-5.31%	-5.28%	-5.04%	-4.90%	-4.66%	-4.50%	4.37%	4.01%	3.83%	3.45%	3.62%	3.64%
08		-6.15%	-6.13%	-5.85%	-5.73%	-5.72%	-5.71%	5.32%	4.94%	4.73%	4.40%	4.48%	4.60%
09		-6.42%	-6.81%	-7.02%	-7.38%	-7.19%	-6.84%	10.20%	9.92%	9.93%	9.59%	10.02%	10.51%
10		-2.46%	-2.63%	-2.72%	-2.75%	-2.74%	-2.70%	7.37%	6.86%	7.08%	6.73%	7.02%	7.28%
11		-2.80%	-2.82%	-2.76%	-2.63%	-2.57%	-2.51%	2.82%	2.47%	2.32%	1.84%	1.90%	1.94%
12		-4.25%	-4.56%	-4.76%	-5.06%	-4.94%	-4.81%	11.74%	11.36%	11.29%	10.88%	11.11%	11.20%
13		-1.22%	-1.10%	-0.89%	-0.63%	-0.60%	-0.57%	2.88%	2.52%	2.36%	1.85%	1.88%	1.96%
14		0.75%	0.95%	1.22%	1.51%	1.51%	1.52%	2.41%	2.32%	2.49%	2.30%	2.35%	2.44%
15	FATS & OILS	-2.58%	-2.62%	-2.52%	-2.54%	-2.47%	-2.42%	-1.20%	-1.92%	-2.46%	-3.31%	-3.19%	-3.11%
16	PREPARED FOODSTUFFS	-4.85%	-4.86%	-4.90%	-4.86%	-4.71%	-4.70%	2.90%	2.54%	2.38%	1.88%	1.92%	2.00%
17		-1.26%	-1.06%	-0.87%	-0.60%	-0.57%	-0.54%	5.10%	4.76%	4.60%	4.13%	4.25%	4.37%
18		-3.47%	-3.53%	-3.49%	-3.41%	-3.25%	-3.25%	3.30%	2.98%	2.86%	2.40%	2.45%	2.56%
19		-2.99%	-3.01%	-2.95%	-2.82%	-2.77%	-2.72%	2.88%	2.52%	2.36%	1.85%	1.87%	1.87%
20		-2.99%	-3.01%	-2.95%	-2.82%	-2.71%	-2.70%	2.88%	2.52%	2.36%	1.85%	1.93%	2.02%
21		-2.85%	-2.85%	-2.78%	-2.63%	-2.63%	-2.58%	2.96%	2.60%	2.44%	1.94%	2.01%	2.05%
22		-0.22%	-0.26%	-0.25%	-0.13%	-0.12%	-0.12%	2.39%	2.18%	2.08%	1.74%	1.80%	1.84%
23		-2.21%	-2.31%	-2.20%	-2.25%	-2.23%	-2.15%	2.90%	2.55%	2.41%	1.92%	2.00%	2.04%
24		-1.98%	-2.05%	-2.01%	-1.92%	-1.90%	-1.81%	2.96%	2.79%	2.75%	2.46%	2.58%	2.68%
25	MINERAL PRODUCTS	2.45%	2.64%	2.83%	3.08%	3.16%	3.29%	1.92%	1.63%	1.49%	1.06%	1.09%	1.12%
26		2.61%	2.79%	2.97%	3.22%	3.37%	3.46%	-1.46%	-2.15%	-2.69%	-3.47%	-3.44%	-3.27%
27		2.72%	3.07%	3.46%	3.87%	3.96%	4.02%	3.81%	3.94%	4.11%	4.03%	4.17%	4.32%
28	CHEMICAL PRODUCTS	0.17%	0.65%	1.06%	1.55%	1.62%	1.62%	0.02%	-0.41%	-0.68%	-1.18%	-1.18%	-1.16%
29		0.11%	0.59%	1.00%	1.49%	1.54%	1.58%	-2.09%	-2.97%	-3.71%	-4.74%	-4.50%	-4.45%
30		0.09%	0.57%	0.99%	1.47%	1.49%	1.50%	-2.03%	-2.89%	-3.62%	-4.64%	-4.56%	-4.54%
31		0.25%	0.71%	1.11%	1.59%	1.63%	1.64%	-2.09%	-2.97%	-3.71%	-4.74%	-4.53%	-4.49%
32		0.12%	0.59%	1.01%	1.49%	1.52%	1.52%	-2.09%	-2.98%	-3.72%	-4.75%	-4.62%	-4.46%
33		0.12%	0.59%	1.01%	1.49%	1.51%	1.56%	-2.09%	-2.98%	-3.72%	-4.75%	-4.71%	-4.70%
34		0.06%	0.53%	0.95%	1.43%	1.49%	1.54%	-2.08%	-2.95%	-3.68%	-4.70%	-4.51%	-4.31%
35		-0.26%	0.16%	0.55%	1.00%	1.03%	1.06%	-1.46%	-2.25%	-2.87%	-3.78%	-3.67%	-3.66%
36		-0.56%	-0.12%	0.28%	0.76%	0.78%	0.79%	-1.92%	-2.72%	-3.39%	-4.36%	-4.15%	-4.04%
37		0.12%	0.59%	1.01%	1.49%	1.51%	1.57%	-2.09%	-2.98%	-3.72%	-4.75%	-4.52%	-4.50%
38		-0.06%	0.41%	0.82%	1.31%	1.32%	1.35%	-1.37%	-2.14%	-2.76%	-3.65%	-3.50%	-3.41%
39	PLASTICS	0.12%	0.59%	1.01%	1.49%	1.51%	1.58%	-2.09%	-2.98%	-3.72%	-4.75%	-4.57%	-4.41%
40		0.16%	0.62%	1.03%	1.51%	1.55%	1.55%	-2.09%	-2.97%	-3.72%	-4.74%	-4.63%	-4.47%
41	LEATHER GOODS	-2.96%	-2.94%	-2.89%	-2.76%	-2.66%	-2.55%	-5.78%	-6.21%	-6.47%	-7.06%	-7.01%	-6.68%
42		-6.40%	-6.36%	-6.40%	-6.30%	-6.25%	-5.98%	-1.86%	-2.37%	-2.72%	-3.44%	-3.42%	-3.30%
43		-0.80%	-0.95%	-1.03%	-1.04%	-1.00%	-0.95%	1.92%	1.67%	1.55%	1.18%	1.22%	1.22%
44	WOOD PRODUCTS	0.37%	0.63%	0.94%	1.28%	1.32%	1.33%	-0.95%	-1.71%	-2.30%	-3.17%	-3.12%	-3.07%
45		0.65%	0.87%	1.15%	1.46%	1.46%	1.51%	0.97%	0.35%	-0.06%	-0.77%	-0.76%	-0.74%
46		-3.24%	-3.15%	-2.90%	-2.68%	-2.56%	-2.44%	0.96%	0.33%	-0.09%	-0.82%	-0.80%	-0.80%
47	PAPER	-1.35%	-1.20%	-0.98%	-0.71%	-0.70%	-0.67%	2.72%	2.34%	2.09%	1.53%	1.56%	1.57%
48		-1.35%	-1.20%	-0.98%	-0.71%	-0.71%	-0.71%	2.72%	2.34%	2.09%	1.53%	1.57%	1.64%
49		-1.35%	-1.20%	-0.98%	-0.71%	-0.70%	-0.67%	2.72%	2.34%	2.09%	1.53%	1.59%	1.62%

TRADE FORECASTING BETWEEN SOUTH KOREA AND U.S. (Cont'd)

HS-2	SECTION	IMPORT						EXPORT						
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020	
50	TEXTILES AND TEXTILE ARTICLES	-8.55%	-8.43%	-8.37%	-8.21%	-7.87%	-7.50%	-0.57%	-1.19%	-1.63%	-2.44%	-2.35%	-2.32%	
51		-8.55%	-8.43%	-8.37%	-8.21%	-8.17%	-7.78%	-0.57%	-1.19%	-1.63%	-2.44%	-2.37%	-2.35%	
52		-5.57%	-5.38%	-5.25%	-5.10%	-4.88%	-4.68%	-0.57%	-1.19%	-1.63%	-2.44%	-2.34%	-2.26%	
53		-1.19%	-1.25%	-1.34%	-1.47%	-1.46%	-1.46%	-0.57%	-1.19%	-1.63%	-2.44%	-2.37%	-2.37%	
54		-8.55%	-8.43%	-8.37%	-8.21%	-8.17%	-7.93%	-0.57%	-1.19%	-1.63%	-2.44%	-2.41%	-2.40%	
55		-8.55%	-8.43%	-8.37%	-8.21%	-7.86%	-7.84%	-0.57%	-1.19%	-1.63%	-2.44%	-2.39%	-2.28%	
56		-8.55%	-8.43%	-8.37%	-8.21%	-7.91%	-7.70%	-0.57%	-1.19%	-1.63%	-2.44%	-2.40%	-2.39%	
57		-8.55%	-8.43%	-8.37%	-8.21%	-7.81%	-7.46%	-0.57%	-1.19%	-1.63%	-2.44%	-2.39%	-2.33%	
58		-8.55%	-8.43%	-8.37%	-8.21%	-8.06%	-7.88%	-0.57%	-1.19%	-1.63%	-2.44%	-2.36%	-2.31%	
59		-1.91%	-1.47%	-1.07%	-0.57%	-0.55%	-0.54%	-1.00%	-1.67%	-2.17%	-3.02%	-2.87%	-2.75%	
60		-8.55%	-8.43%	-8.37%	-8.21%	-7.87%	-7.52%	-0.57%	-1.19%	-1.63%	-2.44%	-2.39%	-2.33%	
61		-8.42%	-8.28%	-8.21%	-8.00%	-7.70%	-7.32%	0.41%	-0.17%	-0.51%	-1.27%	-1.25%	-1.19%	
62		-8.39%	-8.25%	-8.17%	-7.94%	-7.94%	-7.78%	0.65%	0.08%	-0.24%	-1.00%	-0.98%	-0.96%	
63		-6.30%	-6.00%	-5.77%	-5.43%	-5.39%	-5.36%	-0.13%	-0.70%	-1.10%	-1.85%	-1.81%	-1.76%	
64	FOOTWEAR	-8.31%	-8.27%	-8.27%	-8.14%	-7.79%	-7.75%	-5.91%	-6.35%	-6.63%	-7.24%	-7.20%	-6.84%	
65		-0.86%	-0.35%	0.11%	0.64%	0.66%	0.67%	-0.18%	-0.83%	-1.25%	-2.06%	-2.00%	-1.95%	
66		-5.29%	-5.31%	-5.41%	-5.36%	-5.19%	-5.17%	-1.59%	-2.24%	-2.77%	-3.65%	-3.64%	-3.58%	
67		-5.29%	-5.31%	-5.41%	-5.36%	-5.35%	-5.24%	-1.59%	-2.24%	-2.77%	-3.65%	-3.50%	-3.36%	
68	STONE & GLASS	-2.58%	-2.30%	-2.09%	-1.76%	-1.74%	-1.68%	2.54%	2.28%	2.16%	1.73%	1.73%	1.78%	
69		-2.58%	-2.30%	-2.09%	-1.76%	-1.67%	-1.60%	2.54%	2.28%	2.16%	1.73%	1.74%	1.75%	
70		-2.62%	-2.33%	-2.13%	-1.79%	-1.70%	-1.63%	2.38%	2.11%	1.97%	1.53%	1.58%	1.65%	
71	PRECIOUS STONES	-0.81%	-0.43%	-0.10%	0.33%	0.33%	0.34%	-0.05%	-0.40%	-0.64%	-1.14%	-1.10%	-1.05%	
72	BASE METALS	0.08%	0.58%	0.99%	1.54%	1.57%	1.61%	2.01%	1.93%	1.93%	1.70%	1.76%	1.81%	
73		-3.43%	-3.03%	-2.72%	-2.26%	-2.19%	-2.15%	2.43%	2.20%	2.10%	1.72%	1.74%	1.79%	
74		-0.91%	-0.54%	-0.25%	0.16%	0.16%	0.17%	4.09%	3.84%	3.71%	3.29%	3.38%	3.54%	
75		-0.97%	-0.46%	-0.04%	0.45%	0.46%	0.48%	2.38%	2.31%	2.31%	2.07%	2.07%	2.10%	
76		-2.00%	-1.51%	-1.11%	-0.61%	-0.59%	-0.58%	2.41%	2.21%	2.13%	1.76%	1.82%	1.88%	
77		---	---	---	---	---	---	---	---	---	---	---	---	
78		-0.92%	-0.41%	0.01%	0.50%	0.51%	0.52%	2.38%	2.31%	2.32%	2.09%	2.16%	2.21%	
79		-0.92%	-0.41%	0.01%	0.50%	0.51%	0.52%	2.38%	2.31%	2.32%	2.09%	2.14%	2.23%	
80		-1.03%	-0.53%	-0.11%	0.39%	0.40%	0.40%	2.38%	2.30%	2.29%	2.04%	2.12%	2.12%	
81		-0.52%	-0.01%	0.41%	0.89%	0.91%	0.92%	2.36%	2.39%	2.45%	2.30%	2.34%	2.43%	
82		-4.49%	-4.15%	-3.90%	-3.49%	-3.44%	-3.38%	2.44%	2.12%	1.96%	1.48%	1.53%	1.59%	
83		-4.49%	-4.15%	-3.90%	-3.49%	-3.42%	-3.37%	2.44%	2.12%	1.96%	1.48%	1.55%	1.58%	
84		MACHINE	-3.17%	-2.85%	-2.61%	-2.27%	-2.26%	-2.19%	3.32%	2.99%	2.84%	2.35%	2.44%	2.54%
85			-3.27%	-2.98%	-2.72%	-2.40%	-2.35%	-2.24%	1.79%	1.44%	1.32%	0.82%	0.85%	0.85%
86	VEHICLES	-2.91%	-2.92%	-2.95%	-2.80%	-2.72%	-2.71%	4.76%	4.58%	4.52%	4.17%	4.19%	4.35%	
87		-2.30%	-2.20%	-2.15%	-1.92%	-1.85%	-1.79%	4.16%	3.90%	3.77%	3.34%	3.35%	3.38%	
88		-2.93%	-2.94%	-2.98%	-2.83%	-2.75%	-2.61%	5.14%	5.01%	5.01%	4.70%	4.84%	4.95%	
89		-2.93%	-2.94%	-2.98%	-2.82%	-2.71%	-2.66%	5.19%	5.05%	5.06%	4.75%	4.83%	4.98%	
90	CLOCKS & MUSICAL INST.	-3.18%	-2.83%	-2.57%	-2.20%	-2.10%	-2.05%	3.55%	3.18%	3.00%	2.46%	2.49%	2.58%	
91		-3.18%	-2.83%	-2.57%	-2.20%	-2.09%	-2.06%	3.56%	3.18%	3.00%	2.47%	2.56%	2.59%	
92		-5.29%	-5.31%	-5.41%	-5.36%	-5.34%	-5.29%	-1.59%	-2.24%	-2.77%	-3.65%	-3.60%	-3.48%	
93	ARMS	-3.20%	-2.85%	-2.59%	-2.22%	-2.22%	-2.19%	3.53%	3.16%	2.98%	2.45%	2.50%	2.52%	
94	MISC. ART.	-3.71%	-3.45%	-3.27%	-2.96%	-2.92%	-2.82%	1.40%	0.98%	0.73%	0.15%	0.15%	0.16%	
95		-5.29%	-5.31%	-5.41%	-5.36%	-5.13%	-4.87%	-1.59%	-2.24%	-2.77%	-3.65%	-3.52%	-3.46%	
96		-5.30%	-5.31%	-5.42%	-5.36%	-5.29%	-5.05%	-1.60%	-2.25%	-2.78%	-3.65%	-3.55%	-3.50%	
97		ARTS	---	---	---	---	---	---	---	---	---	---	---	

TRADE FORECASTING BETWEEN SOUTH KOREA AND ASEAN

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	1.39%	1.38%	1.00%	1.05%	1.07%	1.09%	-0.03%	-0.08%	-0.43%	-0.42%	-0.41%	-0.41%
02		3.72%	3.77%	2.05%	1.87%	1.95%	1.95%	1.13%	0.23%	-0.38%	-1.21%	-1.16%	-1.15%
03		0.34%	0.33%	-0.11%	-0.03%	-0.03%	-0.03%	1.39%	1.39%	1.15%	1.16%	1.16%	1.22%
04		0.67%	0.66%	0.16%	0.23%	0.23%	0.24%	2.42%	2.40%	2.13%	2.10%	2.18%	2.19%
05		0.49%	0.51%	0.11%	0.24%	0.24%	0.25%	1.36%	1.36%	1.16%	1.17%	1.22%	1.25%
06	VEGETABLE PRODUCTS	4.44%	4.73%	4.27%	4.61%	4.78%	4.92%	12.06%	11.15%	10.60%	9.85%	9.94%	10.22%
07		-1.77%	-1.56%	-1.94%	-1.70%	-1.68%	-1.63%	1.55%	1.46%	1.20%	1.15%	1.15%	1.16%
08		-2.37%	-2.08%	-2.45%	-2.15%	-2.10%	-2.00%	1.75%	1.54%	1.27%	1.15%	1.19%	1.24%
09		-1.21%	-1.23%	-2.22%	-2.26%	-2.25%	-2.15%	8.04%	7.70%	7.45%	7.12%	7.47%	7.54%
10		-10.81%	-9.70%	-11.33%	-10.69%	-10.58%	-10.27%	3.16%	2.31%	2.79%	2.36%	2.45%	2.55%
11		0.23%	0.18%	-0.29%	-0.25%	-0.24%	-0.24%	1.44%	1.44%	1.18%	1.18%	1.22%	1.27%
12		-0.01%	0.05%	-0.84%	-0.82%	-0.82%	-0.81%	9.58%	9.05%	8.71%	8.23%	8.40%	8.54%
13		4.61%	4.85%	4.46%	4.78%	5.00%	5.21%	1.41%	1.41%	1.15%	1.15%	1.21%	1.23%
14		5.47%	5.73%	5.30%	5.61%	5.66%	5.71%	1.80%	1.82%	1.86%	1.89%	1.93%	1.94%
15	FATS & OILS	3.54%	3.53%	2.76%	2.72%	2.79%	2.80%	-0.97%	-1.31%	-1.93%	-2.29%	-2.24%	-2.23%
16	PREPARED FOODSTUFFS	0.57%	0.54%	-0.07%	-0.05%	-0.05%	-0.05%	1.28%	1.13%	0.81%	0.68%	0.70%	0.71%
17		4.55%	4.75%	4.20%	4.40%	4.62%	4.63%	-0.19%	-0.30%	-0.26%	-0.26%	-0.25%	-0.24%
18		0.09%	0.04%	-0.49%	-0.45%	-0.45%	-0.44%	1.83%	1.83%	1.59%	1.59%	1.65%	1.73%
19		0.20%	0.15%	-0.33%	-0.29%	-0.28%	-0.27%	1.42%	1.41%	1.15%	1.15%	1.19%	1.23%
20		0.20%	0.15%	-0.33%	-0.29%	-0.29%	-0.28%	1.42%	1.41%	1.15%	1.15%	1.19%	1.21%
21		0.21%	0.16%	-0.33%	-0.28%	-0.28%	-0.27%	1.44%	1.43%	1.17%	1.17%	1.20%	1.21%
22		1.09%	1.02%	0.78%	0.86%	0.87%	0.91%	1.84%	1.96%	1.67%	1.79%	1.83%	1.88%
23		3.88%	3.96%	3.31%	3.38%	3.55%	3.61%	1.60%	1.53%	1.32%	1.29%	1.29%	1.32%
24		0.38%	0.34%	-0.12%	-0.06%	-0.06%	-0.06%	3.26%	3.35%	3.11%	3.20%	3.29%	3.41%
25	MINERAL PRODUCTS	2.92%	3.08%	3.14%	3.38%	3.51%	3.65%	2.31%	2.55%	2.09%	2.26%	2.36%	2.40%
26		2.99%	3.15%	3.23%	3.47%	3.54%	3.67%	1.22%	1.30%	0.63%	0.68%	0.71%	0.71%
27		7.82%	8.09%	7.54%	7.60%	7.60%	7.65%	5.48%	6.07%	5.80%	6.27%	6.36%	6.37%
28	CHEMICAL PRODUCTS	4.64%	4.91%	4.58%	4.80%	4.94%	4.99%	0.80%	0.86%	0.34%	0.43%	0.44%	0.45%
29		4.76%	5.05%	4.62%	4.84%	4.98%	5.07%	-2.05%	-2.55%	-3.55%	-4.13%	-4.10%	-3.92%
30		4.55%	4.85%	4.43%	4.65%	4.71%	4.92%	-2.09%	-2.57%	-3.57%	-4.14%	-3.99%	-3.83%
31		4.53%	4.81%	4.45%	4.67%	4.91%	5.09%	-2.04%	-2.54%	-3.54%	-4.12%	-4.09%	-3.89%
32		4.77%	5.06%	4.64%	4.85%	5.04%	5.28%	-2.05%	-2.55%	-3.56%	-4.14%	-3.99%	-3.90%
33		4.77%	5.06%	4.64%	4.85%	5.02%	5.22%	-2.05%	-2.55%	-3.56%	-4.14%	-4.04%	-3.95%
34		4.64%	4.92%	4.48%	4.70%	4.85%	5.05%	-2.01%	-2.51%	-3.51%	-4.08%	-3.89%	-3.76%
35		3.71%	3.95%	3.56%	3.77%	3.95%	4.07%	-1.75%	-2.20%	-3.13%	-3.64%	-3.53%	-3.48%
36		3.37%	3.56%	3.04%	3.20%	3.24%	3.30%	-1.63%	-2.06%	-3.00%	-3.51%	-3.34%	-3.20%
37		4.77%	5.06%	4.64%	4.85%	4.87%	5.06%	-2.05%	-2.55%	-3.56%	-4.14%	-3.98%	-3.98%
38		4.56%	4.84%	4.41%	4.62%	4.69%	4.84%	-1.81%	-2.26%	-3.22%	-3.74%	-3.59%	-3.48%
39	PLASTICS	4.77%	5.06%	4.64%	4.85%	4.96%	5.21%	-2.05%	-2.55%	-3.56%	-4.14%	-3.95%	-3.83%
40		5.15%	5.43%	5.01%	5.27%	5.38%	5.52%	-2.05%	-2.55%	-3.56%	-4.14%	-3.98%	-3.91%
41	LEATHER GOODS	-3.07%	-3.22%	-4.11%	-4.23%	-4.20%	-4.07%	-2.57%	-2.71%	-3.30%	-3.54%	-3.36%	-3.30%
42		-2.71%	-2.87%	-3.77%	-3.90%	-3.75%	-3.71%	-2.00%	-2.12%	-2.71%	-2.93%	-2.83%	-2.82%
43		1.39%	1.38%	1.00%	1.05%	1.09%	1.13%	-0.03%	-0.08%	-0.43%	-0.42%	-0.41%	-0.41%
44	WOOD PRODUCTS	3.87%	4.10%	3.73%	4.03%	4.21%	4.25%	-1.78%	-2.20%	-3.05%	-3.52%	-3.39%	-3.33%
45		4.57%	4.81%	4.43%	4.75%	4.87%	5.06%	-0.87%	-1.05%	-1.41%	-1.59%	-1.58%	-1.56%
46		0.82%	0.84%	0.44%	0.55%	0.56%	0.58%	-1.10%	-1.31%	-1.71%	-1.93%	-1.87%	-1.78%
47	PAPER	2.94%	2.95%	2.43%	2.50%	2.50%	2.52%	2.62%	2.73%	2.30%	2.32%	2.40%	2.41%
48		2.94%	2.95%	2.43%	2.50%	2.56%	2.64%	2.62%	2.73%	2.30%	2.32%	2.38%	2.45%
49		2.94%	2.95%	2.43%	2.50%	2.52%	2.62%	2.62%	2.73%	2.30%	2.32%	2.37%	2.41%

TRADE FORECASTING BETWEEN SOUTH KOREA AND ASEAN (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-3.41%	-3.53%	-4.30%	-4.44%	-4.26%	-4.12%	-2.79%	-3.00%	-3.79%	-4.16%	-4.12%	-3.94%
51		-3.41%	-3.53%	-4.30%	-4.44%	-4.36%	-4.20%	-2.79%	-3.00%	-3.79%	-4.16%	-4.12%	-3.98%
52		-3.41%	-3.53%	-4.30%	-4.44%	-4.25%	-4.21%	-2.79%	-3.00%	-3.79%	-4.16%	-4.00%	-3.80%
53		-3.29%	-3.39%	-4.16%	-4.28%	-4.27%	-4.06%	-2.68%	-2.87%	-3.64%	-3.99%	-3.97%	-3.87%
54		-3.41%	-3.53%	-4.31%	-4.44%	-4.39%	-4.36%	-2.79%	-3.00%	-3.79%	-4.16%	-3.99%	-3.87%
55		-3.41%	-3.53%	-4.31%	-4.44%	-4.27%	-4.12%	-2.79%	-3.00%	-3.79%	-4.16%	-4.15%	-3.99%
56		-3.41%	-3.53%	-4.31%	-4.44%	-4.35%	-4.32%	-2.79%	-3.00%	-3.79%	-4.16%	-4.15%	-4.05%
57		-3.41%	-3.53%	-4.31%	-4.44%	-4.33%	-4.19%	-2.79%	-3.00%	-3.79%	-4.16%	-4.05%	-4.01%
58		-3.41%	-3.53%	-4.31%	-4.44%	-4.30%	-4.28%	-2.79%	-3.00%	-3.79%	-4.16%	-4.05%	-3.90%
59		-0.27%	-0.17%	-0.73%	-0.61%	-0.61%	-0.58%	-2.34%	-2.60%	-3.41%	-3.80%	-3.68%	-3.53%
60		-3.41%	-3.53%	-4.31%	-4.44%	-4.33%	-4.28%	-2.79%	-3.00%	-3.79%	-4.16%	-3.98%	-3.79%
61		-3.07%	-3.14%	-3.85%	-3.89%	-3.82%	-3.80%	-2.21%	-2.36%	-3.01%	-3.27%	-3.15%	-3.01%
62		-2.97%	-3.02%	-3.72%	-3.73%	-3.68%	-3.61%	-1.58%	-1.67%	-2.16%	-2.33%	-2.29%	-2.19%
63	-3.13%	-3.21%	-3.97%	-4.08%	-4.08%	-3.92%	-2.58%	-2.76%	-3.52%	-3.86%	-3.69%	-3.57%	
64	FOOTWEAR	-3.10%	-3.25%	-4.15%	-4.27%	-4.22%	-4.13%	-2.57%	-2.71%	-3.31%	-3.54%	-3.44%	-3.42%
65		0.64%	0.90%	0.50%	0.78%	0.82%	0.84%	-1.88%	-2.24%	-3.06%	-3.49%	-3.47%	-3.39%
66		-0.41%	-0.70%	-1.77%	-2.06%	-1.98%	-1.93%	0.64%	0.51%	-0.18%	-0.44%	-0.42%	-0.40%
67		-0.41%	-0.70%	-1.77%	-2.06%	-2.05%	-1.99%	0.64%	0.51%	-0.18%	-0.44%	-0.43%	-0.42%
68	STONE & GLASS	1.14%	1.18%	0.55%	0.58%	0.59%	0.59%	1.93%	2.16%	1.91%	2.06%	2.13%	2.20%
69		1.14%	1.18%	0.55%	0.58%	0.60%	0.62%	1.93%	2.16%	1.91%	2.06%	2.11%	2.20%
70		1.02%	1.06%	0.43%	0.46%	0.47%	0.48%	1.31%	1.50%	1.22%	1.35%	1.39%	1.41%
71	PRECIOUS STONES	3.14%	3.29%	2.63%	2.71%	2.80%	2.83%	2.07%	2.16%	1.48%	1.43%	1.45%	1.47%
72	BASE METALS	2.84%	3.17%	2.85%	3.15%	3.17%	3.23%	3.19%	3.55%	3.03%	3.24%	3.29%	3.42%
73		2.06%	2.26%	1.78%	1.97%	2.03%	2.09%	2.76%	3.08%	2.64%	2.84%	2.84%	2.92%
74		3.96%	4.17%	3.36%	3.42%	3.42%	3.46%	2.40%	2.55%	1.95%	1.97%	2.04%	2.13%
75		4.02%	4.23%	3.41%	3.46%	3.59%	3.62%	2.28%	2.40%	1.75%	1.72%	1.78%	1.82%
76		3.86%	4.07%	3.26%	3.31%	3.45%	3.45%	2.23%	2.37%	1.77%	1.78%	1.78%	1.79%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		4.03%	4.24%	3.41%	3.46%	3.57%	3.60%	2.29%	2.40%	1.74%	1.72%	1.75%	1.81%
79		4.03%	4.24%	3.41%	3.46%	3.46%	3.58%	2.29%	2.40%	1.74%	1.72%	1.76%	1.82%
80		4.01%	4.23%	3.40%	3.45%	3.47%	3.58%	2.28%	2.40%	1.75%	1.73%	1.74%	1.75%
81		4.07%	4.28%	3.45%	3.50%	3.65%	3.73%	2.30%	2.41%	1.74%	1.71%	1.72%	1.76%
82		0.12%	0.09%	-0.62%	-0.63%	-0.63%	-0.61%	1.92%	2.17%	1.91%	2.08%	2.17%	2.23%
83		0.12%	0.09%	-0.62%	-0.63%	-0.63%	-0.60%	1.92%	2.17%	1.91%	2.08%	2.14%	2.16%
84	MACHINE	2.32%	2.37%	1.72%	1.74%	1.80%	1.83%	2.31%	2.44%	1.99%	2.05%	2.13%	2.19%
85		1.87%	1.88%	1.28%	1.27%	1.30%	1.30%	2.28%	2.39%	1.97%	1.98%	2.02%	2.09%
86	VEHICLES	3.63%	3.37%	2.24%	2.06%	2.16%	2.19%	3.07%	3.01%	2.45%	2.43%	2.44%	2.54%
87		2.72%	2.69%	2.03%	2.05%	2.08%	2.11%	2.77%	2.85%	2.33%	2.37%	2.44%	2.54%
88		3.39%	3.14%	2.02%	1.84%	1.91%	1.99%	3.07%	3.00%	2.45%	2.41%	2.42%	2.52%
89		3.67%	3.40%	2.25%	2.06%	2.11%	2.11%	3.09%	3.01%	2.46%	2.43%	2.43%	2.55%
90	CLOCKS & MUSICAL INST.	2.58%	2.65%	1.94%	1.97%	2.00%	2.07%	1.95%	2.08%	1.61%	1.67%	1.71%	1.73%
91		2.51%	2.58%	1.88%	1.91%	1.91%	1.93%	1.94%	2.06%	1.59%	1.65%	1.67%	1.71%
92		-0.41%	-0.70%	-1.77%	-2.06%	-2.06%	-2.03%	0.64%	0.51%	-0.18%	-0.44%	-0.42%	-0.40%
93	ARMS	2.56%	2.63%	1.92%	1.95%	2.02%	2.02%	1.96%	2.08%	1.62%	1.69%	1.70%	1.76%
94	MISC. ART.	0.67%	0.55%	-0.32%	-0.43%	-0.41%	-0.41%	1.16%	1.19%	0.65%	0.60%	0.63%	0.63%
95		-0.41%	-0.70%	-1.77%	-2.06%	-2.04%	-1.97%	0.64%	0.51%	-0.18%	-0.44%	-0.43%	-0.43%
96		-0.47%	-0.76%	-1.83%	-2.11%	-2.10%	-2.05%	0.57%	0.44%	-0.24%	-0.49%	-0.49%	-0.48%
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

TRADE FORECASTING BETWEEN SOUTH KOREA AND EU-27

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	-0.46%	-0.65%	-0.75%	-0.78%	-0.75%	-0.72%	0.26%	0.33%	0.40%	0.52%	0.54%	0.57%
02		-3.77%	-4.47%	-5.04%	-5.61%	-5.58%	-5.31%	4.90%	4.98%	5.01%	5.08%	5.09%	5.25%
03		-2.28%	-2.60%	-2.73%	-2.84%	-2.77%	-2.75%	1.04%	1.26%	1.40%	1.62%	1.69%	1.76%
04		-0.32%	-0.64%	-0.82%	-0.96%	-0.95%	-0.94%	1.17%	1.38%	1.53%	1.75%	1.77%	1.85%
05		-2.25%	-2.55%	-2.68%	-2.78%	-2.69%	-2.64%	0.99%	1.20%	1.35%	1.57%	1.59%	1.62%
06	VEGETABLE PRODUCTS	-4.54%	-4.71%	-4.60%	-4.53%	-4.32%	-4.22%	14.64%	14.29%	14.02%	13.76%	14.34%	14.64%
07		-2.38%	-2.69%	-2.82%	-2.92%	-2.81%	-2.81%	1.13%	1.33%	1.47%	1.68%	1.75%	1.79%
08		-2.60%	-2.88%	-2.97%	-3.06%	-3.01%	-2.92%	1.27%	1.44%	1.56%	1.74%	1.82%	1.84%
09		-5.93%	-6.32%	-6.46%	-6.64%	-6.57%	-6.24%	11.74%	11.77%	11.81%	11.83%	12.40%	12.88%
10		-2.46%	-2.31%	-2.16%	-1.96%	-1.94%	-1.90%	6.62%	6.12%	6.06%	5.76%	5.94%	6.10%
11		-1.28%	-1.53%	-1.63%	-1.68%	-1.67%	-1.65%	1.04%	1.26%	1.41%	1.62%	1.67%	1.70%
12		-5.79%	-6.22%	-6.34%	-6.58%	-6.34%	-6.28%	13.18%	13.03%	12.93%	12.82%	13.11%	13.77%
13		-1.28%	-1.53%	-1.58%	-1.62%	-1.58%	-1.50%	1.09%	1.31%	1.46%	1.68%	1.76%	1.77%
14		1.61%	1.42%	1.46%	1.43%	1.47%	1.53%	1.44%	1.85%	2.27%	2.71%	2.75%	2.87%
15	FATS & OILS	-2.16%	-2.72%	-2.93%	-3.31%	-3.17%	-3.05%	-1.95%	-2.07%	-2.21%	-2.29%	-2.18%	-2.16%
16	PREPARED FOODSTUFFS	-3.63%	-4.27%	-4.76%	-5.26%	-5.25%	-5.02%	1.19%	1.40%	1.55%	1.77%	1.84%	1.85%
17		-0.22%	-0.53%	-0.72%	-0.86%	-0.82%	-0.81%	2.56%	2.80%	2.93%	3.17%	3.22%	3.38%
18		-2.54%	-2.85%	-2.98%	-3.09%	-3.00%	-2.93%	2.11%	2.40%	2.63%	2.93%	2.97%	3.10%
19		-2.30%	-2.62%	-2.75%	-2.87%	-2.85%	-2.83%	1.08%	1.29%	1.44%	1.65%	1.72%	1.73%
20		-2.30%	-2.62%	-2.75%	-2.87%	-2.78%	-2.71%	1.08%	1.29%	1.44%	1.65%	1.71%	1.78%
21		-1.84%	-2.15%	-2.29%	-2.40%	-2.37%	-2.34%	1.08%	1.29%	1.44%	1.66%	1.72%	1.75%
22		0.19%	-0.01%	-0.10%	-0.10%	-0.10%	-0.10%	0.15%	0.36%	0.52%	0.75%	0.78%	0.79%
23		-2.05%	-2.59%	-2.75%	-3.10%	-3.07%	-3.00%	1.42%	1.67%	1.86%	2.12%	2.22%	2.30%
24		0.10%	-0.09%	-0.18%	-0.17%	-0.17%	-0.16%	4.59%	5.04%	5.46%	5.91%	5.95%	6.09%
25	MINERAL PRODUCTS	0.44%	0.40%	0.43%	0.52%	0.52%	0.52%	0.68%	0.98%	1.24%	1.57%	1.59%	1.64%
26		2.21%	2.27%	2.38%	2.53%	2.60%	2.62%	-1.05%	-1.01%	-0.96%	-0.83%	-0.83%	-0.79%
27		3.06%	3.16%	3.33%	3.52%	3.69%	3.76%	1.78%	2.20%	2.56%	3.00%	3.00%	3.12%
28	CHEMICAL PRODUCTS	1.08%	0.94%	0.91%	0.85%	0.89%	0.90%	-3.27%	-3.60%	-3.94%	-4.23%	-4.18%	-4.06%
29		0.99%	0.84%	0.80%	0.73%	0.74%	0.76%	-3.62%	-4.02%	-4.44%	-4.83%	-4.78%	-4.66%
30		0.92%	0.78%	0.74%	0.67%	0.69%	0.73%	-3.50%	-3.88%	-4.28%	-4.65%	-4.49%	-4.44%
31		1.00%	0.85%	0.82%	0.74%	0.78%	0.78%	-3.61%	-4.01%	-4.44%	-4.82%	-4.66%	-4.48%
32		1.00%	0.84%	0.81%	0.73%	0.76%	0.77%	-3.62%	-4.02%	-4.45%	-4.83%	-4.80%	-4.68%
33		1.00%	0.84%	0.81%	0.73%	0.77%	0.77%	-3.62%	-4.02%	-4.45%	-4.83%	-4.67%	-4.54%
34		0.89%	0.74%	0.69%	0.62%	0.63%	0.64%	-3.58%	-3.98%	-4.39%	-4.77%	-4.69%	-4.66%
35		0.60%	0.43%	0.38%	0.30%	0.31%	0.31%	-3.32%	-3.67%	-4.04%	-4.35%	-4.33%	-4.15%
36		-0.10%	-0.33%	-0.44%	-0.55%	-0.54%	-0.54%	-3.24%	-3.54%	-3.87%	-4.17%	-4.01%	-3.84%
37		1.00%	0.84%	0.81%	0.73%	0.75%	0.78%	-3.62%	-4.02%	-4.45%	-4.83%	-4.78%	-4.58%
38		0.70%	0.53%	0.48%	0.39%	0.40%	0.42%	-2.88%	-3.13%	-3.38%	-3.57%	-3.55%	-3.39%
39	PLASTICS	1.00%	0.84%	0.81%	0.73%	0.75%	0.76%	-3.62%	-4.02%	-4.45%	-4.83%	-4.66%	-4.56%
40		1.02%	0.87%	0.83%	0.76%	0.78%	0.79%	-3.61%	-4.01%	-4.44%	-4.82%	-4.59%	-4.45%
41	LEATHER GOODS	-6.76%	-7.31%	-7.68%	-8.03%	-7.82%	-7.47%	-3.22%	-3.32%	-3.44%	-3.61%	-3.55%	-3.40%
42		-6.79%	-7.40%	-7.83%	-8.26%	-8.09%	-7.86%	-2.37%	-2.40%	-2.49%	-2.59%	-2.54%	-2.54%
43		-0.48%	-0.67%	-0.77%	-0.82%	-0.78%	-0.75%	0.26%	0.33%	0.40%	0.52%	0.54%	0.55%
44	WOOD PRODUCTS	-0.34%	-0.57%	-0.56%	-0.62%	-0.61%	-0.59%	-1.74%	-1.76%	-1.81%	-1.78%	-1.69%	-1.62%
45		0.16%	-0.04%	0.00%	-0.02%	-0.02%	-0.02%	-0.16%	0.07%	0.25%	0.50%	0.52%	0.54%
46		-2.15%	-2.52%	-2.59%	-2.77%	-2.69%	-2.58%	-0.49%	-0.30%	-0.18%	0.01%	0.01%	0.01%
47	PAPER	-0.19%	-0.56%	-0.71%	-0.90%	-0.89%	-0.87%	0.95%	1.24%	1.44%	1.71%	1.78%	1.84%
48		-0.19%	-0.56%	-0.71%	-0.90%	-0.86%	-0.85%	0.95%	1.24%	1.44%	1.71%	1.75%	1.80%
49		-0.19%	-0.56%	-0.71%	-0.90%	-0.87%	-0.87%	0.95%	1.24%	1.44%	1.71%	1.77%	1.86%

TRADE FORECASTING BETWEEN SOUTH KOREA AND EU-27 (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-7.06%	-7.56%	-7.92%	-8.30%	-8.26%	-8.05%	-1.22%	-1.24%	-1.33%	-1.42%	-1.39%	-1.37%
51		-7.06%	-7.56%	-7.92%	-8.30%	-8.11%	-8.01%	-1.22%	-1.24%	-1.33%	-1.42%	-1.37%	-1.35%
52		-6.96%	-7.44%	-7.79%	-8.15%	-7.81%	-7.69%	-1.22%	-1.24%	-1.32%	-1.42%	-1.39%	-1.35%
53		-4.58%	-4.78%	-4.87%	-4.90%	-4.78%	-4.63%	-1.16%	-1.17%	-1.24%	-1.32%	-1.27%	-1.22%
54		-7.06%	-7.56%	-7.92%	-8.30%	-8.26%	-8.11%	-1.22%	-1.24%	-1.33%	-1.42%	-1.38%	-1.36%
55		-7.06%	-7.56%	-7.92%	-8.30%	-8.11%	-7.77%	-1.22%	-1.24%	-1.33%	-1.42%	-1.41%	-1.34%
56		-7.06%	-7.56%	-7.92%	-8.30%	-8.01%	-8.00%	-1.22%	-1.24%	-1.33%	-1.42%	-1.41%	-1.40%
57		-7.06%	-7.56%	-7.92%	-8.30%	-8.04%	-7.97%	-1.22%	-1.24%	-1.33%	-1.42%	-1.35%	-1.30%
58		-7.06%	-7.56%	-7.92%	-8.30%	-8.21%	-7.94%	-1.22%	-1.24%	-1.33%	-1.42%	-1.40%	-1.34%
59		-2.40%	-2.65%	-2.76%	-2.87%	-2.77%	-2.77%	-1.78%	-1.86%	-2.00%	-2.13%	-2.05%	-1.96%
60		-7.06%	-7.56%	-7.92%	-8.30%	-8.11%	-7.72%	-1.22%	-1.24%	-1.33%	-1.42%	-1.38%	-1.37%
61		-7.01%	-7.50%	-7.85%	-8.16%	-7.80%	-7.72%	-0.99%	-0.97%	-1.02%	-1.07%	-1.04%	-1.01%
62		-7.01%	-7.49%	-7.84%	-8.15%	-7.78%	-7.50%	-0.86%	-0.81%	-0.85%	-0.88%	-0.88%	-0.87%
63	-5.42%	-5.83%	-6.12%	-6.41%	-6.36%	-6.33%	-0.91%	-0.87%	-0.89%	-0.91%	-0.87%	-0.87%	
64	FOOTWEAR	-7.27%	-7.89%	-8.33%	-8.77%	-8.70%	-8.65%	-3.24%	-3.34%	-3.46%	-3.63%	-3.61%	-3.61%
65		-3.80%	-3.99%	-4.02%	-4.03%	-3.97%	-3.78%	-2.16%	-2.30%	-2.49%	-2.64%	-2.63%	-2.51%
66		-3.86%	-4.57%	-5.16%	-5.71%	-5.50%	-5.34%	-2.14%	-2.15%	-2.27%	-2.36%	-2.32%	-2.21%
67		-3.86%	-4.57%	-5.16%	-5.71%	-5.47%	-5.40%	-2.14%	-2.15%	-2.27%	-2.36%	-2.28%	-2.21%
68	STONE & GLASS	-1.91%	-2.22%	-2.46%	-2.65%	-2.59%	-2.57%	1.38%	1.79%	2.12%	2.50%	2.61%	2.67%
69		-1.91%	-2.22%	-2.46%	-2.65%	-2.63%	-2.52%	1.38%	1.79%	2.12%	2.50%	2.51%	2.57%
70		-1.97%	-2.28%	-2.51%	-2.70%	-2.67%	-2.55%	1.20%	1.58%	1.88%	2.25%	2.26%	2.27%
71	PRECIOUS STONES	-0.99%	-1.35%	-1.57%	-1.80%	-1.75%	-1.66%	-1.30%	-1.26%	-1.29%	-1.28%	-1.27%	-1.27%
72	BASE METALS	0.02%	0.02%	0.05%	0.14%	0.14%	0.15%	0.62%	0.87%	1.09%	1.36%	1.36%	1.42%
73		-1.22%	-1.40%	-1.50%	-1.56%	-1.54%	-1.47%	0.90%	1.21%	1.48%	1.80%	1.82%	1.88%
74		-0.08%	-0.33%	-0.51%	-0.63%	-0.62%	-0.61%	1.02%	1.37%	1.63%	1.98%	2.07%	2.16%
75		0.19%	-0.06%	-0.20%	-0.39%	-0.39%	-0.38%	0.68%	0.92%	1.09%	1.33%	1.33%	1.37%
76		-0.63%	-0.89%	-1.04%	-1.21%	-1.18%	-1.18%	0.91%	1.22%	1.46%	1.76%	1.77%	1.77%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		0.23%	-0.02%	-0.16%	-0.35%	-0.34%	-0.34%	0.66%	0.89%	1.06%	1.29%	1.31%	1.32%
79		0.23%	-0.02%	-0.16%	-0.35%	-0.34%	-0.33%	0.66%	0.89%	1.06%	1.29%	1.30%	1.32%
80		0.14%	-0.11%	-0.25%	-0.44%	-0.43%	-0.41%	0.71%	0.95%	1.13%	1.37%	1.43%	1.46%
81		0.53%	0.27%	0.13%	-0.07%	-0.06%	-0.06%	0.43%	0.59%	0.68%	0.84%	0.88%	0.89%
82		-2.96%	-3.32%	-3.56%	-3.78%	-3.65%	-3.58%	1.07%	1.43%	1.72%	2.06%	2.11%	2.19%
83		-2.96%	-3.32%	-3.56%	-3.78%	-3.65%	-3.51%	1.07%	1.43%	1.72%	2.06%	2.11%	2.11%
84	MACHINE	-1.64%	-2.07%	-2.39%	-2.72%	-2.63%	-2.58%	1.02%	1.42%	1.75%	2.14%	2.24%	2.27%
85		-1.81%	-2.27%	-2.56%	-2.91%	-2.76%	-2.66%	-0.25%	0.07%	0.36%	0.67%	0.70%	0.73%
86	VEHICLES	-1.07%	-1.80%	-2.34%	-2.82%	-2.72%	-2.59%	2.48%	2.79%	3.07%	3.39%	3.40%	3.52%
87		-0.30%	-0.60%	-0.81%	-0.95%	-0.94%	-0.92%	1.28%	1.63%	1.89%	2.24%	2.34%	2.43%
88		-1.27%	-2.10%	-2.71%	-3.27%	-3.24%	-3.18%	2.60%	2.91%	3.18%	3.50%	3.63%	3.70%
89		-1.25%	-2.08%	-2.70%	-3.26%	-3.14%	-3.08%	2.61%	2.91%	3.19%	3.51%	3.64%	3.66%
90	CLOCKS & MUSICAL INST.	-1.70%	-2.14%	-2.46%	-2.80%	-2.69%	-2.60%	1.47%	1.90%	2.27%	2.69%	2.80%	2.91%
91		-1.72%	-2.16%	-2.48%	-2.82%	-2.80%	-2.80%	1.47%	1.90%	2.27%	2.69%	2.79%	2.87%
92		-3.86%	-4.57%	-5.16%	-5.71%	-5.65%	-5.59%	-2.14%	-2.15%	-2.27%	-2.36%	-2.26%	-2.15%
93	ARMS	-1.71%	-2.15%	-2.47%	-2.81%	-2.80%	-2.66%	1.46%	1.90%	2.26%	2.68%	2.76%	2.77%
94	MISC. ART.	-2.40%	-2.90%	-3.28%	-3.66%	-3.63%	-3.46%	0.40%	0.72%	0.98%	1.30%	1.35%	1.38%
95		-3.86%	-4.57%	-5.16%	-5.71%	-5.49%	-5.34%	-2.14%	-2.15%	-2.27%	-2.36%	-2.36%	-2.26%
96		-3.94%	-4.64%	-5.23%	-5.78%	-5.73%	-5.73%	-2.15%	-2.16%	-2.27%	-2.37%	-2.29%	-2.21%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	

TRADE FORECASTING BETWEEN ASEAN AND AUSTRALIA

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.06%	0.02%	-0.15%	-2.35%	-2.53%	-2.85%	2.51%	2.75%	2.65%	4.05%	3.96%	3.59%
02		-1.02%	-1.09%	-0.85%	-3.65%	-4.14%	-4.73%	9.24%	9.78%	8.42%	3.42%	3.24%	2.84%
03		-0.13%	-0.05%	-0.16%	-0.46%	-0.49%	-0.52%	1.95%	1.98%	1.72%	2.04%	1.99%	1.81%
04		1.23%	1.35%	1.35%	3.20%	2.94%	2.73%	2.80%	2.92%	2.57%	2.13%	2.07%	1.78%
05		0.05%	0.01%	-0.15%	0.26%	0.24%	0.21%	3.83%	4.28%	3.95%	1.48%	1.26%	1.12%
06	VEGETABLE PRODUCTS	-2.76%	-2.96%	-2.80%	-4.22%	-4.84%	-4.97%	4.99%	5.28%	4.55%	0.76%	0.67%	0.65%
07		-2.73%	-2.77%	-2.68%	-1.44%	-1.61%	-1.85%	2.21%	2.30%	1.92%	1.34%	1.29%	1.18%
08		-3.44%	-3.53%	-3.41%	-0.28%	-0.29%	-0.33%	2.44%	2.58%	2.12%	3.09%	2.88%	2.64%
09		-1.45%	-1.48%	-1.45%	-4.58%	-4.68%	-5.02%	4.12%	4.34%	3.70%	1.36%	1.16%	1.00%
10		-1.30%	-1.49%	-2.29%	-3.94%	-4.08%	-4.38%	2.99%	2.99%	2.64%	1.61%	1.34%	1.25%
11		0.25%	0.36%	0.17%	2.52%	2.23%	2.09%	1.95%	1.98%	1.71%	0.19%	0.19%	0.16%
12		-1.66%	-1.71%	-1.55%	-3.63%	-3.88%	-3.96%	4.50%	4.73%	4.05%	4.17%	3.72%	3.50%
13		-0.29%	-0.22%	-0.35%	-1.74%	-1.97%	-2.29%	2.28%	2.36%	2.10%	1.31%	1.13%	1.04%
14		-0.55%	-0.61%	-0.62%	-1.32%	-1.44%	-1.66%	4.10%	4.39%	4.09%	4.96%	4.46%	4.12%
15	FATS & OILS	-0.67%	-0.71%	-0.47%	-4.89%	-5.33%	-6.05%	4.02%	4.20%	3.75%	1.21%	1.07%	0.94%
16	PREPARED FOODSTUFFS	-2.94%	-3.21%	-3.31%	-1.95%	-2.10%	-2.31%	1.99%	2.02%	1.74%	2.55%	2.21%	1.87%
17		0.45%	0.51%	0.58%	1.08%	0.94%	0.80%	3.71%	3.86%	3.37%	1.38%	1.22%	1.04%
18		-0.31%	-0.24%	-0.36%	-1.04%	-1.09%	-1.16%	2.11%	2.15%	1.85%	2.01%	1.87%	1.61%
19		-0.26%	-0.19%	-0.32%	-4.27%	-4.70%	-5.46%	1.96%	1.99%	1.71%	2.32%	2.25%	2.18%
20		-0.26%	-0.19%	-0.32%	-3.92%	-4.12%	-4.74%	1.96%	1.99%	1.71%	3.29%	3.14%	2.83%
21		0.74%	0.86%	0.81%	4.06%	3.54%	3.44%	1.97%	2.00%	1.73%	3.79%	3.67%	3.14%
22		1.09%	1.21%	0.92%	4.68%	4.31%	4.08%	1.44%	1.44%	1.38%	2.75%	2.66%	2.47%
23		-1.09%	-1.17%	-1.05%	-4.22%	-4.54%	-4.97%	3.73%	3.90%	3.49%	1.95%	1.65%	1.50%
24		1.08%	1.20%	0.91%	3.18%	2.65%	2.27%	2.86%	2.99%	2.68%	4.91%	4.33%	3.68%
25	MINERAL PRODUCTS	3.76%	4.11%	3.45%	1.59%	1.37%	1.22%	0.12%	0.17%	0.17%	1.38%	1.24%	1.10%
26		3.78%	4.13%	3.48%	4.99%	4.80%	4.45%	0.07%	0.14%	0.21%	0.46%	0.42%	0.39%
27		3.63%	4.67%	4.93%	2.29%	2.18%	1.91%	8.65%	9.57%	9.67%	1.58%	1.42%	1.30%
28	CHEMICAL PRODUCTS	3.38%	3.92%	3.82%	2.10%	1.98%	1.71%	2.94%	3.12%	3.12%	1.01%	0.92%	0.85%
29		2.83%	3.33%	3.26%	0.32%	0.31%	0.29%	2.83%	2.89%	2.46%	3.48%	2.93%	2.68%
30		2.79%	3.28%	3.22%	3.53%	3.41%	3.14%	2.76%	2.81%	2.39%	0.63%	0.57%	0.55%
31		2.94%	3.42%	3.29%	0.95%	0.82%	0.75%	2.77%	2.82%	2.42%	1.79%	1.58%	1.47%
32		2.84%	3.34%	3.27%	0.56%	0.55%	0.46%	2.84%	2.89%	2.47%	2.85%	2.71%	2.42%
33		2.84%	3.34%	3.27%	4.23%	3.87%	3.70%	2.84%	2.89%	2.47%	3.96%	3.56%	3.41%
34		2.76%	3.25%	3.17%	4.13%	3.96%	3.65%	2.41%	2.45%	2.01%	3.57%	3.28%	3.10%
35		1.53%	1.74%	1.72%	2.51%	2.29%	1.96%	2.51%	2.56%	2.19%	0.46%	0.44%	0.39%
36		1.96%	2.37%	2.23%	1.66%	1.54%	1.37%	0.09%	0.02%	-0.57%	2.75%	2.46%	2.35%
37		2.84%	3.34%	3.27%	1.44%	1.21%	1.00%	2.84%	2.89%	2.47%	3.47%	3.01%	2.82%
38		2.72%	3.20%	3.13%	3.67%	3.45%	3.17%	2.71%	2.75%	2.33%	4.18%	3.84%	3.21%
39	PLASTICS	2.84%	3.34%	3.27%	0.11%	0.11%	0.10%	2.84%	2.89%	2.47%	4.95%	4.62%	4.30%
40		2.80%	3.29%	3.22%	3.01%	2.74%	2.55%	2.94%	3.01%	2.61%	2.36%	2.29%	2.14%
41	LEATHER GOODS	-2.90%	-2.87%	-3.19%	-1.60%	-1.68%	-1.81%	-5.07%	-5.11%	-5.74%	-3.70%	-4.15%	-4.79%
42		-3.60%	-3.60%	-4.03%	-1.90%	-2.22%	-2.38%	-3.61%	-3.72%	-4.43%	-3.90%	-4.54%	-5.03%
43		-0.02%	0.00%	-0.25%	-1.96%	-2.28%	-2.46%	0.79%	0.78%	0.75%	1.03%	0.98%	0.94%
44	WOOD PRODUCTS	-0.82%	-0.75%	-0.90%	-1.95%	-2.14%	-2.28%	1.16%	1.21%	1.00%	1.80%	1.70%	1.59%
45		-1.15%	-1.16%	-1.32%	-1.78%	-2.05%	-2.32%	1.50%	1.60%	1.40%	1.20%	1.09%	1.06%
46		-1.26%	-1.26%	-1.44%	-1.64%	-1.75%	-1.91%	0.70%	0.70%	0.48%	4.53%	3.90%	3.61%
47	PAPER	1.50%	1.75%	1.47%	2.47%	2.11%	1.98%	2.21%	2.22%	1.80%	2.43%	2.06%	1.97%
48		1.50%	1.75%	1.47%	1.66%	1.47%	1.39%	2.21%	2.22%	1.80%	4.47%	4.04%	3.53%
49		1.50%	1.75%	1.47%	3.24%	3.02%	2.72%	2.21%	2.22%	1.80%	2.09%	2.04%	1.92%

TRADE FORECASTING BETWEEN ASEAN AND AUSTRALIA (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-2.58%	-2.52%	-2.72%	-0.83%	-0.93%	-0.98%	1.92%	2.91%	2.51%	0.48%	0.42%	0.35%
51		-2.44%	-2.40%	-2.54%	-4.03%	-4.29%	-4.89%	3.09%	4.27%	3.82%	2.30%	1.91%	1.67%
52		1.02%	1.35%	1.01%	1.84%	1.53%	1.40%	-3.19%	-3.36%	-4.03%	-2.16%	-2.21%	-2.38%
53		2.56%	2.88%	2.50%	2.22%	2.14%	2.09%	-3.17%	-3.34%	-4.00%	-4.09%	-4.55%	-5.32%
54		-3.23%	-3.12%	-3.59%	-1.05%	-1.19%	-1.23%	-3.19%	-3.36%	-4.03%	-0.79%	-0.85%	-0.99%
55		-3.23%	-3.12%	-3.59%	-2.77%	-3.01%	-3.23%	-3.19%	-3.36%	-4.03%	-2.25%	-2.59%	-2.79%
56		-3.23%	-3.12%	-3.59%	-4.12%	-4.54%	-4.70%	-3.19%	-3.36%	-4.03%	-2.96%	-3.33%	-3.72%
57		-3.23%	-3.12%	-3.59%	-0.81%	-0.94%	-1.04%	-3.19%	-3.36%	-4.03%	-3.74%	-3.86%	-4.04%
58		-3.23%	-3.12%	-3.59%	-0.89%	-0.91%	-1.04%	-3.19%	-3.36%	-4.03%	-2.38%	-2.60%	-2.68%
59		0.33%	0.67%	0.46%	2.33%	2.28%	2.03%	-0.75%	-0.84%	-1.45%	-0.27%	-0.29%	-0.34%
60		-3.23%	-3.12%	-3.59%	-3.80%	-4.39%	-4.54%	-3.19%	-3.36%	-4.03%	-4.47%	-4.94%	-5.68%
61		-3.39%	-3.30%	-3.70%	-0.57%	-0.64%	-0.74%	-3.78%	-3.85%	-4.42%	-0.22%	-0.24%	-0.26%
62		-3.51%	-3.44%	-3.78%	-1.34%	-1.54%	-1.64%	-3.87%	-3.92%	-4.48%	-1.40%	-1.56%	-1.78%
63	-2.86%	-2.75%	-3.21%	-4.13%	-4.49%	-5.20%	-2.07%	-2.15%	-2.74%	-4.78%	-4.96%	-5.42%	
64	FOOTWEAR	-4.36%	-4.39%	-4.81%	-0.67%	-0.73%	-0.80%	-5.11%	-5.15%	-5.78%	-3.83%	-4.09%	-4.46%
65		2.10%	2.59%	2.54%	0.42%	0.36%	0.34%	-0.70%	-0.59%	-0.95%	-4.81%	-5.62%	-5.75%
66		-1.00%	-0.99%	-1.53%	-1.87%	-2.09%	-2.39%	-1.88%	-2.14%	-2.99%	-4.55%	-4.65%	-5.27%
67		-1.00%	-0.99%	-1.53%	-3.57%	-3.97%	-4.13%	-1.88%	-2.14%	-2.99%	-3.20%	-3.50%	-4.09%
68	STONE & GLASS	0.35%	0.62%	0.45%	1.56%	1.42%	1.18%	0.76%	0.72%	0.34%	3.81%	3.23%	3.01%
69		0.35%	0.62%	0.45%	1.85%	1.77%	1.61%	0.76%	0.72%	0.34%	2.22%	1.92%	1.82%
70		0.21%	0.48%	0.30%	4.85%	4.43%	4.32%	0.72%	0.67%	0.30%	1.08%	0.90%	0.85%
71	PRECIOUS STONES	-0.63%	-0.65%	-1.29%	-0.57%	-0.65%	-0.67%	1.69%	1.87%	1.41%	1.10%	0.96%	0.92%
72	BASE METALS	2.34%	2.83%	2.46%	4.67%	4.36%	3.83%	1.97%	2.13%	1.90%	4.11%	4.01%	3.42%
73		0.78%	1.17%	0.88%	1.45%	1.28%	1.23%	1.23%	1.23%	0.75%	1.32%	1.14%	0.96%
74		-0.70%	-0.72%	-1.37%	-2.87%	-2.97%	-3.10%	2.65%	2.83%	2.55%	4.16%	3.55%	3.00%
75		-0.76%	-0.79%	-1.45%	-1.72%	-1.88%	-1.94%	2.80%	3.06%	2.63%	4.16%	3.67%	3.40%
76		-0.75%	-0.78%	-1.43%	-1.34%	-1.44%	-1.54%	2.62%	2.85%	2.41%	3.83%	3.18%	2.73%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		-0.76%	-0.80%	-1.45%	-0.68%	-0.75%	-0.81%	2.81%	3.07%	2.63%	0.34%	0.31%	0.27%
79		-0.76%	-0.80%	-1.45%	-3.74%	-4.07%	-4.26%	2.81%	3.07%	2.63%	4.46%	3.75%	3.57%
80		-0.76%	-0.79%	-1.45%	-1.55%	-1.80%	-2.00%	2.79%	3.05%	2.62%	0.26%	0.22%	0.21%
81		-0.76%	-0.80%	-1.45%	-4.76%	-5.23%	-5.94%	2.86%	3.12%	2.69%	0.37%	0.36%	0.35%
82		-0.53%	-0.25%	-0.49%	-2.82%	-3.09%	-3.35%	0.66%	0.60%	0.03%	2.95%	2.45%	2.03%
83		-0.53%	-0.25%	-0.49%	-0.17%	-0.20%	-0.23%	0.66%	0.60%	0.03%	4.02%	3.86%	3.42%
84	MACHINE	-0.38%	-0.21%	-0.65%	-4.48%	-4.79%	-4.92%	1.42%	1.45%	1.03%	0.98%	0.89%	0.84%
85		-0.26%	-0.09%	-0.49%	-1.97%	-2.19%	-2.38%	-0.28%	-0.31%	-0.77%	-1.76%	-1.90%	-2.02%
86	VEHICLES	0.24%	0.22%	-0.33%	-3.05%	-3.36%	-3.52%	2.63%	2.58%	2.11%	1.63%	1.40%	1.29%
87		0.91%	1.12%	0.69%	0.95%	0.85%	0.80%	2.52%	2.62%	2.43%	3.44%	2.92%	2.72%
88		0.18%	0.14%	-0.42%	-5.95%	-6.32%	-7.30%	2.69%	2.51%	1.83%	1.49%	1.38%	1.24%
89		0.19%	0.15%	-0.41%	-4.88%	-4.99%	-5.60%	2.72%	2.54%	1.86%	2.69%	2.26%	2.11%
90	CLOCKS & MUSICAL INST.	-0.74%	-0.61%	-1.10%	-0.97%	-1.08%	-1.11%	2.36%	2.35%	1.82%	0.41%	0.38%	0.35%
91		-0.76%	-0.64%	-1.12%	-2.70%	-3.15%	-3.44%	2.36%	2.35%	1.82%	1.02%	0.86%	0.76%
92		-1.00%	-0.99%	-1.53%	-2.64%	-2.91%	-3.39%	-1.88%	-2.14%	-2.99%	-2.70%	-2.93%	-3.05%
93	ARMS	-0.73%	-0.59%	-1.07%	-4.32%	-4.43%	-4.64%	2.33%	2.32%	1.79%	3.09%	2.65%	2.37%
94	MISC. ART.	-0.73%	-0.64%	-1.11%	-1.78%	-1.93%	-2.14%	-0.76%	-0.91%	-1.63%	-1.51%	-1.61%	-1.85%
95		-1.00%	-0.99%	-1.53%	-4.09%	-4.48%	-5.20%	-1.88%	-2.14%	-2.99%	-3.39%	-3.74%	-4.36%
96		-1.05%	-1.04%	-1.57%	-4.27%	-4.79%	-5.14%	-1.90%	-2.15%	-3.00%	-3.60%	-3.83%	-4.08%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

TRADE FORECASTING BETWEEN ASEAN AND CHINA

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	4.20%	4.25%	3.99%	3.99%	3.78%	3.25%	3.90%	3.95%	3.62%	0.02%	0.02%	0.01%
02		14.93%	14.28%	13.94%	1.04%	0.97%	0.94%	4.29%	4.73%	3.46%	3.42%	3.35%	3.07%
03		5.87%	5.86%	5.60%	1.75%	1.65%	1.39%	2.38%	2.49%	2.19%	0.81%	0.79%	0.67%
04		14.04%	14.27%	14.25%	3.51%	3.18%	2.85%	2.31%	2.43%	2.04%	0.70%	0.66%	0.62%
05		5.85%	5.84%	5.59%	1.71%	1.56%	1.32%	2.33%	2.44%	2.19%	2.41%	2.02%	1.71%
06	VEGETABLE PRODUCTS	7.92%	7.80%	7.96%	1.26%	1.20%	1.13%	6.94%	7.16%	6.67%	1.72%	1.52%	1.41%
07		2.51%	2.44%	2.46%	4.39%	3.97%	3.79%	2.05%	2.03%	1.75%	2.18%	2.01%	1.72%
08		1.88%	1.76%	1.81%	0.01%	0.01%	0.01%	2.01%	1.98%	1.71%	0.51%	0.49%	0.44%
09		7.64%	7.54%	7.65%	1.57%	1.34%	1.13%	6.56%	6.82%	6.09%	4.91%	4.26%	3.63%
10		11.57%	11.44%	10.52%	1.07%	0.91%	0.77%	0.52%	0.56%	0.18%	1.10%	1.01%	0.95%
11		5.77%	5.77%	5.50%	0.84%	0.76%	0.72%	2.47%	2.58%	2.24%	4.28%	4.05%	3.92%
12		7.78%	7.74%	7.88%	3.70%	3.43%	3.08%	4.28%	4.58%	4.13%	4.24%	4.11%	3.98%
13		5.90%	5.89%	5.62%	4.73%	3.97%	3.57%	6.66%	6.88%	6.43%	4.80%	4.62%	4.10%
14		8.08%	8.12%	8.25%	2.86%	2.56%	2.51%	6.56%	6.78%	6.32%	0.60%	0.56%	0.52%
15	FATS & OILS	10.38%	10.31%	10.23%	3.45%	3.16%	2.73%	1.83%	1.84%	1.29%	1.20%	1.05%	0.88%
16	PREPARED FOODSTUFFS	9.05%	8.96%	8.81%	1.72%	1.58%	1.34%	2.46%	2.57%	2.22%	0.47%	0.45%	0.41%
17		10.29%	10.39%	10.54%	3.89%	3.40%	3.20%	3.31%	3.53%	2.93%	2.18%	1.97%	1.92%
18		6.17%	6.15%	5.94%	2.83%	2.56%	2.46%	2.85%	2.99%	2.62%	4.46%	4.19%	3.71%
19		5.91%	5.90%	5.63%	4.15%	4.07%	3.55%	2.44%	2.55%	2.21%	0.18%	0.16%	0.14%
20		5.91%	5.90%	5.63%	2.21%	2.03%	1.97%	2.44%	2.55%	2.21%	3.22%	3.15%	2.73%
21		6.53%	6.58%	6.38%	2.89%	2.46%	2.28%	2.44%	2.55%	2.21%	2.73%	2.29%	1.96%
22		3.59%	3.69%	3.37%	0.78%	0.66%	0.64%	3.35%	3.37%	3.19%	0.61%	0.59%	0.53%
23		9.08%	9.06%	9.09%	1.26%	1.17%	1.03%	2.50%	2.58%	2.07%	3.68%	3.09%	2.69%
24		4.90%	4.97%	4.85%	3.19%	3.04%	2.92%	5.08%	5.22%	4.81%	4.93%	4.27%	3.70%
25	MINERAL PRODUCTS	6.07%	6.32%	5.82%	3.00%	2.55%	2.36%	7.97%	8.10%	8.15%	0.31%	0.27%	0.24%
26		5.72%	6.10%	5.52%	2.69%	2.60%	2.19%	7.98%	8.12%	8.16%	3.85%	3.38%	3.05%
27		8.16%	8.90%	8.85%	3.09%	2.77%	2.46%	11.52%	12.31%	12.41%	4.40%	3.80%	3.51%
28	CHEMICAL PRODUCTS	9.50%	9.75%	9.37%	4.11%	3.47%	3.40%	7.40%	7.69%	7.34%	2.33%	1.98%	1.90%
29		9.61%	9.80%	9.40%	4.91%	4.30%	3.75%	7.26%	7.53%	7.09%	1.55%	1.43%	1.33%
30		9.24%	9.41%	8.98%	3.43%	3.16%	2.85%	7.23%	7.50%	7.07%	1.05%	0.94%	0.90%
31		9.58%	9.78%	9.38%	2.17%	1.87%	1.68%	7.36%	7.61%	7.25%	0.70%	0.61%	0.56%
32		9.61%	9.81%	9.41%	3.13%	2.92%	2.74%	7.26%	7.53%	7.10%	4.35%	4.18%	3.67%
33		9.61%	9.81%	9.41%	4.37%	4.23%	3.85%	7.26%	7.53%	7.10%	2.50%	2.36%	2.20%
34		9.68%	9.86%	9.44%	4.57%	4.44%	3.90%	7.23%	7.50%	7.07%	0.88%	0.76%	0.72%
35		9.36%	9.56%	9.23%	3.02%	2.57%	2.33%	6.97%	7.24%	6.83%	2.81%	2.71%	2.27%
36		10.12%	10.20%	9.68%	4.07%	3.78%	3.62%	6.90%	7.18%	6.74%	0.37%	0.32%	0.30%
37		9.61%	9.81%	9.41%	4.89%	4.78%	4.03%	7.26%	7.53%	7.10%	3.04%	2.73%	2.31%
38		9.35%	9.52%	9.09%	3.94%	3.85%	3.26%	7.17%	7.44%	7.01%	0.94%	0.89%	0.86%
39	PLASTICS	9.61%	9.81%	9.41%	2.27%	2.01%	1.71%	7.26%	7.53%	7.10%	1.40%	1.18%	1.08%
40		9.61%	9.80%	9.40%	4.70%	4.07%	3.93%	7.10%	7.34%	6.90%	3.26%	3.08%	2.85%
41	LEATHER GOODS	7.75%	7.58%	6.89%	0.28%	0.24%	0.20%	2.46%	2.57%	1.91%	3.54%	3.44%	2.88%
42		7.80%	7.69%	7.07%	1.92%	1.71%	1.62%	2.57%	2.69%	2.02%	4.07%	3.90%	3.71%
43		3.56%	3.58%	3.28%	1.92%	1.86%	1.80%	3.90%	3.95%	3.62%	4.02%	3.63%	3.38%
44	WOOD PRODUCTS	5.24%	5.15%	4.83%	3.91%	3.25%	2.75%	6.61%	6.83%	6.39%	4.33%	3.69%	3.24%
45		4.90%	4.78%	4.46%	4.32%	4.00%	3.38%	6.75%	6.97%	6.51%	4.84%	4.50%	4.16%
46		4.90%	4.78%	4.45%	4.79%	4.64%	4.29%	1.01%	0.91%	0.58%	2.85%	2.75%	2.54%
47	PAPER	8.86%	8.99%	8.55%	2.04%	1.82%	1.72%	5.02%	5.17%	4.66%	3.01%	2.75%	2.52%
48		8.86%	8.99%	8.55%	0.77%	0.75%	0.63%	5.02%	5.17%	4.66%	2.89%	2.42%	2.09%
49		8.86%	8.99%	8.55%	2.25%	2.09%	1.83%	5.02%	5.17%	4.66%	3.70%	3.30%	2.77%

TRADE FORECASTING BETWEEN ASEAN AND CHINA (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	6.33%	6.22%	5.46%	2.46%	2.33%	2.15%	4.09%	4.25%	3.64%	0.47%	0.43%	0.42%
51		6.33%	6.22%	5.46%	2.42%	2.14%	2.02%	4.09%	4.25%	3.64%	4.39%	4.03%	3.40%
52		6.33%	6.22%	5.47%	0.76%	0.70%	0.59%	4.09%	4.25%	3.64%	2.22%	1.99%	1.66%
53		6.46%	6.36%	5.62%	3.88%	3.69%	3.41%	4.37%	4.56%	3.98%	3.57%	3.09%	2.81%
54		6.33%	6.22%	5.46%	1.14%	1.12%	1.09%	4.08%	4.24%	3.63%	4.55%	4.06%	3.82%
55		6.33%	6.22%	5.46%	1.03%	0.98%	0.87%	4.08%	4.24%	3.63%	2.96%	2.70%	2.61%
56		6.33%	6.22%	5.46%	4.12%	3.51%	3.17%	4.08%	4.24%	3.63%	2.05%	1.80%	1.70%
57		6.33%	6.22%	5.46%	1.13%	0.95%	0.83%	4.08%	4.24%	3.63%	0.16%	0.15%	0.13%
58		6.33%	6.22%	5.46%	2.08%	1.84%	1.79%	4.08%	4.24%	3.63%	0.76%	0.67%	0.57%
59		7.24%	7.20%	6.52%	2.91%	2.67%	2.41%	5.76%	6.01%	5.52%	4.78%	4.64%	4.47%
60		6.33%	6.22%	5.46%	0.76%	0.73%	0.62%	4.08%	4.24%	3.63%	0.63%	0.54%	0.45%
61		6.38%	6.29%	5.75%	2.43%	2.27%	2.18%	3.72%	3.93%	3.38%	1.79%	1.70%	1.57%
62		6.38%	6.30%	5.79%	3.78%	3.44%	3.17%	3.31%	3.56%	3.09%	0.95%	0.83%	0.69%
63	6.40%	6.29%	5.54%	4.57%	4.24%	4.00%	4.12%	4.29%	3.69%	2.44%	2.03%	1.74%	
64	FOOTWEAR	7.78%	7.60%	6.91%	3.98%	3.82%	3.25%	2.40%	2.51%	1.84%	1.28%	1.20%	1.13%
65		6.67%	6.62%	6.13%	4.59%	4.32%	4.14%	6.93%	7.21%	6.78%	1.74%	1.51%	1.40%
66		10.67%	10.61%	9.97%	3.48%	3.14%	3.06%	3.15%	3.32%	2.65%	2.14%	1.83%	1.54%
67		10.67%	10.61%	9.97%	2.80%	2.35%	2.10%	3.15%	3.32%	2.65%	1.07%	0.97%	0.85%
68	STONE & GLASS	6.90%	7.00%	6.60%	4.82%	4.01%	3.38%	4.11%	4.32%	3.81%	4.62%	4.18%	3.94%
69		6.90%	7.00%	6.60%	0.09%	0.09%	0.07%	4.11%	4.32%	3.81%	3.57%	3.28%	3.12%
70		6.85%	6.93%	6.51%	1.33%	1.29%	1.14%	4.11%	4.32%	3.80%	1.74%	1.56%	1.30%
71	PRECIOUS STONES	11.16%	11.20%	10.50%	4.08%	3.49%	3.17%	6.95%	7.20%	6.85%	0.95%	0.85%	0.76%
72	BASE METALS	7.21%	7.34%	6.54%	3.58%	3.46%	3.26%	6.22%	6.59%	6.39%	0.91%	0.83%	0.77%
73		7.52%	7.57%	6.84%	1.78%	1.70%	1.48%	4.64%	4.91%	4.40%	2.70%	2.44%	2.26%
74		10.04%	10.17%	9.51%	4.99%	4.22%	3.97%	6.39%	6.73%	6.05%	4.84%	4.65%	4.17%
75		11.24%	11.31%	10.59%	4.86%	4.10%	3.45%	6.64%	6.97%	6.26%	1.26%	1.15%	1.03%
76		10.26%	10.31%	9.65%	3.10%	2.74%	2.55%	6.37%	6.70%	6.01%	4.89%	4.14%	4.02%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		11.29%	11.36%	10.63%	4.99%	4.17%	3.67%	6.65%	6.98%	6.27%	0.88%	0.84%	0.80%
79		11.29%	11.36%	10.63%	0.97%	0.95%	0.92%	6.65%	6.98%	6.27%	1.20%	1.08%	0.93%
80		11.18%	11.25%	10.53%	2.57%	2.35%	2.23%	6.62%	6.96%	6.25%	1.33%	1.15%	1.11%
81		11.66%	11.74%	10.98%	2.02%	1.79%	1.61%	6.72%	7.06%	6.34%	0.76%	0.72%	0.69%
82		7.85%	7.80%	7.20%	2.98%	2.47%	2.06%	4.25%	4.47%	3.87%	2.78%	2.50%	2.39%
83		7.85%	7.80%	7.20%	3.25%	2.74%	2.53%	4.25%	4.47%	3.87%	3.05%	2.60%	2.27%
84	MACHINE	8.39%	8.27%	7.51%	1.44%	1.23%	1.05%	5.57%	5.72%	5.19%	2.46%	2.17%	2.08%
85		8.26%	8.18%	7.48%	1.60%	1.50%	1.26%	6.13%	6.20%	5.68%	0.50%	0.44%	0.42%
86	VEHICLES	10.51%	10.14%	9.23%	3.68%	3.17%	3.08%	3.96%	4.17%	3.42%	3.93%	3.67%	3.51%
87		8.96%	8.87%	8.14%	1.08%	0.90%	0.84%	3.65%	3.89%	3.42%	1.16%	1.04%	0.95%
88		10.52%	10.14%	9.24%	3.75%	3.40%	3.31%	4.04%	4.24%	3.47%	0.49%	0.42%	0.36%
89		10.56%	10.18%	9.27%	3.58%	3.19%	2.79%	4.03%	4.24%	3.46%	3.27%	2.92%	2.81%
90	CLOCKS & MUSICAL INST.	8.40%	8.25%	7.44%	1.51%	1.26%	1.15%	4.37%	4.65%	4.08%	2.46%	2.29%	1.97%
91		8.39%	8.23%	7.43%	4.86%	4.65%	4.04%	4.36%	4.65%	4.07%	0.64%	0.57%	0.50%
92		10.67%	10.61%	9.97%	3.21%	2.71%	2.45%	3.15%	3.32%	2.65%	2.04%	1.90%	1.74%
93	ARMS	8.38%	8.22%	7.42%	4.44%	3.79%	3.17%	4.37%	4.65%	4.08%	4.94%	4.11%	3.58%
94	MISC. ART.	9.51%	9.44%	8.76%	1.82%	1.77%	1.50%	4.20%	4.45%	3.87%	3.85%	3.26%	3.01%
95		10.67%	10.61%	9.97%	2.69%	2.63%	2.40%	3.15%	3.32%	2.65%	3.27%	2.88%	2.54%
96		10.62%	10.57%	9.93%	1.22%	1.17%	1.05%	3.14%	3.31%	2.63%	2.36%	2.00%	1.90%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

TRADE FORECASTING BETWEEN ASEAN AND JAPAN

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	-0.09%	-0.16%	-0.48%	-4.79%	-5.14%	-5.62%	-2.23%	-1.99%	-2.32%	-0.71%	-0.83%	-0.87%
02		-2.91%	-3.64%	-3.68%	-3.60%	-3.83%	-4.19%	-0.36%	-0.44%	-2.37%	-2.59%	-2.79%	-2.85%
03		-0.52%	-0.70%	-0.94%	-1.55%	-1.65%	-1.91%	-0.91%	-0.61%	-1.00%	-3.60%	-4.18%	-4.65%
04		-0.01%	-0.31%	-0.55%	-4.23%	-4.37%	-4.48%	-0.63%	-0.32%	-0.77%	-2.51%	-2.89%	-3.23%
05		-0.38%	-0.56%	-0.78%	-3.03%	-3.16%	-3.31%	-0.86%	-0.54%	-0.89%	-3.20%	-3.48%	-3.75%
06	VEGETABLE PRODUCTS	-3.13%	-3.83%	-3.99%	-0.61%	-0.67%	-0.70%	1.48%	1.84%	1.30%	2.90%	2.42%	2.28%
07		-0.74%	-0.93%	-1.17%	-2.24%	-2.62%	-2.92%	-0.67%	-0.37%	-0.88%	-2.97%	-3.28%	-3.78%
08		-1.04%	-1.23%	-1.44%	-3.39%	-3.48%	-3.57%	-0.53%	-0.22%	-0.77%	-2.14%	-2.25%	-2.42%
09		-1.62%	-1.99%	-2.18%	-1.54%	-1.74%	-1.94%	0.40%	0.69%	-0.08%	-5.78%	-6.50%	-6.68%
10		-5.24%	-5.86%	-5.07%	-3.26%	-3.43%	-3.96%	1.16%	1.48%	0.55%	2.11%	1.86%	1.60%
11		-0.54%	-0.72%	-0.97%	-0.11%	-0.12%	-0.13%	-0.94%	-0.65%	-1.09%	-0.39%	-0.44%	-0.47%
12		-2.09%	-2.55%	-2.71%	-3.99%	-4.49%	-4.91%	0.98%	1.29%	0.48%	0.98%	0.83%	0.71%
13		-0.61%	-0.81%	-1.06%	-2.22%	-2.32%	-2.45%	0.67%	1.04%	0.65%	4.65%	4.45%	4.26%
14		-0.63%	-0.99%	-1.15%	-3.12%	-3.65%	-3.98%	1.56%	1.95%	1.54%	1.90%	1.86%	1.59%
15	FATS & OILS	-1.25%	-1.61%	-2.02%	-4.21%	-4.29%	-4.98%	0.04%	0.22%	-0.70%	-0.37%	-0.41%	-0.46%
16	PREPARED FOODSTUFFS	-0.89%	-1.12%	-1.36%	-1.31%	-1.40%	-1.55%	-0.72%	-0.57%	-1.58%	-1.90%	-2.11%	-2.20%
17		-0.08%	-0.45%	-0.59%	-1.45%	-1.51%	-1.55%	0.72%	1.01%	0.63%	2.30%	2.24%	1.87%
18		-0.65%	-0.85%	-1.10%	-1.11%	-1.27%	-1.41%	-0.85%	-0.57%	-1.03%	-1.73%	-1.77%	-1.93%
19		-0.61%	-0.81%	-1.06%	-0.51%	-0.57%	-0.65%	-0.94%	-0.66%	-1.10%	-0.46%	-0.54%	-0.61%
20		-0.61%	-0.81%	-1.06%	-2.97%	-3.08%	-3.52%	-0.94%	-0.66%	-1.10%	-4.23%	-4.41%	-4.98%
21		-0.60%	-0.79%	-1.04%	-4.28%	-4.73%	-4.99%	-0.94%	-0.65%	-1.09%	-3.56%	-3.65%	-3.80%
22		0.86%	0.86%	0.54%	1.37%	1.18%	1.02%	-0.59%	-0.35%	-0.59%	-3.76%	-4.30%	-4.83%
23		-0.88%	-1.13%	-1.28%	-0.28%	-0.29%	-0.33%	0.33%	0.60%	-0.07%	-0.54%	-0.60%	-0.67%
24		0.72%	0.70%	0.40%	3.47%	3.35%	3.08%	0.28%	0.54%	-0.01%	-4.92%	-5.73%	-6.15%
25	MINERAL PRODUCTS	0.59%	0.61%	0.19%	2.98%	2.85%	2.44%	-0.38%	-0.39%	-0.34%	-1.61%	-1.74%	-2.00%
26		2.27%	2.41%	1.86%	2.07%	1.96%	1.90%	-0.36%	-0.39%	-0.32%	-4.30%	-4.86%	-5.18%
27		5.51%	6.10%	5.87%	1.75%	1.56%	1.36%	3.95%	4.41%	4.10%	0.75%	0.70%	0.61%
28	CHEMICAL PRODUCTS	-0.21%	-0.44%	-0.97%	-0.42%	-0.47%	-0.52%	1.46%	1.76%	1.36%	1.96%	1.63%	1.58%
29		-0.74%	-1.09%	-1.69%	-3.42%	-3.72%	-3.99%	1.38%	1.69%	1.17%	3.50%	3.08%	2.67%
30		-0.79%	-1.13%	-1.73%	-3.01%	-3.10%	-3.53%	1.26%	1.57%	1.06%	4.74%	4.26%	3.78%
31		-0.73%	-1.07%	-1.68%	-1.14%	-1.24%	-1.31%	1.04%	1.27%	0.89%	0.09%	0.09%	0.08%
32		-0.74%	-1.09%	-1.69%	-4.45%	-4.72%	-4.89%	1.40%	1.70%	1.19%	1.34%	1.18%	0.98%
33		-0.74%	-1.09%	-1.69%	-1.83%	-2.11%	-2.25%	1.40%	1.70%	1.19%	1.77%	1.56%	1.51%
34		-0.79%	-1.14%	-1.74%	-2.93%	-3.39%	-3.46%	1.08%	1.39%	0.87%	0.28%	0.25%	0.24%
35		-0.73%	-1.07%	-1.66%	-3.11%	-3.56%	-3.94%	0.38%	0.69%	0.22%	1.02%	0.89%	0.86%
36		-1.20%	-1.60%	-2.23%	-4.13%	-4.27%	-4.77%	-0.99%	-0.67%	-1.32%	-2.51%	-2.58%	-2.99%
37		-0.74%	-1.09%	-1.69%	-2.04%	-2.14%	-2.19%	1.40%	1.70%	1.19%	1.24%	1.18%	1.06%
38		-0.85%	-1.20%	-1.79%	-3.73%	-3.89%	-4.14%	1.14%	1.45%	0.93%	1.26%	1.12%	0.99%
39	PLASTICS	-0.74%	-1.09%	-1.69%	-1.42%	-1.54%	-1.60%	1.40%	1.70%	1.19%	3.69%	3.46%	3.04%
40		-0.74%	-1.09%	-1.69%	-2.61%	-3.03%	-3.40%	1.50%	1.84%	1.38%	4.74%	4.64%	3.95%
41	LEATHER GOODS	-4.59%	-5.10%	-5.68%	-0.92%	-1.02%	-1.19%	-5.88%	-5.67%	-6.48%	-4.57%	-4.82%	-5.23%
42		-3.01%	-3.62%	-4.34%	-0.23%	-0.26%	-0.27%	-5.22%	-4.99%	-5.80%	-0.53%	-0.62%	-0.67%
43		-0.09%	-0.16%	-0.48%	-1.02%	-1.10%	-1.27%	-2.23%	-1.99%	-2.32%	-2.47%	-2.72%	-2.88%
44	WOOD PRODUCTS	-1.11%	-1.44%	-1.93%	-2.99%	-3.27%	-3.65%	0.21%	0.54%	0.20%	1.58%	1.37%	1.23%
45		-1.57%	-1.90%	-2.22%	-4.36%	-4.97%	-5.10%	0.75%	1.11%	0.75%	0.94%	0.84%	0.82%
46		-1.71%	-2.03%	-2.36%	-3.66%	-3.83%	-4.23%	-1.69%	-1.51%	-1.82%	-1.49%	-1.56%	-1.69%
47	PAPER	0.47%	0.29%	-0.13%	-1.42%	-1.62%	-1.69%	0.35%	0.61%	0.06%	4.71%	4.44%	4.15%
48		0.47%	0.29%	-0.13%	2.39%	2.02%	1.84%	0.35%	0.61%	0.06%	1.21%	1.06%	0.95%
49		0.47%	0.29%	-0.13%	1.09%	1.06%	0.98%	0.35%	0.61%	0.06%	4.61%	4.20%	3.73%

TRADE FORECASTING BETWEEN ASEAN AND JAPAN (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-3.99%	-4.44%	-5.16%	-1.37%	-1.58%	-1.63%	-6.73%	-6.65%	-7.38%	-1.35%	-1.54%	-1.62%
51		-3.99%	-4.44%	-5.16%	-0.66%	-0.67%	-0.75%	-6.73%	-6.65%	-7.38%	-3.43%	-3.68%	-4.13%
52		-3.99%	-4.44%	-5.16%	-4.54%	-4.63%	-4.80%	-6.72%	-6.64%	-7.37%	-4.69%	-5.40%	-6.01%
53		-3.99%	-4.44%	-5.16%	-2.94%	-3.06%	-3.26%	-6.36%	-6.27%	-6.94%	-2.58%	-2.79%	-3.10%
54		-3.99%	-4.44%	-5.16%	-2.28%	-2.62%	-2.93%	-6.73%	-6.65%	-7.38%	-0.85%	-0.96%	-1.07%
55		-3.99%	-4.44%	-5.16%	-1.27%	-1.43%	-1.51%	-6.73%	-6.65%	-7.38%	-2.42%	-2.55%	-2.94%
56		-3.99%	-4.44%	-5.16%	-1.03%	-1.08%	-1.10%	-6.73%	-6.65%	-7.38%	-3.07%	-3.16%	-3.56%
57		-3.99%	-4.44%	-5.16%	-4.38%	-4.66%	-5.24%	-6.73%	-6.65%	-7.38%	-0.15%	-0.16%	-0.18%
58		-3.99%	-4.44%	-5.16%	-3.43%	-3.87%	-4.10%	-6.73%	-6.65%	-7.38%	-0.63%	-0.66%	-0.74%
59		-2.34%	-2.75%	-3.39%	-4.14%	-4.26%	-4.73%	-3.15%	-2.86%	-3.50%	-2.11%	-2.19%	-2.38%
60		-3.99%	-4.44%	-5.16%	-1.93%	-2.22%	-2.39%	-6.73%	-6.65%	-7.38%	-1.40%	-1.58%	-1.66%
61		-4.00%	-4.45%	-5.14%	-4.77%	-5.29%	-5.82%	-5.25%	-4.95%	-5.61%	-0.18%	-0.19%	-0.22%
62		-4.04%	-4.50%	-5.03%	-3.39%	-3.95%	-4.32%	-5.16%	-4.85%	-5.50%	-0.43%	-0.47%	-0.53%
63	-3.49%	-3.94%	-4.62%	-4.71%	-5.12%	-6.00%	-5.91%	-5.76%	-6.43%	-0.34%	-0.37%	-0.42%	
64	FOOTWEAR	-4.98%	-5.55%	-6.17%	-4.64%	-5.42%	-6.16%	-5.97%	-5.77%	-6.59%	-4.43%	-5.07%	-5.62%
65		-0.87%	-1.21%	-1.81%	-1.54%	-1.73%	-1.95%	-3.68%	-3.29%	-3.83%	-3.80%	-4.06%	-4.61%
66		-2.76%	-3.38%	-4.12%	-0.25%	-0.27%	-0.32%	-3.38%	-3.17%	-4.09%	-4.63%	-4.85%	-5.45%
67	-2.76%	-3.38%	-4.12%	-4.85%	-5.28%	-5.55%	-3.38%	-3.17%	-4.09%	-0.80%	-0.83%	-0.86%	
68	STONE & GLASS	-1.00%	-1.21%	-1.59%	-0.03%	-0.03%	-0.04%	-0.78%	-0.46%	-1.03%	-4.35%	-5.02%	-5.23%
69		-1.00%	-1.21%	-1.59%	-0.65%	-0.70%	-0.82%	-0.78%	-0.46%	-1.03%	-4.59%	-4.73%	-5.28%
70		-1.04%	-1.25%	-1.64%	-4.49%	-4.63%	-5.09%	-0.88%	-0.56%	-1.12%	-2.12%	-2.32%	-2.40%
71	PRECIOUS STONES	0.03%	-0.22%	-0.93%	-3.54%	-3.80%	-4.23%	0.23%	0.41%	-0.17%	2.77%	2.47%	2.39%
72	BASE METALS	-0.28%	-0.38%	-1.11%	-3.84%	-4.13%	-4.71%	1.12%	1.47%	1.17%	3.30%	3.22%	3.04%
73		-0.86%	-1.05%	-1.68%	-3.55%	-4.07%	-4.61%	-1.04%	-0.72%	-1.34%	-0.65%	-0.67%	-0.74%
74		0.27%	0.10%	-0.49%	5.65%	4.77%	4.40%	1.39%	1.59%	0.97%	4.30%	4.04%	3.71%
75		0.35%	0.13%	-0.58%	4.81%	4.55%	4.33%	1.54%	1.70%	1.00%	0.99%	0.93%	0.77%
76		0.01%	-0.21%	-0.88%	-4.12%	-4.74%	-5.38%	1.27%	1.44%	0.76%	3.69%	3.33%	3.17%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		0.36%	0.15%	-0.57%	-2.97%	-3.21%	-3.36%	1.55%	1.71%	1.01%	4.40%	4.00%	3.68%
79		0.36%	0.15%	-0.57%	-0.42%	-0.48%	-0.54%	1.55%	1.71%	1.01%	3.56%	3.35%	3.22%
80		0.33%	0.12%	-0.60%	-3.54%	-3.93%	-4.53%	1.53%	1.68%	0.99%	2.70%	2.29%	2.06%
81		0.46%	0.25%	-0.48%	-5.99%	-6.60%	-6.83%	1.63%	1.77%	1.08%	2.40%	2.28%	2.04%
82		-2.06%	-2.37%	-2.79%	-4.64%	-5.03%	-5.83%	-1.25%	-0.94%	-1.60%	-1.22%	-1.26%	-1.29%
83	-2.06%	-2.37%	-2.79%	-1.77%	-1.82%	-2.01%	-1.25%	-0.94%	-1.60%	-1.59%	-1.68%	-1.76%	
84	MACHINE	-1.79%	-2.23%	-2.83%	-2.54%	-2.74%	-3.21%	-1.19%	-0.86%	-1.49%	-2.90%	-3.07%	-3.49%
85		-1.91%	-2.42%	-3.01%	-3.85%	-4.38%	-4.85%	-1.21%	-0.85%	-1.44%	-2.52%	-2.89%	-2.95%
86	VEHICLES	-1.44%	-1.99%	-2.65%	-1.77%	-2.04%	-2.34%	1.46%	1.64%	0.75%	3.45%	3.18%	2.68%
87		0.02%	-0.15%	-0.67%	-0.25%	-0.28%	-0.32%	0.53%	0.89%	0.49%	3.85%	3.75%	3.13%
88		-1.82%	-2.48%	-3.19%	-4.89%	-5.04%	-5.32%	1.49%	1.61%	0.54%	0.55%	0.52%	0.46%
89		-1.82%	-2.47%	-3.18%	-0.92%	-0.98%	-1.05%	1.78%	1.87%	0.77%	4.66%	3.96%	3.49%
90	CLOCKS & MUSICAL INST.	-1.96%	-2.42%	-3.03%	-1.46%	-1.62%	-1.84%	-1.28%	-0.97%	-1.65%	-1.49%	-1.69%	-1.78%
91		-1.96%	-2.41%	-3.03%	-3.94%	-4.03%	-4.45%	-1.31%	-0.99%	-1.67%	-2.63%	-2.81%	-2.97%
92		-2.76%	-3.38%	-4.12%	-2.82%	-3.05%	-3.51%	-3.38%	-3.17%	-4.09%	-1.44%	-1.50%	-1.69%
93	ARMS	-1.96%	-2.41%	-3.02%	-3.32%	-3.50%	-3.91%	-1.27%	-0.96%	-1.64%	-1.78%	-2.04%	-2.19%
94	MISC. ART.	-2.18%	-2.67%	-3.31%	-4.22%	-4.88%	-5.25%	-2.65%	-2.40%	-3.21%	-2.02%	-2.26%	-2.37%
95		-2.76%	-3.38%	-4.12%	-1.56%	-1.80%	-2.05%	-3.38%	-3.17%	-4.09%	-3.52%	-3.96%	-4.36%
96		-2.76%	-3.38%	-4.12%	-3.22%	-3.55%	-4.09%	-3.40%	-3.20%	-4.11%	-1.28%	-1.48%	-1.55%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	

TRADE FORECASTING BETWEEN ASEAN AND SOUTH KOREA

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.63%	0.58%	0.23%	1.35%	1.17%	1.04%	1.21%	1.18%	0.82%	0.14%	0.14%	0.12%
02		1.19%	0.30%	-0.31%	3.84%	3.24%	2.98%	3.57%	3.60%	1.90%	2.90%	2.83%	2.45%
03		1.45%	1.45%	1.22%	3.52%	3.19%	2.73%	0.25%	0.23%	-0.20%	2.90%	2.53%	2.33%
04		2.48%	2.45%	2.19%	4.00%	3.58%	3.28%	0.58%	0.56%	0.06%	0.17%	0.14%	0.12%
05		1.41%	1.41%	1.22%	1.83%	1.63%	1.42%	0.39%	0.41%	0.03%	3.41%	2.85%	2.65%
06	VEGETABLE PRODUCTS	12.18%	11.28%	10.72%	0.02%	0.02%	0.02%	4.43%	4.72%	4.26%	1.34%	1.30%	1.09%
07		1.70%	1.62%	1.35%	4.71%	3.92%	3.61%	-1.90%	-1.70%	-2.06%	-2.67%	-3.02%	-3.23%
08		2.04%	1.83%	1.56%	1.79%	1.50%	1.26%	-2.51%	-2.24%	-2.58%	-0.41%	-0.48%	-0.51%
09		8.15%	7.81%	7.56%	4.09%	3.86%	3.29%	-1.30%	-1.33%	-2.31%	-4.80%	-5.07%	-5.74%
10		3.59%	2.73%	3.21%	0.38%	0.33%	0.28%	-11.01%	-9.92%	-11.52%	-4.28%	-4.46%	-5.21%
11		1.50%	1.51%	1.25%	0.76%	0.71%	0.69%	0.15%	0.09%	-0.38%	3.89%	3.26%	2.74%
12		9.69%	9.16%	8.83%	0.20%	0.18%	0.17%	-0.12%	-0.08%	-0.95%	-4.08%	-4.46%	-5.06%
13		1.48%	1.48%	1.23%	1.40%	1.34%	1.17%	4.59%	4.84%	4.45%	3.43%	2.88%	2.67%
14		1.91%	1.95%	2.00%	3.79%	3.18%	2.73%	5.47%	5.72%	5.29%	1.14%	1.06%	1.04%
15	FATS & OILS	-0.98%	-1.31%	-1.94%	-0.84%	-0.88%	-0.96%	3.42%	3.40%	2.65%	1.99%	1.86%	1.69%
16	PREPARED FOODSTUFFS	1.34%	1.19%	0.88%	2.61%	2.36%	2.26%	0.47%	0.43%	-0.16%	-4.70%	-4.88%	-5.00%
17		-0.17%	-0.28%	-0.23%	-2.92%	-3.25%	-3.44%	4.43%	4.63%	4.09%	1.36%	1.15%	0.96%
18		1.90%	1.90%	1.67%	3.21%	3.04%	2.72%	0.00%	-0.06%	-0.57%	-0.25%	-0.27%	-0.30%
19		1.48%	1.48%	1.23%	1.48%	1.43%	1.35%	0.12%	0.06%	-0.42%	0.11%	0.11%	0.10%
20		1.48%	1.48%	1.23%	0.46%	0.43%	0.40%	0.12%	0.06%	-0.42%	0.44%	0.37%	0.36%
21		1.50%	1.50%	1.25%	2.57%	2.17%	2.08%	0.13%	0.07%	-0.41%	-5.90%	-6.50%	-7.49%
22		1.87%	1.99%	1.70%	2.35%	1.96%	1.70%	1.06%	0.98%	0.75%	3.68%	3.56%	3.40%
23		1.66%	1.59%	1.39%	2.12%	1.91%	1.72%	3.80%	3.86%	3.23%	0.82%	0.73%	0.71%
24		3.30%	3.40%	3.17%	3.86%	3.75%	3.62%	0.33%	0.28%	-0.16%	-0.50%	-0.52%	-0.57%
25	MINERAL PRODUCTS	2.38%	2.63%	2.18%	4.58%	4.27%	4.05%	2.80%	2.93%	3.08%	1.08%	1.04%	0.95%
26		1.26%	1.36%	0.71%	3.32%	3.02%	2.52%	2.87%	3.00%	3.17%	4.59%	4.43%	3.68%
27		5.39%	5.97%	5.70%	2.64%	2.44%	2.26%	7.86%	8.14%	7.60%	1.11%	1.02%	0.86%
28	CHEMICAL PRODUCTS	0.72%	0.77%	0.24%	2.89%	2.59%	2.46%	4.63%	4.90%	4.59%	4.08%	3.86%	3.47%
29		-2.13%	-2.64%	-3.65%	-2.99%	-3.23%	-3.65%	4.74%	5.02%	4.61%	0.52%	0.50%	0.45%
30		-2.16%	-2.66%	-3.66%	-1.81%	-1.99%	-2.29%	4.53%	4.82%	4.41%	1.27%	1.19%	1.06%
31		-2.12%	-2.63%	-3.64%	-0.18%	-0.21%	-0.22%	4.50%	4.77%	4.44%	4.77%	4.67%	4.22%
32		-2.13%	-2.64%	-3.66%	-4.78%	-5.39%	-6.18%	4.75%	5.04%	4.62%	2.28%	1.90%	1.78%
33		-2.13%	-2.64%	-3.66%	-4.77%	-5.26%	-5.56%	4.75%	5.04%	4.62%	0.40%	0.35%	0.30%
34		-2.09%	-2.60%	-3.61%	-0.71%	-0.78%	-0.84%	4.61%	4.89%	4.47%	2.02%	1.94%	1.61%
35		-1.82%	-2.28%	-3.21%	-2.22%	-2.54%	-2.62%	3.67%	3.91%	3.53%	4.77%	4.58%	4.09%
36		-1.69%	-2.13%	-3.07%	-3.47%	-4.00%	-4.32%	3.35%	3.54%	3.02%	0.42%	0.41%	0.34%
37		-2.13%	-2.64%	-3.66%	-2.81%	-3.19%	-3.49%	4.75%	5.04%	4.62%	3.33%	3.15%	2.95%
38		-1.89%	-2.35%	-3.31%	-3.14%	-3.35%	-3.71%	4.54%	4.81%	4.39%	0.28%	0.27%	0.24%
39	PLASTICS	-2.13%	-2.64%	-3.66%	-2.17%	-2.22%	-2.49%	4.75%	5.04%	4.62%	2.15%	1.91%	1.87%
40		-2.13%	-2.64%	-3.66%	-0.64%	-0.70%	-0.73%	5.14%	5.41%	5.00%	0.35%	0.34%	0.29%
41	LEATHER GOODS	-2.53%	-2.67%	-3.26%	-4.98%	-5.72%	-6.21%	-3.11%	-3.26%	-4.15%	-1.68%	-1.86%	-2.09%
42		-1.96%	-2.08%	-2.66%	-4.46%	-4.64%	-4.78%	-2.74%	-2.90%	-3.80%	-3.60%	-3.99%	-4.17%
43		0.63%	0.58%	0.23%	1.20%	1.07%	1.01%	1.21%	1.18%	0.82%	1.87%	1.67%	1.56%
44	WOOD PRODUCTS	-1.78%	-2.20%	-3.04%	-2.26%	-2.44%	-2.52%	3.79%	4.01%	3.66%	3.16%	2.70%	2.32%
45		-0.63%	-0.77%	-1.10%	-1.16%	-1.23%	-1.35%	4.52%	4.77%	4.39%	3.15%	3.06%	2.84%
46		-0.85%	-1.02%	-1.40%	-4.66%	-4.93%	-5.47%	0.57%	0.55%	0.17%	2.00%	1.87%	1.79%
47	PAPER	2.69%	2.80%	2.38%	4.34%	4.17%	3.56%	2.88%	2.88%	2.37%	4.45%	3.82%	3.61%
48		2.69%	2.80%	2.38%	0.03%	0.03%	0.03%	2.88%	2.88%	2.37%	0.77%	0.64%	0.60%
49		2.69%	2.80%	2.38%	1.80%	1.61%	1.44%	2.88%	2.88%	2.37%	1.92%	1.85%	1.57%

TRADE FORECASTING BETWEEN ASEAN AND SOUTH KOREA (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-2.75%	-2.95%	-3.74%	-2.39%	-2.65%	-3.07%	-3.46%	-3.58%	-4.35%	-0.98%	-1.10%	-1.20%
51		-2.75%	-2.95%	-3.74%	-4.15%	-4.62%	-4.83%	-3.46%	-3.58%	-4.35%	-0.72%	-0.75%	-0.82%
52		-2.74%	-2.95%	-3.73%	-3.90%	-4.26%	-4.91%	-3.45%	-3.58%	-4.35%	-2.69%	-2.94%	-3.15%
53		-2.61%	-2.80%	-3.56%	-3.50%	-3.71%	-4.18%	-3.34%	-3.45%	-4.21%	-0.98%	-1.10%	-1.20%
54		-2.75%	-2.95%	-3.74%	-4.62%	-4.80%	-5.60%	-3.46%	-3.58%	-4.35%	-0.14%	-0.16%	-0.17%
55		-2.75%	-2.95%	-3.74%	-3.12%	-3.41%	-3.99%	-3.46%	-3.58%	-4.35%	-2.73%	-2.87%	-3.32%
56		-2.75%	-2.95%	-3.74%	-4.47%	-4.78%	-5.44%	-3.46%	-3.58%	-4.35%	-2.60%	-2.82%	-3.14%
57		-2.75%	-2.95%	-3.74%	-0.66%	-0.75%	-0.76%	-3.46%	-3.58%	-4.35%	-4.32%	-4.48%	-4.74%
58		-2.75%	-2.95%	-3.74%	-3.44%	-3.62%	-4.00%	-3.46%	-3.58%	-4.35%	-2.95%	-3.35%	-3.75%
59		-2.32%	-2.58%	-3.39%	-1.82%	-2.03%	-2.09%	-0.30%	-0.20%	-0.76%	-1.06%	-1.22%	-1.39%
60		-2.75%	-2.95%	-3.74%	-2.78%	-3.21%	-3.65%	-3.46%	-3.58%	-4.35%	-3.66%	-3.99%	-4.40%
61		-2.17%	-2.31%	-2.95%	-2.10%	-2.39%	-2.51%	-3.10%	-3.17%	-3.89%	-1.30%	-1.36%	-1.58%
62		-1.53%	-1.61%	-2.11%	-3.28%	-3.53%	-3.92%	-3.00%	-3.06%	-3.76%	-4.25%	-4.37%	-4.86%
63	-2.53%	-2.71%	-3.47%	-4.68%	-5.20%	-5.76%	-3.17%	-3.26%	-4.01%	-0.98%	-1.08%	-1.12%	
64	FOOTWEAR	-2.53%	-2.67%	-3.26%	-0.61%	-0.70%	-0.74%	-3.14%	-3.29%	-4.19%	-2.52%	-2.67%	-2.99%
65		-1.92%	-2.28%	-3.10%	-3.11%	-3.29%	-3.54%	0.61%	0.87%	0.47%	3.82%	3.69%	3.59%
66		0.68%	0.55%	-0.13%	-2.75%	-2.96%	-3.34%	-0.42%	-0.72%	-1.79%	-3.57%	-3.84%	-4.03%
67	0.68%	0.55%	-0.13%	5.81%	5.02%	4.72%	-0.42%	-0.72%	-1.79%	-1.47%	-1.70%	-1.91%	
68	STONE & GLASS	1.97%	2.19%	1.95%	2.67%	2.47%	2.12%	1.09%	1.13%	0.51%	1.13%	1.05%	0.99%
69		1.97%	2.19%	1.95%	4.24%	3.77%	3.61%	1.09%	1.13%	0.51%	3.83%	3.38%	3.09%
70		1.35%	1.54%	1.26%	1.08%	0.99%	0.89%	0.97%	1.00%	0.39%	0.30%	0.29%	0.28%
71	PRECIOUS STONES	2.07%	2.16%	1.49%	2.34%	2.07%	1.85%	3.11%	3.26%	2.62%	1.11%	0.94%	0.91%
72	BASE METALS	3.19%	3.55%	3.03%	4.62%	4.34%	3.85%	2.83%	3.15%	2.84%	4.88%	4.29%	4.18%
73		2.77%	3.09%	2.65%	3.85%	3.33%	2.85%	2.04%	2.24%	1.77%	0.73%	0.61%	0.56%
74		2.41%	2.55%	1.96%	0.56%	0.51%	0.48%	3.95%	4.16%	3.36%	4.38%	3.67%	3.25%
75		2.28%	2.40%	1.75%	4.84%	4.09%	3.99%	4.01%	4.23%	3.40%	1.61%	1.57%	1.50%
76		2.23%	2.37%	1.77%	3.16%	2.85%	2.76%	3.86%	4.06%	3.25%	0.28%	0.24%	0.21%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		2.29%	2.40%	1.75%	4.35%	3.66%	3.05%	4.02%	4.23%	3.41%	1.97%	1.84%	1.76%
79		2.29%	2.40%	1.75%	1.42%	1.29%	1.12%	4.02%	4.23%	3.41%	0.69%	0.60%	0.56%
80		2.28%	2.40%	1.75%	0.81%	0.74%	0.64%	4.01%	4.22%	3.39%	1.82%	1.57%	1.40%
81		2.30%	2.41%	1.74%	0.80%	0.72%	0.62%	4.06%	4.27%	3.44%	4.41%	4.14%	3.57%
82		1.94%	2.19%	1.94%	1.78%	1.74%	1.68%	0.09%	0.06%	-0.65%	0.42%	0.36%	0.30%
83		1.94%	2.19%	1.94%	3.20%	2.68%	2.61%	0.09%	0.06%	-0.65%	-4.40%	-4.98%	-5.73%
84	MACHINE	2.33%	2.45%	2.00%	3.03%	2.54%	2.28%	2.29%	2.33%	1.70%	3.45%	3.33%	3.10%
85		2.30%	2.42%	1.99%	0.04%	0.03%	0.03%	1.84%	1.84%	1.25%	2.76%	2.46%	2.13%
86	VEHICLES	3.08%	3.01%	2.46%	1.56%	1.39%	1.36%	3.57%	3.30%	2.18%	4.78%	4.34%	3.98%
87		2.78%	2.86%	2.34%	1.66%	1.41%	1.20%	2.67%	2.63%	1.97%	1.00%	0.91%	0.84%
88		3.07%	3.00%	2.45%	0.31%	0.28%	0.27%	3.33%	3.07%	1.96%	4.44%	4.07%	3.90%
89		3.09%	3.01%	2.46%	3.53%	3.04%	2.64%	3.62%	3.33%	2.18%	2.06%	1.82%	1.72%
90	CLOCKS & MUSICAL INST.	1.97%	2.10%	1.63%	3.06%	2.99%	2.90%	2.55%	2.62%	1.91%	0.46%	0.41%	0.39%
91		1.96%	2.08%	1.62%	0.30%	0.29%	0.27%	2.48%	2.55%	1.85%	4.03%	3.65%	3.36%
92		0.68%	0.55%	-0.13%	-3.29%	-3.70%	-3.81%	-0.42%	-0.72%	-1.79%	-3.52%	-3.74%	-4.32%
93	ARMS	1.97%	2.10%	1.65%	0.71%	0.63%	0.55%	2.53%	2.60%	1.89%	4.93%	4.67%	4.23%
94	MISC. ART.	1.18%	1.21%	0.68%	0.96%	0.90%	0.87%	0.65%	0.53%	-0.34%	-3.77%	-4.26%	-4.43%
95		0.68%	0.55%	-0.13%	5.35%	4.62%	4.22%	-0.42%	-0.72%	-1.79%	-3.00%	-3.07%	-3.15%
96		0.61%	0.48%	-0.19%	-3.89%	-4.11%	-4.78%	-0.48%	-0.77%	-1.84%	-0.14%	-0.15%	-0.16%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	

TRADE FORECASTING BETWEEN ASEAN AND U.S.

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	-0.39%	-0.36%	-0.65%	-0.62%	-0.66%	-0.69%	2.54%	2.49%	2.12%	2.04%	1.93%	1.73%
02		-5.69%	-5.76%	-5.74%	-4.64%	-5.20%	-5.34%	6.38%	6.58%	5.72%	3.60%	3.39%	3.08%
03		-1.17%	-0.98%	-1.09%	-1.28%	-1.43%	-1.65%	3.42%	3.27%	2.72%	4.69%	4.49%	4.16%
04		-0.62%	-0.28%	-0.30%	-2.88%	-3.05%	-3.17%	3.53%	3.37%	2.79%	3.28%	2.99%	2.88%
05		-1.02%	-0.85%	-0.96%	-2.85%	-3.25%	-3.67%	3.42%	3.29%	2.80%	0.29%	0.25%	0.24%
06	VEGETABLE PRODUCTS	-2.41%	-2.55%	-2.62%	-1.89%	-2.08%	-2.40%	5.28%	5.63%	4.99%	1.41%	1.29%	1.24%
07		-2.74%	-2.72%	-2.74%	-1.80%	-1.86%	-2.05%	3.64%	3.60%	3.01%	3.59%	3.13%	2.81%
08		-3.36%	-3.44%	-3.43%	-0.48%	-0.51%	-0.57%	3.86%	3.97%	3.36%	1.80%	1.74%	1.69%
09		-2.15%	-2.26%	-2.36%	-0.84%	-0.94%	-0.97%	5.49%	5.72%	4.90%	4.86%	4.22%	3.54%
10		-2.43%	-2.90%	-4.17%	-3.78%	-4.23%	-4.72%	1.65%	1.58%	0.97%	1.46%	1.38%	1.25%
11		-1.19%	-0.99%	-1.11%	-3.82%	-3.93%	-4.43%	3.42%	3.24%	2.67%	1.83%	1.68%	1.46%
12		-0.27%	-0.32%	-0.39%	-3.20%	-3.37%	-3.69%	5.67%	5.93%	5.10%	2.70%	2.25%	1.97%
13		-1.34%	-1.14%	-1.23%	-1.29%	-1.40%	-1.56%	4.04%	4.18%	3.72%	3.65%	3.22%	2.90%
14		-1.61%	-1.46%	-1.42%	-2.97%	-3.46%	-3.63%	4.56%	4.93%	4.54%	0.08%	0.08%	0.07%
15	FATS & OILS	-1.75%	-1.73%	-1.63%	-4.30%	-5.00%	-5.43%	5.05%	5.15%	4.50%	4.79%	4.41%	4.31%
16	PREPARED FOODSTUFFS	-3.65%	-3.56%	-3.59%	-3.73%	-4.10%	-4.31%	3.43%	3.26%	2.68%	3.23%	2.77%	2.62%
17		-0.62%	-0.28%	-0.29%	-3.03%	-3.40%	-3.73%	6.47%	6.60%	5.88%	4.56%	4.15%	3.79%
18		-1.31%	-1.13%	-1.24%	-2.89%	-3.15%	-3.30%	3.66%	3.53%	2.93%	1.36%	1.26%	1.21%
19		-1.26%	-1.07%	-1.17%	-1.86%	-2.06%	-2.12%	3.43%	3.25%	2.68%	3.43%	2.85%	2.46%
20		-1.26%	-1.07%	-1.17%	-0.06%	-0.06%	-0.07%	3.43%	3.25%	2.68%	0.32%	0.31%	0.26%
21		-1.04%	-0.79%	-0.87%	-1.62%	-1.82%	-1.95%	3.43%	3.25%	2.68%	4.38%	3.75%	3.45%
22		0.54%	0.71%	0.45%	3.73%	3.52%	3.30%	2.64%	2.46%	2.13%	0.83%	0.78%	0.70%
23		-1.63%	-1.62%	-1.53%	-3.32%	-3.58%	-3.83%	4.78%	4.90%	4.31%	2.71%	2.39%	2.34%
24		0.19%	0.30%	0.07%	1.40%	1.24%	1.11%	4.72%	4.89%	4.24%	1.90%	1.63%	1.41%
25	MINERAL PRODUCTS	3.20%	3.69%	3.19%	2.56%	2.31%	2.10%	3.21%	3.10%	2.46%	3.06%	2.63%	2.38%
26		3.64%	4.10%	3.55%	0.81%	0.78%	0.66%	3.95%	3.99%	3.48%	2.32%	2.24%	1.94%
27		5.59%	6.31%	6.16%	3.85%	3.74%	3.19%	10.15%	10.92%	10.11%	1.23%	1.06%	0.91%
28	CHEMICAL PRODUCTS	0.42%	1.02%	0.93%	2.56%	2.40%	2.06%	4.60%	4.60%	3.93%	3.25%	2.76%	2.59%
29		-0.13%	0.43%	0.31%	2.37%	2.29%	2.04%	4.59%	4.58%	3.89%	2.52%	2.27%	1.97%
30		-0.17%	0.39%	0.28%	4.84%	4.69%	4.51%	4.37%	4.34%	3.64%	2.15%	1.94%	1.74%
31		-0.08%	0.47%	0.36%	3.16%	3.04%	2.82%	4.60%	4.59%	3.90%	1.63%	1.48%	1.27%
32		-0.13%	0.43%	0.31%	2.16%	1.96%	1.82%	4.60%	4.59%	3.90%	2.94%	2.82%	2.49%
33		-0.13%	0.43%	0.31%	4.24%	3.75%	3.57%	4.60%	4.59%	3.90%	0.83%	0.80%	0.74%
34		-0.21%	0.35%	0.23%	4.69%	4.24%	3.66%	3.87%	3.82%	3.10%	2.71%	2.54%	2.22%
35		-0.36%	0.11%	0.02%	3.59%	3.07%	2.71%	4.12%	4.04%	3.40%	0.00%	0.00%	0.00%
36		-0.96%	-0.44%	-0.59%	-2.75%	-3.17%	-3.66%	0.95%	0.67%	-0.30%	-3.49%	-4.08%	-4.48%
37		-0.13%	0.43%	0.31%	2.40%	2.11%	1.96%	4.60%	4.59%	3.90%	2.00%	1.84%	1.79%
38		-0.35%	0.20%	0.09%	3.04%	2.62%	2.57%	4.55%	4.52%	3.82%	0.66%	0.57%	0.53%
39	PLASTICS	-0.13%	0.43%	0.31%	3.04%	2.96%	2.83%	4.60%	4.59%	3.90%	1.31%	1.13%	1.10%
40		-0.17%	0.38%	0.27%	0.64%	0.56%	0.53%	4.58%	4.71%	4.14%	4.74%	4.25%	3.78%
41	LEATHER GOODS	-3.99%	-3.73%	-3.98%	-4.89%	-5.01%	-5.39%	-4.16%	-4.37%	-5.27%	-2.77%	-3.05%	-3.39%
42		-4.59%	-4.27%	-4.59%	-4.80%	-5.33%	-6.19%	-1.34%	-1.62%	-2.53%	-4.63%	-4.93%	-5.23%
43		-0.38%	-0.35%	-0.64%	-2.08%	-2.29%	-2.34%	2.54%	2.49%	2.12%	4.79%	4.64%	4.30%
44	WOOD PRODUCTS	-1.57%	-1.35%	-1.45%	-2.96%	-3.30%	-3.54%	3.78%	3.91%	3.49%	0.71%	0.64%	0.60%
45		-1.85%	-1.70%	-1.76%	-4.49%	-4.92%	-5.13%	4.10%	4.34%	3.95%	3.15%	3.06%	2.85%
46		-2.25%	-2.23%	-2.46%	-3.41%	-3.64%	-4.12%	2.11%	1.64%	1.07%	3.10%	2.62%	2.26%
47	PAPER	-0.39%	0.07%	-0.11%	-4.06%	-4.43%	-4.73%	4.19%	4.02%	3.31%	1.22%	1.05%	0.90%
48		-0.39%	0.07%	-0.11%	5.78%	5.28%	4.43%	4.19%	4.02%	3.31%	3.90%	3.58%	3.03%
49		-0.39%	0.07%	-0.11%	4.48%	3.83%	3.61%	4.19%	4.02%	3.31%	3.16%	2.99%	2.70%

TRADE FORECASTING BETWEEN ASEAN AND U.S. (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-6.26%	-5.97%	-6.39%	-1.78%	-2.05%	-2.37%	1.25%	0.90%	-0.08%	4.08%	3.50%	3.20%
51		-6.26%	-5.97%	-6.39%	-3.71%	-3.85%	-3.97%	1.25%	0.90%	-0.08%	-5.54%	-5.99%	-6.24%
52		-0.66%	-0.22%	-0.63%	-3.13%	-3.41%	-3.52%	1.25%	0.90%	-0.08%	1.96%	1.72%	1.55%
53		2.19%	2.47%	1.83%	0.72%	0.70%	0.65%	1.25%	0.90%	-0.08%	-2.36%	-2.54%	-2.76%
54		-6.26%	-5.97%	-6.39%	-2.04%	-2.30%	-2.36%	1.25%	0.90%	-0.08%	0.80%	0.68%	0.59%
55		-6.26%	-5.97%	-6.39%	-1.30%	-1.41%	-1.60%	1.25%	0.90%	-0.08%	2.00%	1.69%	1.54%
56		-6.26%	-5.97%	-6.39%	-4.28%	-4.81%	-5.20%	1.25%	0.90%	-0.08%	-3.61%	-4.13%	-4.83%
57		-6.26%	-5.97%	-6.39%	-1.52%	-1.71%	-1.96%	1.25%	0.90%	-0.08%	5.08%	4.97%	4.73%
58		-6.26%	-5.97%	-6.39%	-3.23%	-3.42%	-3.91%	1.25%	0.90%	-0.08%	5.31%	4.78%	4.56%
59		-2.19%	-1.69%	-1.86%	-0.84%	-0.97%	-1.02%	0.88%	0.53%	-0.46%	0.07%	0.07%	0.06%
60		-6.26%	-5.97%	-6.39%	-4.95%	-5.42%	-6.29%	1.25%	0.90%	-0.08%	3.23%	3.11%	2.75%
61		-6.34%	-6.05%	-6.39%	-4.82%	-5.36%	-5.65%	1.18%	0.79%	-0.10%	0.41%	0.40%	0.33%
62		-6.43%	-6.13%	-6.38%	-0.91%	-1.02%	-1.13%	1.18%	0.79%	-0.10%	0.67%	0.65%	0.55%
63	-5.06%	-4.66%	-4.99%	-3.29%	-3.70%	-4.32%	1.34%	0.99%	0.02%	2.70%	2.35%	2.23%	
64	FOOTWEAR	-6.20%	-5.94%	-6.27%	-1.05%	-1.12%	-1.21%	-4.35%	-4.58%	-5.51%	-0.65%	-0.68%	-0.74%
65		-0.52%	0.05%	-0.05%	4.62%	4.18%	3.99%	1.30%	0.92%	0.05%	0.76%	0.74%	0.63%
66		-3.33%	-3.00%	-3.35%	-4.99%	-5.50%	-6.15%	-0.69%	-1.20%	-2.41%	-1.01%	-1.07%	-1.23%
67	-3.33%	-3.00%	-3.35%	-3.80%	-4.34%	-4.97%	-0.69%	-1.20%	-2.41%	-0.72%	-0.81%	-0.89%	
68	STONE & GLASS	-1.36%	-0.84%	-0.90%	-0.49%	-0.57%	-0.66%	3.15%	2.96%	2.23%	3.88%	3.22%	3.14%
69		-1.36%	-0.84%	-0.90%	-4.00%	-4.22%	-4.55%	3.15%	2.96%	2.23%	0.40%	0.35%	0.30%
70	-1.43%	-0.91%	-0.97%	-3.85%	-4.37%	-4.94%	2.94%	2.74%	1.99%	3.83%	3.47%	3.21%	
71	PRECIOUS STONES	-1.33%	-0.76%	-0.98%	-4.96%	-5.67%	-6.12%	-0.13%	-0.52%	-1.63%	-2.88%	-3.04%	-3.29%
72	BASE METALS	1.27%	2.01%	1.78%	2.52%	2.37%	2.25%	3.08%	3.15%	2.67%	3.40%	3.32%	2.96%
73		-2.25%	-1.63%	-1.74%	-0.02%	-0.02%	-0.02%	3.01%	2.79%	1.95%	1.94%	1.79%	1.73%
74		-0.25%	0.33%	0.09%	3.92%	3.67%	3.43%	4.90%	4.97%	4.33%	2.43%	2.29%	2.06%
75		-0.14%	0.60%	0.47%	1.87%	1.83%	1.79%	4.42%	4.63%	3.89%	3.45%	3.14%	3.00%
76		-1.05%	-0.33%	-0.42%	-2.55%	-2.64%	-2.92%	3.54%	3.51%	2.69%	1.68%	1.52%	1.37%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		-0.10%	0.65%	0.52%	4.69%	4.46%	4.16%	4.48%	4.70%	3.97%	0.49%	0.45%	0.43%
79		-0.10%	0.65%	0.52%	4.50%	4.36%	3.90%	4.48%	4.70%	3.97%	3.15%	2.64%	2.43%
80		-0.21%	0.54%	0.41%	1.16%	0.97%	0.94%	4.35%	4.53%	3.79%	2.66%	2.39%	2.07%
81		0.30%	1.05%	0.89%	2.30%	2.19%	1.87%	5.04%	5.39%	4.69%	0.23%	0.22%	0.21%
82		-2.75%	-2.13%	-2.18%	-2.84%	-3.12%	-3.37%	2.57%	2.25%	1.32%	3.58%	3.20%	2.89%
83		-2.75%	-2.13%	-2.18%	-3.31%	-3.50%	-3.65%	2.57%	2.25%	1.32%	3.44%	2.99%	2.74%
84	MACHINE	-2.90%	-2.43%	-2.70%	-3.67%	-3.79%	-3.93%	2.69%	2.43%	1.58%	4.96%	4.51%	3.87%
85		-2.62%	-2.19%	-2.46%	-1.15%	-1.19%	-1.26%	1.53%	1.25%	0.44%	1.27%	1.12%	0.93%
86	VEHICLES	-2.67%	-2.38%	-2.74%	-2.30%	-2.66%	-2.85%	6.35%	6.40%	5.44%	1.39%	1.17%	1.03%
87		-2.08%	-1.72%	-2.05%	-0.65%	-0.69%	-0.80%	4.92%	4.81%	4.10%	0.06%	0.05%	0.05%
88		-2.69%	-2.40%	-2.76%	-1.30%	-1.48%	-1.53%	6.14%	6.18%	5.23%	2.71%	2.39%	2.04%
89		-2.69%	-2.40%	-2.76%	-4.92%	-5.09%	-5.61%	6.42%	6.47%	5.50%	1.76%	1.71%	1.60%
90	CLOCKS & MUSICAL INST.	-3.13%	-2.64%	-2.89%	-0.29%	-0.31%	-0.32%	4.22%	3.94%	2.98%	2.99%	2.89%	2.80%
91		-3.13%	-2.64%	-2.89%	-4.35%	-4.97%	-5.37%	4.13%	3.86%	2.91%	3.22%	3.11%	3.05%
92	-3.33%	-3.00%	-3.35%	-2.66%	-2.80%	-3.20%	-0.69%	-1.20%	-2.41%	-4.29%	-4.38%	-5.09%	
93	ARMS	-3.13%	-2.63%	-2.88%	-3.70%	-4.30%	-4.57%	4.26%	3.98%	3.01%	3.42%	3.03%	2.83%
94	MISC. ART.	-3.12%	-2.68%	-2.96%	-4.58%	-4.91%	-5.41%	-0.03%	-0.46%	-1.60%	-4.85%	-5.66%	-6.61%
95		-3.33%	-3.00%	-3.35%	-4.41%	-4.85%	-5.30%	-0.69%	-1.20%	-2.41%	-0.40%	-0.44%	-0.46%
96		-3.33%	-3.00%	-3.36%	-3.60%	-4.10%	-4.50%	-0.73%	-1.23%	-2.43%	-4.50%	-4.80%	-5.36%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	

TRADE FORECASTING BETWEEN ASEAN AND EU-27

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	-0.03%	-0.05%	-0.39%	-0.86%	-0.92%	-1.03%	0.73%	1.01%	0.82%	4.85%	4.34%	3.72%
02		-3.94%	-4.67%	-5.09%	-1.20%	-1.34%	-1.42%	6.60%	7.52%	6.54%	1.49%	1.43%	1.29%
03		-0.56%	-0.66%	-0.96%	-0.29%	-0.30%	-0.31%	1.48%	1.86%	1.62%	0.54%	0.49%	0.44%
04		0.79%	0.61%	0.25%	1.30%	1.22%	1.08%	1.50%	1.89%	1.63%	1.51%	1.37%	1.34%
05		-0.55%	-0.65%	-0.94%	-4.99%	-5.52%	-6.35%	1.44%	1.81%	1.60%	0.29%	0.27%	0.26%
06	VEGETABLE PRODUCTS	-3.45%	-3.82%	-3.92%	-0.69%	-0.75%	-0.84%	4.24%	4.83%	4.17%	2.32%	2.16%	1.96%
07		-0.99%	-1.08%	-1.32%	-2.17%	-2.38%	-2.52%	1.44%	1.74%	1.28%	2.38%	2.11%	1.99%
08		-1.69%	-1.78%	-1.92%	-3.10%	-3.46%	-3.61%	1.40%	1.67%	1.10%	1.27%	1.21%	1.03%
09		-2.38%	-2.62%	-2.79%	-2.82%	-3.04%	-3.17%	5.06%	5.69%	4.89%	3.14%	2.81%	2.75%
10		-2.69%	-3.12%	-4.08%	-3.08%	-3.20%	-3.49%	6.09%	6.48%	5.05%	3.03%	2.97%	2.47%
11		0.06%	0.03%	-0.30%	3.85%	3.73%	3.51%	1.49%	1.87%	1.62%	2.81%	2.64%	2.47%
12		-2.96%	-3.27%	-3.39%	-4.65%	-4.99%	-5.19%	5.12%	5.77%	4.99%	3.78%	3.53%	3.43%
13		-0.55%	-0.65%	-0.96%	-4.65%	-5.21%	-5.81%	2.05%	2.49%	2.15%	1.59%	1.40%	1.26%
14		-0.35%	-0.53%	-0.74%	-1.87%	-2.07%	-2.32%	2.61%	3.10%	2.71%	3.34%	3.04%	2.84%
15	FATS & OILS	-1.58%	-1.92%	-2.16%	-4.83%	-5.00%	-5.49%	4.93%	5.65%	5.07%	3.46%	2.93%	2.74%
16	PREPARED FOODSTUFFS	-1.92%	-2.22%	-2.54%	-2.47%	-2.71%	-2.96%	3.88%	4.58%	4.05%	4.10%	3.78%	3.68%
17		0.78%	0.59%	0.24%	3.80%	3.35%	2.82%	3.29%	3.84%	3.34%	1.90%	1.77%	1.67%
18		-0.66%	-0.77%	-1.06%	-4.31%	-4.55%	-4.78%	2.42%	2.89%	2.52%	1.52%	1.44%	1.22%
19		-0.57%	-0.67%	-0.97%	-4.32%	-4.64%	-4.81%	1.51%	1.89%	1.64%	2.57%	2.24%	1.93%
20		-0.57%	-0.67%	-0.97%	-1.30%	-1.40%	-1.56%	1.51%	1.89%	1.64%	0.39%	0.33%	0.29%
21		-0.09%	-0.21%	-0.53%	-1.19%	-1.23%	-1.34%	1.51%	1.89%	1.64%	4.01%	3.91%	3.69%
22		0.94%	0.98%	0.61%	0.17%	0.15%	0.13%	0.35%	0.62%	0.56%	4.97%	4.61%	4.34%
23		-1.22%	-1.46%	-1.67%	-1.46%	-1.49%	-1.70%	4.64%	5.34%	4.80%	0.71%	0.61%	0.53%
24		0.91%	0.95%	0.59%	1.85%	1.65%	1.46%	4.32%	4.93%	4.27%	4.60%	4.44%	4.34%
25	MINERAL PRODUCTS	3.60%	3.95%	3.32%	2.17%	1.94%	1.78%	0.61%	0.84%	0.99%	1.57%	1.51%	1.29%
26		3.96%	4.32%	3.67%	2.56%	2.35%	2.00%	0.59%	0.81%	0.98%	4.32%	3.69%	3.21%
27		5.17%	5.73%	5.47%	3.76%	3.20%	2.93%	3.18%	3.64%	3.46%	2.26%	2.18%	1.96%
28	CHEMICAL PRODUCTS	1.01%	1.00%	0.47%	3.12%	2.95%	2.84%	3.02%	3.52%	3.18%	3.11%	2.60%	2.32%
29		0.74%	0.68%	0.12%	1.77%	1.54%	1.34%	3.02%	3.52%	3.16%	4.14%	3.79%	3.43%
30		0.69%	0.63%	0.06%	0.15%	0.13%	0.12%	2.95%	3.43%	3.07%	4.84%	4.43%	4.32%
31		0.83%	0.79%	0.22%	0.35%	0.33%	0.30%	2.92%	3.41%	3.08%	3.03%	2.83%	2.35%
32		0.75%	0.68%	0.12%	2.97%	2.58%	2.51%	3.03%	3.52%	3.17%	4.66%	4.38%	3.92%
33		0.75%	0.68%	0.12%	0.11%	0.10%	0.09%	3.03%	3.52%	3.17%	1.96%	1.69%	1.60%
34		0.67%	0.60%	0.03%	2.64%	2.38%	2.23%	2.70%	3.18%	2.81%	2.48%	2.33%	1.94%
35		0.63%	0.54%	0.05%	1.88%	1.73%	1.68%	2.72%	3.20%	2.86%	1.32%	1.18%	1.05%
36		-0.03%	-0.18%	-0.81%	-2.03%	-2.18%	-2.27%	0.76%	1.12%	0.59%	2.36%	2.12%	1.95%
37		0.75%	0.68%	0.12%	2.91%	2.80%	2.56%	3.03%	3.52%	3.17%	3.98%	3.87%	3.35%
38		0.54%	0.46%	-0.12%	-2.50%	-2.60%	-2.90%	2.97%	3.47%	3.11%	2.65%	2.35%	2.07%
39	PLASTICS	0.75%	0.68%	0.12%	3.70%	3.59%	3.03%	3.03%	3.52%	3.17%	0.62%	0.56%	0.52%
40		0.74%	0.68%	0.11%	4.88%	4.07%	3.70%	2.81%	3.30%	2.94%	4.78%	4.05%	3.94%
41	LEATHER GOODS	-4.71%	-5.05%	-5.77%	-4.55%	-4.75%	-5.24%	-1.73%	-1.63%	-2.41%	-2.23%	-2.29%	-2.60%
42		-4.13%	-4.50%	-5.28%	-4.51%	-5.02%	-5.72%	-1.57%	-1.44%	-2.21%	-3.76%	-3.86%	-4.25%
43		-0.02%	-0.05%	-0.38%	-1.22%	-1.27%	-1.48%	0.73%	1.01%	0.82%	3.03%	2.69%	2.50%
44	WOOD PRODUCTS	-0.94%	-1.13%	-1.54%	-0.85%	-0.99%	-1.13%	1.47%	1.86%	1.55%	1.60%	1.40%	1.22%
45		-1.21%	-1.44%	-1.79%	-2.17%	-2.24%	-2.50%	1.78%	2.20%	1.86%	3.21%	2.73%	2.37%
46		-1.56%	-1.81%	-2.22%	-3.93%	-4.02%	-4.64%	0.20%	0.47%	0.22%	0.01%	0.01%	0.01%
47	PAPER	0.82%	0.74%	0.18%	1.90%	1.74%	1.59%	2.14%	2.61%	2.31%	0.75%	0.67%	0.58%
48		0.82%	0.74%	0.18%	3.64%	3.16%	2.81%	2.14%	2.61%	2.31%	3.65%	3.50%	3.25%
49		0.82%	0.74%	0.18%	1.77%	1.67%	1.42%	2.14%	2.61%	2.31%	4.28%	3.94%	3.52%

TRADE FORECASTING BETWEEN ASEAN AND EU-27 (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	-4.74%	-5.08%	-5.94%	-0.21%	-0.23%	-0.23%	0.49%	0.73%	0.12%	4.93%	4.78%	4.13%
51		-4.73%	-5.08%	-5.93%	-3.07%	-3.30%	-3.40%	0.49%	0.73%	0.12%	0.62%	0.56%	0.55%
52		-4.67%	-5.00%	-5.85%	-4.49%	-4.75%	-5.30%	0.49%	0.73%	0.12%	0.32%	0.31%	0.30%
53		-2.77%	-2.81%	-3.45%	-2.72%	-3.03%	-3.36%	0.48%	0.72%	0.12%	2.72%	2.58%	2.47%
54		-4.74%	-5.08%	-5.94%	-4.19%	-4.69%	-5.06%	0.49%	0.73%	0.12%	3.29%	3.14%	3.05%
55		-4.74%	-5.08%	-5.94%	-1.65%	-1.89%	-2.07%	0.49%	0.73%	0.12%	4.16%	4.01%	3.44%
56		-4.74%	-5.08%	-5.94%	-1.40%	-1.60%	-1.73%	0.49%	0.73%	0.12%	3.61%	3.31%	3.06%
57		-4.74%	-5.08%	-5.94%	-1.98%	-2.31%	-2.44%	0.49%	0.73%	0.12%	0.46%	0.38%	0.33%
58		-4.74%	-5.08%	-5.94%	-0.67%	-0.70%	-0.73%	0.49%	0.73%	0.12%	1.11%	1.01%	0.86%
59		-1.48%	-1.66%	-2.33%	-0.57%	-0.62%	-0.67%	0.36%	0.65%	0.05%	4.62%	4.39%	3.67%
60		-4.74%	-5.08%	-5.94%	-1.28%	-1.47%	-1.54%	0.49%	0.73%	0.12%	4.27%	4.07%	3.81%
61		-4.97%	-5.30%	-6.02%	-1.59%	-1.80%	-1.95%	-0.28%	-0.04%	-0.64%	-1.58%	-1.64%	-1.81%
62		-5.03%	-5.36%	-6.04%	-0.68%	-0.72%	-0.75%	-0.33%	-0.10%	-0.70%	-2.04%	-2.32%	-2.69%
63	-3.87%	-4.18%	-5.02%	-4.61%	-5.14%	-5.25%	0.55%	0.80%	0.20%	2.93%	2.85%	2.53%	
64	FOOTWEAR	-5.15%	-5.55%	-6.34%	-0.20%	-0.22%	-0.26%	-1.75%	-1.64%	-2.43%	-4.31%	-4.95%	-5.62%
65		-1.14%	-1.21%	-1.73%	-1.64%	-1.71%	-1.98%	0.18%	0.47%	-0.07%	-3.79%	-3.90%	-4.34%
66		-1.83%	-2.22%	-3.08%	-1.86%	-1.90%	-2.16%	-1.24%	-1.09%	-1.89%	-2.96%	-3.17%	-3.45%
67		-1.83%	-2.22%	-3.08%	-1.77%	-1.93%	-2.16%	-1.24%	-1.09%	-1.89%	-2.62%	-2.81%	-3.20%
68	STONE & GLASS	-0.69%	-0.78%	-1.29%	-0.30%	-0.34%	-0.36%	1.73%	2.17%	1.83%	4.04%	3.90%	3.47%
69		-0.69%	-0.78%	-1.29%	-0.33%	-0.34%	-0.40%	1.73%	2.17%	1.83%	3.39%	2.93%	2.61%
70		-0.75%	-0.84%	-1.36%	-4.31%	-4.59%	-5.32%	1.66%	2.09%	1.74%	0.96%	0.83%	0.79%
71	PRECIOUS STONES	0.29%	0.18%	-0.55%	-2.17%	-2.51%	-2.64%	-0.37%	-0.14%	-0.78%	-3.31%	-3.55%	-4.01%
72	BASE METALS	1.41%	1.59%	0.94%	2.19%	1.95%	1.68%	1.65%	2.05%	1.78%	5.00%	4.73%	3.98%
73		-0.28%	-0.30%	-0.92%	-3.62%	-3.77%	-4.30%	1.48%	1.88%	1.46%	3.43%	3.02%	2.77%
74		0.83%	0.81%	0.12%	4.80%	4.52%	4.24%	2.23%	2.72%	2.43%	1.69%	1.56%	1.32%
75		1.07%	1.03%	0.32%	1.75%	1.49%	1.38%	2.81%	3.28%	2.65%	1.65%	1.50%	1.37%
76		0.32%	0.27%	-0.38%	3.72%	3.30%	2.93%	2.23%	2.66%	2.08%	3.87%	3.25%	3.02%
77		---	---	---	---	---	---	---	---	---	---	---	---
78		1.11%	1.07%	0.35%	4.04%	3.55%	2.97%	2.84%	3.31%	2.68%	3.62%	3.42%	3.22%
79		1.11%	1.07%	0.35%	2.14%	2.02%	1.73%	2.84%	3.31%	2.68%	1.84%	1.56%	1.36%
80		1.02%	0.98%	0.27%	0.13%	0.11%	0.10%	2.77%	3.24%	2.61%	0.24%	0.20%	0.19%
81		1.42%	1.39%	0.64%	2.43%	2.27%	2.18%	3.09%	3.58%	2.92%	3.75%	3.32%	2.96%
82		-1.16%	-1.27%	-1.84%	-2.22%	-2.40%	-2.62%	1.16%	1.51%	1.00%	3.18%	2.98%	2.57%
83		-1.16%	-1.27%	-1.84%	-1.39%	-1.46%	-1.54%	1.16%	1.51%	1.00%	1.27%	1.09%	0.95%
84	MACHINE	-1.46%	-1.78%	-2.61%	-4.14%	-4.73%	-4.93%	1.12%	1.58%	1.15%	1.23%	1.10%	1.01%
85		-1.29%	-1.60%	-2.41%	-1.66%	-1.76%	-2.03%	0.04%	0.41%	-0.04%	-1.96%	-2.01%	-2.13%
86	VEHICLES	-0.98%	-1.49%	-2.43%	-0.01%	-0.01%	-0.01%	3.73%	4.22%	3.56%	2.83%	2.46%	2.19%
87		-0.14%	-0.37%	-1.14%	-2.95%	-3.09%	-3.42%	2.39%	2.88%	2.59%	0.82%	0.74%	0.70%
88		-1.02%	-1.54%	-2.49%	-3.03%	-3.38%	-3.78%	3.76%	4.25%	3.57%	3.79%	3.30%	2.96%
89		-1.02%	-1.54%	-2.48%	-3.52%	-3.68%	-4.10%	3.80%	4.28%	3.60%	4.61%	3.90%	3.72%
90	CLOCKS & MUSICAL INST.	-1.63%	-1.94%	-2.78%	-3.56%	-3.73%	-3.95%	2.12%	2.64%	2.22%	1.98%	1.87%	1.82%
91		-1.63%	-1.94%	-2.79%	-1.86%	-1.97%	-2.02%	1.91%	2.43%	2.00%	0.04%	0.03%	0.03%
92		-1.83%	-2.22%	-3.08%	-1.64%	-1.80%	-1.90%	-1.24%	-1.09%	-1.89%	-3.84%	-4.49%	-4.67%
93	ARMS	-1.62%	-1.92%	-2.76%	-0.74%	-0.76%	-0.87%	2.14%	2.67%	2.25%	1.88%	1.84%	1.74%
94	MISC. ART.	-1.65%	-1.98%	-2.81%	-2.91%	-3.28%	-3.57%	-0.68%	-0.46%	-1.17%	-4.77%	-5.36%	-5.80%
95		-1.83%	-2.22%	-3.08%	-2.64%	-2.84%	-3.10%	-1.24%	-1.09%	-1.89%	-1.66%	-1.86%	-2.17%
96		-1.85%	-2.25%	-3.11%	-1.07%	-1.18%	-1.36%	-1.25%	-1.11%	-1.90%	-1.49%	-1.67%	-1.79%
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	

APPENDIX IV - Summary of Interview

Interviewee	Mr Goh Hung Song
Designation	Former Vice President, Strategic Development in APL
Summary of Interview	From his over 40 year experience in shipping company, he commented that shipping company took the customer cargo without checking what was actually inside the container. Customer would do the cargo declaration and over 80% of the shipped cargos were declared as “Freight All Kind”, meaning that even the carriers also did not have clear idea what the exact commodity was shipped inside a container. Besides, he also shared his experiences on evaluating the cargo value. In some cases, food items would be of higher value than those electronic parts. Therefore, it was difficult to estimate the cargo value based on their commodity classification. From his experience, the industrial norm was to assume the cargo weight of a container to be approximately 12 metric tons to estimate the total load on board.
Interviewee	Capt Tey Yoh Huat
Designation	Former Vice President, Technical Services in APL
Summary of Interview	As an experienced captain with over 40 year experience in shipping company, he commented that a container vessel had to be loaded more than 90% of its capacity before departing for its long haul leg. Shipping company would strive to fill the ship as much as possible. In order to do so, freight rate would be reduced, even to a non-profitable rate. He also commented that the shipping industry was in down cycle now. Freight rate along the US-Asia route had dropped more than 50% when compared to the prosperous time before the financial crisis. He mentioned that shipping industry was now struggling and tried to reduce operation cost for sustaining their business.
Interviewee	Mr Kim Kyung Soo
Designation	Former Chief Executive Officer of IMC Shipping Co Pte Ltd
Summary of Interview	During the conversation with Mr Kim, he shared his experience in managing shipping company and his insights in shipping industry. He commented that shipping industry was a dynamic industry and market could be changed dramatically over night. He mentioned that trade forecasting could be a helping tool to the industry as it could give some indication for future market. However, he suggested that it would be more beneficial to the industry if the forecasting model could provide forecast at monthly basis to predict short-term market trend. As his major professional was on bulk carriers and offshore assets, he did not give much comment on the container shipping.

**APPENDIX V - Estimated Maritime Trade (Commodity-Level) at
Median Growth Case Scenario**

MARITIME TRADE BETWEEN AUSTRALIA AND CHINA

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.01	0.01	0.01	0.01	0.01	0.01	1.60	1.63	1.66	1.69	1.77	1.83
02		5.98	7.26	8.83	10.75	11.03	11.47	254.85	264.78	275.50	286.83	288.92	297.16
03		143.30	151.54	160.47	169.98	171.00	179.20	30.71	30.95	31.26	31.61	32.18	33.64
04		28.98	32.30	36.11	40.49	42.00	42.45	73.47	72.45	71.57	70.77	67.63	66.41
05		3.50	4.03	4.71	5.62	5.65	5.70	157.06	158.49	160.37	162.66	166.24	172.82
06	VEGETABLE PRODUCTS	1.51	1.66	1.84	2.03	2.12	2.15	1.05	1.08	1.11	1.14	1.15	1.21
07		61.14	64.55	68.25	72.21	73.66	74.07	10.31	10.23	10.18	10.13	9.63	9.19
08		40.44	42.60	44.94	47.45	48.79	49.54	10.83	10.70	10.61	10.52	10.26	9.90
09		22.32	24.10	26.09	28.28	29.67	30.65	1.93	1.95	1.98	2.01	2.08	2.08
10		2.92	3.07	3.24	3.42	3.56	3.73	66.52	67.46	68.47	69.54	72.14	75.11
11		88.71	93.80	99.32	105.21	105.31	109.40	11.37	11.51	11.66	11.83	12.04	12.29
12		30.69	33.45	36.58	40.07	41.17	41.48	2.71	2.76	2.83	2.91	2.91	2.96
13		11.78	12.46	13.20	13.99	14.30	14.60	3.00	3.07	3.14	3.21	3.32	3.39
14		1.06	1.14	1.22	1.31	1.34	1.40	10.96	11.29	11.64	11.99	12.57	12.91
15	FATS & OILS	18.98	20.60	22.43	24.47	25.19	26.26	44.29	45.41	46.68	48.03	49.32	50.61
16	PREPARED FOODSTUFFS	41.57	44.26	47.23	50.47	51.92	52.90	4.83	4.77	4.72	4.68	4.47	4.46
17		3.35	3.73	4.17	4.67	4.71	4.81	11.06	10.90	10.77	10.64	10.48	10.10
18		21.52	22.79	24.17	25.64	26.73	27.74	1.73	1.74	1.74	1.76	1.76	1.78
19		49.85	52.74	55.87	59.22	61.35	64.12	3.99	4.00	4.02	4.05	4.12	4.28
20		137.20	145.16	153.79	162.98	167.96	171.38	10.98	11.02	11.08	11.14	11.45	11.99
21		37.50	39.75	42.20	44.83	46.07	48.00	5.48	5.42	5.38	5.34	5.26	5.13
22		24.20	25.03	25.92	26.88	27.20	27.39	46.81	48.02	49.29	50.62	50.99	52.87
23		11.44	12.29	13.24	14.30	14.37	14.67	5.35	5.31	5.28	5.26	5.02	4.88
24		6.27	6.53	6.82	7.14	7.47	7.81	11.69	11.99	12.31	12.64	12.66	12.96
25	MINERAL PRODUCTS	65.48	68.20	71.13	74.22	75.55	77.36	11764.48	12645.03	13606.30	14663.46	15293.99	15794.10
26		8.66	8.92	9.20	9.50	9.54	9.92	4885.67	5251.37	5650.60	6089.65	6104.87	6228.19
27		99.34	106.20	114.08	122.94	127.05	128.61	1606.02	1747.19	1908.62	2092.82	2169.00	2204.14
28	CHEMICAL PRODUCTS	802.07	864.32	932.72	1006.91	1008.12	1058.12	168.92	179.98	192.66	206.98	215.55	218.65
29		592.24	638.27	688.81	743.62	775.22	801.11	105.85	112.19	119.42	127.51	133.14	135.91
30		31.12	33.43	35.95	38.67	39.84	41.25	5.13	5.43	5.78	6.16	6.20	6.21
31		67.46	72.70	78.44	84.67	88.71	90.28	179.67	192.94	207.46	223.44	226.33	227.86
32		120.75	130.14	140.45	151.64	158.32	162.50	21.61	22.91	24.38	26.04	27.11	28.35
33		79.31	85.47	92.25	99.59	102.35	102.59	14.19	15.04	16.01	17.10	17.12	17.66
34		90.61	97.27	104.51	112.27	113.60	119.13	11.84	12.54	13.35	14.25	14.80	15.29
35		37.82	40.68	43.82	47.23	48.49	48.65	8.41	8.67	8.98	9.33	9.37	9.63
36		80.24	85.45	90.94	96.67	97.29	97.97	2.56	2.69	2.85	3.03	3.10	3.17
37		81.70	88.05	95.03	102.59	105.15	109.03	14.62	15.50	16.50	17.62	18.01	18.43
38		173.39	186.44	200.73	216.15	223.85	232.31	27.00	28.57	30.37	32.39	33.68	34.07
39	PLASTICS	331.15	356.90	385.18	415.84	423.33	427.94	59.27	62.82	66.87	71.40	73.29	74.74
40		213.50	230.09	248.31	268.06	271.49	283.11	44.55	47.04	49.86	52.99	54.96	54.99
41	LEATHER GOODS	442.73	453.14	463.55	473.56	475.41	485.73	95.45	96.66	97.96	99.31	99.83	103.98
42		140.36	144.98	149.70	154.40	162.05	167.14	4.58	4.54	4.51	4.48	4.30	4.20
43		0.07	0.07	0.07	0.08	0.08	0.08	8.47	8.63	8.80	8.98	9.27	9.59
44	WOOD PRODUCTS	163.67	167.88	172.40	177.00	181.62	190.64	40.82	41.29	41.83	42.39	44.26	44.94
45		5.96	6.10	6.26	6.41	6.62	6.91	2.09	2.12	2.16	2.20	2.28	2.39
46		15.95	16.32	16.73	17.13	17.59	17.65	2.62	2.61	2.61	2.61	2.68	2.78
47	PAPER	41.66	44.49	47.56	50.86	51.04	52.99	2.37	2.43	2.48	2.54	2.66	2.73
48		753.26	804.45	859.96	919.57	961.87	1009.48	42.89	43.88	44.93	46.01	47.93	50.04
49		26.46	28.26	30.21	32.30	32.66	32.81	1.51	1.54	1.58	1.62	1.63	1.71

MARITIME TRADE BETWEEN AUSTRALIA AND CHINA (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	20.26	21.34	22.57	23.99	24.86	24.97	141.54	142.84	144.54	146.61	149.47	153.70
51		78.82	83.42	88.76	95.06	95.08	95.60	721.40	727.97	736.66	747.21	753.34	760.57
52		338.16	350.99	364.01	376.93	388.20	391.07	33.63	35.40	37.41	39.66	40.51	41.45
53		45.11	46.83	48.56	50.29	50.46	51.39	122.11	130.01	138.95	148.97	154.46	156.56
54		195.48	202.90	210.42	217.89	219.26	226.24	5.30	5.40	5.52	5.65	5.69	5.77
55		351.21	364.54	378.06	391.48	393.16	405.19	9.52	9.71	9.92	10.15	10.18	10.63
56		105.26	109.26	113.31	117.33	122.08	125.63	2.85	2.91	2.97	3.04	3.08	3.23
57		76.56	79.46	82.41	85.34	89.40	91.29	2.07	2.12	2.16	2.21	2.27	2.38
58		60.01	62.29	64.60	66.89	68.33	69.24	1.63	1.66	1.69	1.73	1.79	1.86
59		116.65	122.88	129.37	136.04	136.10	141.53	2.86	2.96	3.08	3.21	3.34	3.41
60		97.75	101.46	105.22	108.95	111.62	115.49	2.65	2.70	2.76	2.82	2.85	2.86
61		548.75	563.23	577.94	592.57	609.52	628.60	1.13	1.15	1.17	1.20	1.24	1.30
62		408.28	418.75	429.40	440.00	461.60	474.06	0.21	0.21	0.21	0.21	0.22	0.23
63	128.27	133.34	138.50	143.65	145.40	146.97	3.56	3.63	3.71	3.79	3.96	4.14	
64	FOOTWEAR	310.83	318.13	325.43	332.45	339.17	354.26	16.14	15.99	15.87	15.75	15.04	14.65
65		57.88	59.51	61.18	62.87	65.94	68.02	0.52	0.55	0.58	0.62	0.65	0.66
66		115.75	122.98	130.52	138.33	144.43	149.92	0.45	0.45	0.45	0.46	0.47	0.47
67		93.67	99.52	105.63	111.94	114.93	118.30	0.36	0.36	0.37	0.37	0.39	0.39
68	STONE & GLASS	176.86	185.71	195.18	205.13	209.81	213.04	4.05	4.13	4.23	4.34	4.41	4.60
69		68.24	71.66	75.31	79.15	81.20	83.09	1.56	1.59	1.63	1.68	1.74	1.77
70		278.22	291.99	306.69	322.12	325.82	326.31	6.42	6.56	6.71	6.89	6.91	7.11
71	PRECIOUS STONES	30.11	32.09	34.20	36.41	37.40	39.27	38.88	41.44	44.23	47.28	49.04	49.45
72	BASE METALS	472.79	494.75	517.66	541.24	556.93	566.96	12.79	13.42	14.13	14.92	15.41	15.66
73		838.57	888.66	941.09	995.46	1011.29	1025.04	18.77	19.20	19.68	20.23	20.59	21.36
74		261.34	281.92	304.84	329.84	344.98	345.67	224.40	226.99	229.73	232.23	238.61	245.48
75		76.07	82.30	89.23	96.77	97.37	100.41	77.59	78.48	79.42	80.24	81.86	85.17
76		233.94	250.69	268.88	288.29	298.59	308.65	127.87	129.36	130.93	132.31	136.46	140.60
77		---	---	---	---	---	---	---	---	---	---	---	---
78		43.42	47.00	51.00	55.35	57.82	59.04	45.66	46.18	46.73	47.22	47.65	49.48
79		46.96	50.84	55.16	59.87	62.83	63.63	49.38	49.95	50.55	51.07	51.97	54.25
80		29.98	32.40	35.10	38.03	38.97	40.02	29.40	29.74	30.09	30.41	30.92	32.42
81		161.09	175.40	191.56	209.31	209.71	214.00	216.49	218.99	221.59	223.87	224.03	226.79
82		425.32	450.91	477.62	505.27	514.01	520.03	7.85	8.00	8.17	8.36	8.38	8.55
83		249.73	264.75	280.43	296.67	303.52	311.20	4.61	4.70	4.80	4.91	4.98	5.00
84	MACHINE	5245.66	5560.28	5894.24	6242.90	6447.67	6755.87	168.28	170.85	173.84	177.12	182.99	186.39
85		2538.70	2645.29	2757.20	2871.82	2967.45	3042.53	38.56	39.40	40.36	41.36	41.59	41.79
86	VEHICLES	196.36	213.54	232.00	251.53	253.94	265.09	5.18	5.20	5.24	5.28	5.40	5.48
87		694.42	744.21	798.05	855.62	860.58	884.93	114.80	116.12	117.64	119.37	124.86	129.71
88		43.40	47.19	51.25	55.54	58.21	60.33	0.77	0.77	0.77	0.77	0.81	0.81
89		159.95	174.08	189.27	205.32	212.79	213.62	2.79	2.79	2.80	2.81	2.83	2.87
90	CLOCKS & MUSICAL INST.	354.36	380.91	409.24	439.06	439.76	452.56	15.00	15.16	15.35	15.56	15.89	16.26
91		90.54	97.21	104.32	111.81	114.63	119.00	3.93	3.97	4.01	4.06	4.13	4.16
92		184.31	195.81	207.83	220.25	231.11	236.45	0.71	0.72	0.72	0.73	0.75	0.78
93	ARMS	72.76	78.16	83.92	89.98	94.28	96.47	3.03	3.06	3.10	3.14	3.16	3.25
94	MISC. ART.	565.08	600.92	638.45	677.35	682.84	692.53	5.07	5.14	5.22	5.30	5.49	5.56
95		794.67	844.28	896.09	949.67	952.05	980.32	3.07	3.09	3.11	3.14	3.18	3.30
96		565.83	600.92	637.55	675.43	689.75	713.89	2.48	2.49	2.51	2.52	2.55	2.58
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

MARITIME TRADE BETWEEN AUSTRALIA AND JAPAN

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.01	0.01	0.01	0.01	0.01	0.01	0.27	0.26	0.26	0.26	0.25	0.25
02		1.22	1.22	1.21	1.21	1.16	1.14	1444.31	1427.21	1411.14	1396.03	1327.34	1292.04
03		7.78	7.72	7.66	7.60	7.29	7.03	121.60	118.63	115.88	113.28	110.37	105.58
04		1.64	1.63	1.63	1.63	1.59	1.52	276.24	275.31	274.85	274.73	264.40	252.29
05		0.20	0.20	0.20	0.20	0.21	0.22	5.18	5.08	5.00	4.92	4.78	4.71
06	VEGETABLE PRODUCTS	0.09	0.09	0.09	0.09	0.08	0.08	4.70	4.51	4.32	4.15	4.08	3.95
07		2.11	2.09	2.07	2.05	2.03	1.98	36.94	35.69	34.52	33.41	32.65	32.35
08		0.79	0.78	0.78	0.77	0.77	0.76	26.93	25.91	24.96	24.06	23.13	22.13
09		1.22	1.20	1.19	1.18	1.16	1.11	40.28	38.66	37.17	35.71	34.10	33.87
10		0.03	0.03	0.03	0.03	0.02	0.02	64.65	63.58	62.57	61.66	59.17	56.80
11		4.46	4.42	4.39	4.35	4.23	4.12	52.48	51.03	49.66	48.34	47.16	45.51
12		0.92	0.91	0.90	0.89	0.87	0.86	75.93	74.02	72.31	70.69	68.45	67.01
13		0.56	0.55	0.55	0.54	0.53	0.51	6.48	6.29	6.11	5.94	5.85	5.58
14		0.02	0.02	0.02	0.02	0.02	0.02	0.54	0.53	0.52	0.51	0.49	0.49
15	FATS & OILS	1.94	1.89	1.85	1.80	1.77	1.72	177.61	175.46	173.44	171.55	168.15	166.23
16	PREPARED FOODSTUFFS	2.28	2.26	2.24	2.22	2.14	2.11	27.46	26.40	25.38	24.38	24.04	23.92
17		0.14	0.14	0.14	0.14	0.15	0.15	27.85	27.77	27.74	27.74	28.06	28.45
18		1.04	1.02	1.02	1.01	0.98	0.93	13.04	12.64	12.26	11.89	11.41	11.27
19		2.38	2.36	2.34	2.32	2.29	2.24	27.37	26.57	25.81	25.07	24.87	23.76
20		6.56	6.49	6.44	6.38	6.19	6.19	75.33	73.12	71.03	69.01	66.05	65.86
21		1.81	1.79	1.77	1.76	1.75	1.72	32.76	32.13	31.56	31.02	29.80	29.55
22		3.48	3.49	3.51	3.53	3.56	3.69	52.98	52.40	51.83	51.28	49.68	48.29
23		0.59	0.58	0.58	0.57	0.57	0.56	5.63	5.43	5.24	5.06	4.89	4.73
24		0.89	0.89	0.90	0.90	0.93	0.94	15.80	15.54	15.29	15.05	14.86	14.49
25	MINERAL PRODUCTS	8.28	8.14	8.01	7.87	7.85	7.84	3332.07	3306.18	3282.84	3261.79	3244.50	3107.59
26		2.37	2.34	2.31	2.28	2.24	2.21	1383.59	1372.85	1363.16	1354.43	1340.07	1273.60
27		484.61	499.57	517.92	539.16	541.58	558.64	7778.82	7630.53	7504.55	7384.41	7043.99	6719.97
28	CHEMICAL PRODUCTS	256.33	251.28	246.48	241.50	230.13	226.98	106.53	108.24	110.30	112.65	115.96	121.52
29		161.68	157.06	152.42	147.48	146.86	139.74	27.30	27.34	27.47	27.66	28.51	29.91
30		7.75	7.52	7.30	7.06	6.91	6.61	1.28	1.28	1.29	1.30	1.30	1.33
31		18.45	17.93	17.40	16.84	16.67	16.52	50.49	50.13	49.82	49.54	47.33	46.88
32		33.03	32.09	31.14	30.13	29.41	29.26	5.42	5.43	5.46	5.51	5.74	6.02
33		21.69	21.07	20.45	19.79	19.75	19.54	3.56	3.57	3.59	3.62	3.77	3.79
34		18.37	17.83	17.29	16.71	16.20	15.41	3.15	3.15	3.15	3.17	3.20	3.30
35		8.53	8.29	8.06	7.81	7.75	7.73	17.81	17.67	17.55	17.45	16.98	16.28
36		4.66	4.47	4.30	4.11	4.06	4.02	1.14	1.11	1.08	1.05	1.04	1.03
37		22.35	21.71	21.07	20.38	19.68	19.54	3.67	3.68	3.70	3.73	3.88	3.99
38		44.91	43.63	42.35	40.99	40.22	39.65	6.92	6.93	6.95	6.99	7.30	7.47
39	PLASTICS	90.58	87.99	85.39	82.62	81.07	77.37	14.86	14.90	14.98	15.10	15.57	15.79
40		58.27	56.61	54.93	53.15	51.56	50.57	9.86	9.88	9.93	10.00	10.25	10.54
41	LEATHER GOODS	0.33	0.30	0.27	0.24	0.24	0.24	1.88	1.74	1.61	1.48	1.47	1.44
42		0.63	0.58	0.54	0.50	0.48	0.47	0.54	0.50	0.47	0.43	0.42	0.41
43		0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.06	0.06	0.05	0.05	0.05
44	WOOD PRODUCTS	1.74	1.69	1.64	1.59	1.52	1.45	6.77	6.55	6.32	6.10	5.91	5.70
45		0.01	0.01	0.01	0.01	0.00	0.00	0.27	0.26	0.25	0.24	0.24	0.23
46		0.01	0.01	0.01	0.01	0.01	0.01	0.60	0.57	0.55	0.53	0.52	0.52
47	PAPER	7.75	7.61	7.48	7.35	7.14	7.06	0.18	0.18	0.17	0.17	0.17	0.17
48		140.22	137.65	135.29	132.87	130.94	126.19	3.22	3.18	3.14	3.10	3.08	3.03
49		4.93	4.84	4.75	4.67	4.54	4.48	0.11	0.11	0.11	0.11	0.11	0.10

MARITIME TRADE BETWEEN AUSTRALIA AND JAPAN (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	0.22	0.21	0.19	0.18	0.17	0.17	0.27	0.26	0.24	0.23	0.22	0.22
51		0.85	0.79	0.74	0.68	0.68	0.65	1.26	1.19	1.12	1.06	1.05	1.05
52		3.89	3.63	3.38	3.14	3.00	2.91	5.14	4.91	4.69	4.50	4.38	4.38
53		0.52	0.48	0.45	0.42	0.41	0.39	16.65	16.25	15.89	15.56	14.84	14.72
54		2.25	2.10	1.96	1.82	1.80	1.71	1.05	0.96	0.88	0.80	0.80	0.79
55		4.04	3.77	3.51	3.26	3.23	3.11	1.89	1.73	1.58	1.44	1.37	1.37
56		1.21	1.13	1.05	0.98	0.97	0.93	0.57	0.52	0.47	0.43	0.42	0.40
57		0.88	0.82	0.77	0.71	0.70	0.70	0.41	0.38	0.34	0.31	0.30	0.29
58		0.69	0.64	0.60	0.56	0.55	0.53	0.32	0.30	0.27	0.25	0.24	0.23
59		3.80	3.63	3.47	3.30	3.26	3.21	1.08	1.03	0.98	0.94	0.93	0.89
60		1.12	1.05	0.98	0.91	0.87	0.84	0.53	0.48	0.44	0.40	0.38	0.38
61		0.59	0.55	0.51	0.47	0.45	0.44	0.36	0.33	0.31	0.28	0.28	0.27
62		0.17	0.16	0.15	0.14	0.14	0.13	0.15	0.14	0.13	0.12	0.11	0.11
63	3.00	2.86	2.73	2.60	2.48	2.45	0.73	0.67	0.61	0.56	0.53	0.53	
64	FOOTWEAR	0.23	0.21	0.19	0.17	0.17	0.16	0.96	0.88	0.80	0.72	0.72	0.69
65		0.78	0.75	0.73	0.70	0.69	0.66	0.14	0.14	0.14	0.14	0.13	0.13
66		1.97	1.83	1.70	1.57	1.49	1.49	0.96	0.91	0.85	0.80	0.80	0.78
67		1.60	1.48	1.37	1.27	1.24	1.21	0.78	0.74	0.69	0.65	0.64	0.61
68	STONE & GLASS	13.57	13.18	12.81	12.44	12.21	11.88	2.64	2.57	2.51	2.45	2.38	2.37
69		5.23	5.09	4.94	4.80	4.68	4.60	1.02	0.99	0.97	0.95	0.95	0.90
70		20.50	19.91	19.35	18.78	17.95	17.94	4.03	3.92	3.83	3.73	3.58	3.44
71	PRECIOUS STONES	3.36	3.27	3.19	3.11	3.09	3.06	16.66	16.28	15.92	15.56	15.07	14.86
72	BASE METALS	309.38	300.79	292.41	283.91	276.53	272.24	6.26	6.24	6.24	6.26	5.92	6.01
73		133.95	129.92	126.04	122.11	118.34	112.53	5.79	5.64	5.50	5.37	5.12	5.03
74		1279.96	1266.68	1255.80	1245.30	1221.39	1211.01	255.37	244.72	234.62	224.13	213.61	204.24
75		41.01	40.16	39.42	38.68	37.60	37.36	98.00	93.85	89.92	85.83	84.45	80.36
76		71.02	69.47	68.11	66.74	64.83	64.63	159.47	152.73	146.33	139.69	134.18	127.84
77		---	---	---	---	---	---	---	---	---	---	---	---
78		24.09	23.59	23.16	22.73	22.19	21.29	57.70	55.25	52.94	50.53	48.84	47.49
79		26.05	25.51	25.05	24.58	23.61	23.24	62.40	59.76	57.26	54.65	54.23	51.92
80		15.57	15.25	14.97	14.69	14.55	14.54	37.11	35.54	34.05	32.50	31.06	30.50
81		112.80	110.50	108.52	106.53	103.60	100.66	274.42	262.80	251.79	240.33	234.23	230.62
82		17.38	16.70	16.05	15.41	14.79	14.57	2.06	1.99	1.93	1.87	1.83	1.79
83	10.21	9.80	9.42	9.05	8.66	8.33	1.21	1.17	1.13	1.10	1.06	1.04	
84	MACHINE	1590.42	1547.82	1508.33	1468.67	1418.01	1411.62	56.60	55.14	53.82	52.59	51.57	49.38
85		313.21	297.39	282.64	268.12	263.51	254.21	8.69	8.35	8.03	7.73	7.49	7.29
86	VEHICLES	162.19	158.93	155.90	152.79	151.86	145.80	4.06	3.95	3.84	3.71	3.60	3.49
87		4943.70	4894.99	4855.08	4816.66	4593.16	4420.92	24.28	23.94	23.63	23.32	22.43	21.50
88		17.54	16.98	16.45	15.89	15.44	15.22	0.84	0.82	0.79	0.76	0.75	0.72
89		66.14	64.05	62.03	59.92	59.24	59.11	3.14	3.06	2.96	2.86	2.82	2.77
90	CLOCKS & MUSICAL INST.	102.60	99.69	96.93	94.09	89.70	88.15	4.37	4.18	4.00	3.83	3.66	3.60
91		25.92	25.19	24.49	23.78	23.11	22.84	1.10	1.05	1.01	0.96	0.93	0.90
92		3.14	2.92	2.70	2.49	2.41	2.35	1.54	1.45	1.36	1.28	1.27	1.23
93	ARMS	20.34	19.76	19.21	18.65	18.45	18.29	0.87	0.83	0.80	0.76	0.75	0.72
94	MISC. ART.	26.08	24.98	23.93	22.87	21.73	20.79	4.99	4.72	4.47	4.21	4.19	4.07
95		13.55	12.59	11.66	10.75	10.25	10.12	6.62	6.24	5.87	5.51	5.29	5.22
96		9.55	8.87	8.22	7.58	7.25	7.18	4.68	4.41	4.15	3.90	3.80	3.63
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

MARITIME TRADE BETWEEN AUSTRALIA AND SOUTH KOREA

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.05	0.05	0.05	0.06
02		0.06	0.07	0.07	0.08	0.08	0.08	646.32	646.16	647.47	650.36	681.12	683.43
03		11.83	11.99	12.16	12.34	12.89	13.25	5.21	5.10	5.00	4.90	4.82	4.77
04		3.95	4.09	4.24	4.40	4.43	4.46	58.68	58.78	58.96	59.21	61.42	63.63
05		0.24	0.25	0.26	0.27	0.28	0.28	0.38	0.38	0.38	0.38	0.39	0.40
06	VEGETABLE PRODUCTS	0.05	0.06	0.07	0.08	0.08	0.08	1.44	1.41	1.38	1.36	1.31	1.26
07		3.72	3.79	3.86	3.93	3.94	4.12	2.64	2.54	2.44	2.35	2.28	2.18
08		1.71	1.75	1.79	1.84	1.89	1.90	2.13	2.01	1.91	1.81	1.79	1.71
09		1.29	1.35	1.42	1.48	1.56	1.62	4.85	4.49	4.16	3.85	3.80	3.68
10		0.05	0.05	0.05	0.05	0.05	0.05	9.33	9.22	9.11	9.01	8.63	8.63
11		7.58	7.69	7.80	7.92	7.97	8.02	7.97	7.92	7.86	7.81	7.45	7.11
12		0.66	0.70	0.75	0.80	0.82	0.82	4.67	4.36	4.06	3.79	3.60	3.43
13		0.91	0.92	0.94	0.95	0.98	1.03	2.29	2.32	2.34	2.38	2.42	2.50
14		0.05	0.05	0.05	0.05	0.05	0.05	9.85	10.02	10.21	10.41	10.51	10.58
15	FATS & OILS	0.91	0.88	0.86	0.83	0.81	0.77	82.07	82.04	82.20	82.55	84.23	87.20
16	PREPARED FOODSTUFFS	3.11	3.15	3.20	3.25	3.26	3.38	1.86	1.81	1.77	1.72	1.66	1.61
17		0.33	0.34	0.36	0.37	0.37	0.38	8.93	8.96	8.99	9.03	9.30	9.49
18		1.65	1.67	1.70	1.73	1.75	1.80	0.93	0.90	0.87	0.84	0.80	0.77
19		3.87	3.92	3.98	4.04	4.21	4.38	1.74	1.70	1.66	1.63	1.55	1.52
20		10.65	10.79	10.95	11.11	11.24	11.41	4.78	4.68	4.58	4.48	4.27	4.14
21		2.99	3.03	3.08	3.13	3.16	3.27	4.00	3.97	3.96	3.94	3.85	3.68
22		9.24	9.36	9.50	9.64	9.67	10.12	52.21	52.32	52.42	52.54	53.21	53.71
23		0.71	0.72	0.74	0.75	0.76	0.76	2.69	2.70	2.71	2.72	2.79	2.85
24		2.28	2.31	2.35	2.39	2.46	2.49	13.37	13.37	13.36	13.37	13.50	14.00
25	MINERAL PRODUCTS	1.51	1.50	1.49	1.48	1.48	1.44	1894.94	1943.66	1996.41	2054.58	2145.19	2149.05
26		0.40	0.38	0.37	0.35	0.34	0.33	787.04	807.28	829.20	853.37	854.74	875.42
27		318.85	326.44	335.92	346.92	350.64	350.71	4116.23	4213.23	4324.68	4466.55	4586.70	4681.19
28	CHEMICAL PRODUCTS	112.97	109.69	106.30	102.72	101.89	101.51	104.49	107.97	112.05	116.68	121.34	126.11
29		65.27	62.35	59.25	55.91	54.24	52.91	67.67	70.05	72.84	76.02	78.36	80.27
30		3.20	3.06	2.91	2.74	2.70	2.67	3.25	3.37	3.50	3.65	3.67	3.73
31		7.42	7.09	6.73	6.35	6.09	5.88	34.69	35.66	36.73	37.92	38.40	39.31
32		13.32	12.72	12.09	11.40	10.95	10.67	13.82	14.31	14.88	15.53	15.58	15.64
33		8.75	8.35	7.94	7.49	7.39	7.05	9.08	9.40	9.77	10.20	10.25	10.66
34		7.34	7.01	6.66	6.29	6.20	5.98	7.54	7.80	8.11	8.46	8.56	8.57
35		3.99	3.85	3.71	3.56	3.46	3.43	6.34	6.46	6.61	6.77	7.10	7.19
36		1.70	1.62	1.55	1.47	1.41	1.41	1.54	1.59	1.65	1.71	1.75	1.82
37		9.01	8.61	8.18	7.71	7.69	7.44	9.35	9.68	10.07	10.51	10.85	11.18
38		17.50	16.80	16.06	15.26	14.85	14.21	16.95	17.53	18.22	19.01	19.73	20.11
39	PLASTICS	36.52	34.89	33.14	31.27	31.19	30.58	37.90	39.23	40.80	42.58	42.81	44.07
40		23.52	22.47	21.34	20.14	19.54	18.67	30.25	31.21	32.33	33.60	35.11	36.61
41	LEATHER GOODS	0.43	0.41	0.38	0.35	0.35	0.35	2.89	2.74	2.59	2.44	2.34	2.31
42		0.25	0.24	0.23	0.22	0.21	0.21	0.48	0.45	0.42	0.39	0.37	0.36
43		0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.07	0.07	0.07	0.07	0.07
44	WOOD PRODUCTS	1.36	1.33	1.30	1.26	1.23	1.22	24.41	24.46	24.56	24.69	24.95	25.79
45		0.03	0.03	0.03	0.03	0.03	0.03	1.43	1.45	1.46	1.47	1.52	1.58
46		0.07	0.07	0.07	0.07	0.06	0.06	1.11	1.09	1.07	1.05	1.03	0.99
47	PAPER	8.15	8.22	8.30	8.38	8.65	8.88	0.31	0.31	0.31	0.31	0.32	0.33
48		147.40	148.68	150.15	151.59	156.60	158.05	5.54	5.56	5.59	5.62	5.78	5.91
49		5.18	5.22	5.27	5.33	5.42	5.58	0.19	0.20	0.20	0.20	0.21	0.21

MARITIME TRADE BETWEEN AUSTRALIA AND SOUTH KOREA (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	0.63	0.60	0.58	0.56	0.56	0.56	0.17	0.16	0.16	0.15	0.15	0.14
51		2.42	2.34	2.26	2.20	2.11	2.04	0.67	0.64	0.60	0.57	0.54	0.54
52		10.64	10.10	9.57	9.03	8.96	8.65	5.90	5.71	5.54	5.37	5.32	5.22
53		1.42	1.35	1.28	1.21	1.17	1.14	14.74	14.63	14.54	14.46	14.23	13.99
54		6.15	5.84	5.53	5.22	5.18	5.06	1.73	1.63	1.54	1.45	1.40	1.33
55		11.05	10.49	9.94	9.38	9.07	8.85	3.11	2.94	2.77	2.61	2.57	2.52
56		3.31	3.14	2.98	2.81	2.69	2.59	0.93	0.88	0.83	0.78	0.77	0.76
57		2.41	2.29	2.17	2.05	2.02	1.98	0.68	0.64	0.60	0.57	0.54	0.54
58		1.89	1.79	1.70	1.60	1.55	1.49	0.53	0.50	0.47	0.45	0.44	0.44
59		2.87	2.76	2.64	2.52	2.49	2.38	1.29	1.29	1.30	1.31	1.35	1.41
60		3.08	2.92	2.77	2.61	2.49	2.41	0.87	0.82	0.77	0.73	0.70	0.68
61		1.65	1.57	1.49	1.42	1.41	1.38	0.39	0.36	0.34	0.32	0.31	0.31
62		0.51	0.49	0.46	0.44	0.43	0.42	0.08	0.08	0.07	0.07	0.07	0.06
63	4.32	4.13	3.94	3.76	3.71	3.60	1.16	1.09	1.04	0.98	0.97	0.97	
64	FOOTWEAR	0.30	0.28	0.26	0.25	0.23	0.22	1.59	1.48	1.38	1.28	1.25	1.19
65		0.37	0.36	0.34	0.32	0.31	0.30	0.33	0.34	0.35	0.36	0.38	0.39
66		0.48	0.47	0.45	0.44	0.43	0.43	0.12	0.12	0.11	0.11	0.11	0.11
67		0.39	0.38	0.37	0.35	0.35	0.35	0.10	0.09	0.09	0.09	0.09	0.08
68	STONE & GLASS	3.70	3.72	3.75	3.78	3.90	3.91	1.14	1.13	1.12	1.11	1.10	1.08
69		1.43	1.44	1.45	1.46	1.53	1.54	0.44	0.44	0.43	0.43	0.42	0.40
70		5.96	5.97	5.99	6.02	6.18	6.40	1.82	1.80	1.78	1.76	1.70	1.67
71	PRECIOUS STONES	1.29	1.28	1.28	1.28	1.29	1.33	11.20	11.23	11.27	11.30	11.53	11.91
72	BASE METALS	119.65	120.89	122.41	124.12	126.93	132.96	68.72	69.57	70.65	71.98	73.94	75.57
73		57.80	58.35	59.04	59.80	61.39	61.65	21.48	21.64	21.87	22.17	22.81	23.12
74		271.76	275.81	280.57	285.72	296.18	302.81	258.66	254.95	251.22	246.98	235.70	229.26
75		16.80	16.82	16.90	16.98	17.63	17.99	82.20	80.65	79.08	77.28	74.52	72.56
76		30.54	30.59	30.74	30.91	31.78	32.54	133.69	131.17	128.61	125.69	124.61	120.76
77		---	---	---	---	---	---	---	---	---	---	---	---
78		9.85	9.87	9.91	9.96	10.23	10.54	48.39	47.48	46.55	45.50	43.61	42.90
79		10.66	10.67	10.72	10.77	10.97	11.00	52.34	51.35	50.35	49.21	47.60	45.77
80		6.40	6.41	6.43	6.47	6.67	6.98	31.13	30.54	29.94	29.27	28.52	27.33
81		45.55	45.60	45.79	46.02	46.39	46.98	230.20	225.86	221.46	216.44	215.64	208.93
82		12.65	12.72	12.82	12.93	13.02	13.20	1.46	1.43	1.39	1.36	1.33	1.30
83	7.43	7.47	7.53	7.59	7.66	7.92	0.86	0.84	0.82	0.80	0.78	0.78	
84	MACHINE	557.57	560.24	564.45	569.26	570.85	595.23	64.21	64.00	63.85	63.72	62.54	59.84
85		246.81	243.92	241.72	239.70	236.51	233.62	10.24	10.18	10.13	10.09	9.87	9.49
86	VEHICLES	21.33	21.73	22.17	22.64	23.06	23.72	4.28	4.29	4.30	4.32	4.49	4.49
87		957.54	974.21	993.29	1013.87	1043.48	1077.08	201.74	202.73	203.91	205.33	212.29	218.11
88		1.14	1.16	1.18	1.21	1.25	1.29	0.19	0.19	0.19	0.18	0.18	0.17
89		4.17	4.26	4.36	4.46	4.56	4.67	0.68	0.68	0.67	0.67	0.64	0.62
90	CLOCKS & MUSICAL INST.	29.25	29.71	30.25	30.83	31.72	32.96	4.41	4.37	4.34	4.30	4.18	3.99
91		7.39	7.51	7.65	7.79	8.01	8.40	1.13	1.12	1.11	1.10	1.04	1.04
92		0.77	0.75	0.72	0.70	0.68	0.67	0.19	0.19	0.18	0.17	0.17	0.16
93	ARMS	5.88	5.97	6.08	6.19	6.41	6.69	0.88	0.87	0.87	0.86	0.82	0.81
94	MISC. ART.	7.47	7.46	7.46	7.47	7.72	8.07	1.57	1.55	1.54	1.52	1.49	1.49
95		3.33	3.22	3.11	3.00	2.85	2.75	0.83	0.80	0.77	0.74	0.71	0.68
96		2.35	2.27	2.20	2.12	2.05	1.99	0.62	0.59	0.57	0.55	0.54	0.52
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	

MARITIME TRADE BETWEEN AUSTRALIA AND U.S.

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.16	0.16	0.17	0.17	0.17	0.17	0.19	0.19	0.20	0.20	0.20	0.21
02		69.56	68.72	68.05	67.57	66.75	64.89	1170.08	1207.61	1247.67	1285.48	1347.57	1354.04
03		69.81	68.94	68.27	67.73	66.18	63.15	41.08	41.55	42.04	42.37	44.35	44.90
04		25.72	25.60	25.56	25.59	25.22	23.98	61.00	62.62	64.32	65.84	68.68	71.94
05		2.30	2.30	2.31	2.32	2.43	2.52	3.36	3.34	3.31	3.26	3.22	3.13
06	VEGETABLE PRODUCTS	1.46	1.45	1.45	1.44	1.41	1.39	0.67	0.67	0.67	0.67	0.70	0.71
07		53.69	52.95	52.33	51.73	51.30	51.07	30.48	30.52	30.60	30.64	31.02	31.89
08		52.27	51.53	50.88	50.23	47.82	45.52	32.53	32.50	32.52	32.55	33.37	33.53
09		16.51	16.40	16.31	16.20	15.76	15.23	7.47	7.49	7.52	7.54	7.61	7.92
10		4.11	3.97	3.86	3.76	3.68	3.64	0.39	0.40	0.42	0.45	0.46	0.48
11		54.13	53.59	53.20	52.91	52.61	51.90	68.77	69.67	70.54	71.16	71.83	75.11
12		12.66	12.59	12.53	12.45	12.27	11.80	8.97	9.02	9.10	9.18	9.39	9.83
13		5.92	5.85	5.79	5.75	5.71	5.67	2.63	2.66	2.68	2.69	2.82	2.86
14		0.60	0.59	0.59	0.58	0.56	0.55	0.21	0.22	0.22	0.22	0.22	0.23
15	FATS & OILS	28.71	28.29	27.97	27.69	27.41	27.14	147.02	151.62	156.54	161.18	163.42	168.85
16	PREPARED FOODSTUFFS	41.44	40.93	40.53	40.22	38.64	37.97	11.95	12.10	12.26	12.35	12.60	13.02
17		2.70	2.69	2.68	2.69	2.64	2.60	12.24	12.55	12.88	13.17	13.43	13.97
18		11.15	11.01	10.91	10.82	10.81	10.68	4.95	4.99	5.03	5.05	5.13	5.38
19		25.30	24.98	24.74	24.54	23.60	22.99	11.22	11.31	11.41	11.45	11.80	12.22
20		69.65	68.76	68.08	67.54	66.65	66.00	30.88	31.14	31.40	31.52	32.57	33.76
21		19.55	19.32	19.13	18.99	18.24	17.41	10.95	11.10	11.24	11.35	11.37	11.87
22		107.96	108.14	108.55	109.16	110.30	115.37	518.89	526.64	534.11	539.83	563.20	568.38
23		11.98	11.81	11.69	11.57	11.23	10.92	3.63	3.66	3.69	3.72	3.73	3.86
24		27.46	27.51	27.61	27.76	28.73	29.57	129.47	131.40	133.26	134.68	141.36	142.11
25	MINERAL PRODUCTS	64.94	64.56	64.33	64.15	63.34	61.42	28.68	29.11	29.59	30.06	31.19	31.20
26		26.41	26.28	26.22	26.17	25.12	23.99	10.54	10.71	10.90	11.09	11.10	11.50
27		269.81	282.54	298.18	316.62	330.01	342.58	287.59	302.40	316.43	332.44	346.77	359.29
28	CHEMICAL PRODUCTS	868.28	856.68	848.75	843.88	839.83	839.74	82.76	85.22	87.93	90.57	90.85	94.52
29		636.21	626.76	619.89	615.16	597.32	580.47	59.93	61.73	63.71	65.65	67.47	70.42
30		30.44	29.98	29.65	29.41	29.16	27.79	2.88	2.97	3.06	3.15	3.16	3.18
31		73.15	72.07	71.29	70.75	67.38	66.35	7.14	7.35	7.58	7.81	7.94	8.19
32		129.88	127.95	126.55	125.58	125.00	121.65	12.18	12.55	12.96	13.35	13.60	14.26
33		85.30	84.03	83.11	82.48	79.81	77.67	8.00	8.24	8.51	8.77	9.07	9.29
34		71.96	70.82	69.97	69.37	67.45	64.12	7.07	7.25	7.45	7.64	8.00	8.15
35		36.59	36.07	35.69	35.43	34.04	32.84	7.31	7.48	7.67	7.85	7.86	8.16
36		17.54	17.08	16.70	16.39	16.09	15.64	2.50	2.49	2.48	2.47	2.42	2.41
37		87.87	86.57	85.62	84.96	82.03	79.11	8.24	8.49	8.77	9.03	9.21	9.43
38		169.65	166.94	164.93	163.50	160.51	158.76	17.56	18.03	18.53	19.01	19.77	20.32
39	PLASTICS	356.19	350.89	347.05	344.40	338.78	337.77	33.41	34.42	35.53	36.62	37.01	37.44
40		229.19	225.78	223.31	221.61	216.49	213.20	21.55	22.19	22.91	23.61	24.69	25.33
41	LEATHER GOODS	3.50	3.16	2.85	2.59	2.54	2.52	1.88	1.83	1.78	1.74	1.69	1.66
42		2.60	2.40	2.22	2.06	2.05	1.96	0.77	0.73	0.70	0.66	0.63	0.61
43		0.01	0.01	0.01	0.01	0.01	0.01	0.14	0.14	0.14	0.14	0.15	0.15
44	WOOD PRODUCTS	26.42	25.80	25.30	24.89	23.70	22.76	4.25	4.29	4.33	4.35	4.46	4.57
45		0.76	0.74	0.72	0.71	0.71	0.71	0.14	0.14	0.14	0.14	0.15	0.16
46		2.03	1.97	1.93	1.89	1.84	1.82	0.36	0.36	0.36	0.36	0.38	0.37
47	PAPER	23.92	23.44	23.05	22.74	22.70	22.18	2.37	2.41	2.45	2.48	2.49	2.60
48		432.45	423.79	416.76	411.13	401.88	400.40	42.83	43.55	44.26	44.80	45.17	47.33
49		15.19	14.89	14.64	14.44	14.33	14.01	1.50	1.53	1.55	1.57	1.58	1.61

MARITIME TRADE BETWEEN AUSTRALIA AND U.S. (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	0.81	0.75	0.70	0.66	0.65	0.65	1.39	1.34	1.27	1.18	1.14	1.11
51		3.21	2.99	2.80	2.62	2.62	2.56	6.78	6.52	6.18	5.73	5.59	5.55
52		12.86	11.81	10.86	10.00	9.59	9.17	4.24	4.18	4.12	4.03	3.91	3.84
53		1.72	1.58	1.45	1.33	1.33	1.28	0.57	0.56	0.55	0.54	0.52	0.51
54		7.44	6.83	6.28	5.78	5.66	5.52	2.45	2.42	2.38	2.33	2.29	2.28
55		13.36	12.26	11.28	10.39	10.10	9.76	4.41	4.34	4.27	4.18	4.10	4.01
56		4.00	3.68	3.38	3.11	3.11	3.11	1.32	1.30	1.28	1.25	1.25	1.20
57		2.91	2.67	2.46	2.26	2.22	2.11	0.96	0.95	0.93	0.91	0.87	0.84
58		2.28	2.10	1.93	1.78	1.74	1.69	0.75	0.74	0.73	0.71	0.68	0.65
59		13.63	13.13	12.69	12.31	11.77	11.53	2.48	2.45	2.42	2.38	2.31	2.24
60		3.72	3.41	3.14	2.89	2.85	2.73	1.23	1.21	1.19	1.16	1.12	1.08
61		3.97	3.62	3.31	3.04	2.97	2.92	1.66	1.63	1.60	1.56	1.48	1.44
62		2.18	1.98	1.81	1.65	1.64	1.63	0.99	0.97	0.95	0.93	0.88	0.86
63	9.14	8.62	8.16	7.76	7.52	7.15	2.25	2.24	2.21	2.18	2.14	2.05	
64	FOOTWEAR	2.42	2.18	1.97	1.78	1.77	1.75	0.48	0.44	0.40	0.37	0.35	0.34
65		3.25	3.18	3.12	3.08	2.97	2.93	0.41	0.42	0.42	0.43	0.44	0.46
66		6.43	6.00	5.60	5.24	5.06	5.02	2.07	1.99	1.90	1.81	1.78	1.75
67		5.21	4.86	4.54	4.24	4.20	4.16	1.67	1.61	1.54	1.46	1.46	1.41
68	STONE & GLASS	21.47	20.95	20.53	20.18	19.68	18.83	13.46	13.60	13.74	13.83	14.49	14.89
69		8.29	8.09	7.92	7.79	7.69	7.65	5.19	5.25	5.30	5.34	5.44	5.45
70		32.71	31.89	31.21	30.65	29.94	28.55	20.36	20.56	20.77	20.90	20.93	21.09
71	PRECIOUS STONES	2.84	2.73	2.63	2.55	2.51	2.41	2.25	2.22	2.19	2.16	2.09	2.05
72	BASE METALS	62.96	62.54	62.46	62.74	60.77	59.85	113.44	114.81	116.40	117.86	118.15	119.03
73		188.02	182.08	177.10	173.05	165.80	165.43	64.98	65.36	65.76	65.93	67.33	68.89
74		362.99	359.73	358.01	357.69	354.37	344.27	100.64	101.26	101.93	102.24	104.99	105.52
75		16.55	16.28	16.13	16.09	15.43	15.41	24.33	24.16	24.02	23.78	23.56	23.49
76		43.96	42.89	42.11	41.58	41.02	40.55	43.53	43.26	43.01	42.59	41.22	40.58
77		---	---	---	---	---	---	---	---	---	---	---	---
78		9.53	9.38	9.30	9.28	8.83	8.54	14.27	14.18	14.09	13.95	13.36	12.97
79		10.31	10.15	10.06	10.04	9.67	9.64	15.44	15.33	15.24	15.09	14.62	14.40
80		6.45	6.34	6.28	6.26	5.97	5.80	9.25	9.19	9.14	9.05	8.74	8.74
81		38.33	37.85	37.70	37.79	39.26	39.37	66.25	65.80	65.39	64.74	63.01	61.94
82		65.84	63.42	61.35	59.60	59.47	58.45	15.70	15.67	15.63	15.51	14.89	14.24
83	38.66	37.24	36.02	34.99	34.73	34.64	9.22	9.20	9.18	9.11	9.03	8.69	
84	MACHINE	3119.85	3019.45	2935.11	2864.80	2813.52	2752.47	494.17	496.51	498.06	496.71	511.96	503.93
85		642.97	614.87	590.55	569.33	564.49	560.20	95.48	94.99	94.40	93.27	89.97	89.47
86	VEHICLES	455.43	441.85	430.30	420.35	413.62	395.17	98.95	101.18	103.45	105.40	105.50	108.83
87		1781.82	1756.93	1739.08	1727.62	1684.09	1655.96	259.95	266.26	272.63	278.15	289.69	299.37
88		97.04	94.03	91.46	89.23	88.92	87.79	21.58	22.06	22.55	22.98	23.56	23.75
89		366.05	354.72	345.02	336.61	321.63	316.78	81.38	83.20	85.06	86.66	89.33	90.34
90	CLOCKS & MUSICAL INST.	289.26	280.41	273.03	266.94	259.28	249.51	46.16	46.39	46.53	46.38	48.41	49.44
91		73.08	70.85	68.99	67.45	64.60	64.36	11.65	11.71	11.74	11.71	11.94	12.15
92		10.24	9.56	8.92	8.34	7.97	7.74	3.29	3.17	3.03	2.88	2.78	2.70
93	ARMS	57.50	55.74	54.27	53.06	50.49	48.55	9.22	9.26	9.29	9.26	9.50	9.67
94	MISC. ART.	77.93	74.57	71.62	69.03	65.62	63.58	17.01	16.71	16.38	15.95	15.87	15.30
95		44.17	41.20	38.48	35.97	34.88	33.65	14.21	13.65	13.07	12.40	12.27	12.13
96		31.16	29.06	27.14	25.37	24.51	23.71	10.01	9.63	9.21	8.74	8.44	8.24
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

MARITIME TRADE BETWEEN AUSTRALIA AND ASEAN

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.00	0.01	0.01	0.01	0.01	0.01	4.36	4.36	4.35	4.34	4.23	4.22
02		1.01	1.10	1.20	1.30	1.35	1.35	285.67	282.53	280.07	277.74	273.04	271.68
03		212.88	217.26	221.13	225.32	230.36	238.13	58.74	58.70	58.60	58.53	57.89	57.05
04		20.71	21.33	21.89	22.50	22.85	22.96	576.06	583.81	591.64	600.12	624.18	641.47
05		4.06	4.24	4.41	4.60	4.75	4.93	31.53	31.53	31.48	31.44	31.12	30.52
06	VEGETABLE PRODUCTS	6.31	6.65	6.96	7.29	7.32	7.37	0.46	0.45	0.44	0.42	0.41	0.40
07		101.06	103.49	105.58	107.85	109.84	111.26	50.88	49.46	48.12	46.85	45.01	42.92
08		74.01	76.02	77.73	79.59	80.06	81.21	54.94	52.98	51.15	49.41	48.05	46.17
09		53.54	55.91	58.02	60.30	62.89	64.56	6.85	6.74	6.65	6.55	6.26	5.96
10		59.87	61.80	63.56	65.40	67.02	68.53	185.99	183.19	178.94	174.24	168.82	161.86
11		131.36	134.04	136.41	138.96	143.80	146.80	51.04	51.21	51.28	51.40	53.74	55.86
12		45.37	47.57	49.54	51.67	54.08	54.41	6.27	6.16	6.07	5.98	5.81	5.81
13		20.49	20.99	21.44	21.93	22.76	23.23	4.46	4.45	4.43	4.42	4.36	4.14
14		21.79	22.76	23.70	24.74	25.52	25.53	1.79	1.78	1.77	1.76	1.74	1.67
15	FATS & OILS	177.73	185.39	192.53	200.28	204.77	213.25	51.42	51.05	50.80	50.58	48.36	46.31
16	PREPARED FOODSTUFFS	59.76	61.01	62.11	63.30	65.38	66.19	34.34	33.23	32.12	30.98	30.62	30.43
17		5.07	5.27	5.45	5.65	5.82	6.00	96.51	96.97	97.48	98.07	102.63	106.71
18		33.04	33.78	34.43	35.12	36.16	37.27	7.73	7.71	7.68	7.66	7.40	7.19
19		74.51	76.04	77.39	78.84	80.52	80.70	18.03	18.00	17.94	17.89	17.18	16.48
20		205.08	209.29	213.00	217.00	222.35	231.78	49.64	49.54	49.37	49.23	48.15	46.23
21		55.01	56.14	57.15	58.23	59.23	59.43	39.51	39.84	40.16	40.51	41.55	42.50
22		23.09	23.44	23.78	24.15	24.92	25.29	208.06	210.53	212.41	214.53	223.18	233.73
23		81.60	84.87	87.91	91.22	92.78	95.22	10.78	10.65	10.53	10.42	9.94	9.93
24		7.89	8.14	8.36	8.61	8.88	9.14	51.78	52.39	52.85	53.37	54.15	56.55
25	MINERAL PRODUCTS	77.44	77.62	77.78	77.96	80.04	83.01	179.29	186.97	193.76	201.22	205.53	212.21
26		26.83	26.88	26.94	27.01	27.77	28.79	74.40	77.61	80.44	83.56	86.88	90.65
27		19419.97	21263.83	23305.13	25675.49	26931.02	28056.73	4167.28	4364.69	4583.57	4858.47	5073.21	5188.88
28	CHEMICAL PRODUCTS	877.09	904.03	931.75	962.46	976.13	979.06	321.30	333.93	346.71	361.19	369.60	385.35
29		322.07	331.45	339.68	348.30	363.62	378.64	181.68	187.72	193.83	200.71	208.40	214.71
30		15.46	15.90	16.29	16.69	17.39	17.75	8.72	9.00	9.29	9.62	10.01	10.48
31		37.29	38.36	39.29	40.27	40.67	41.93	23.15	23.95	24.74	25.63	25.79	26.98
32		65.39	67.30	68.97	70.73	72.03	74.46	37.03	38.26	39.51	40.92	42.04	43.10
33		42.95	44.20	45.30	46.45	47.90	49.33	24.32	25.13	25.95	26.87	27.08	27.58
34		38.94	39.90	40.71	41.56	43.41	44.55	20.54	21.20	21.88	22.63	23.02	24.12
35		27.16	27.87	28.49	29.15	30.51	30.82	37.69	38.35	39.01	39.73	41.65	42.03
36		16.14	16.15	16.06	15.96	15.82	15.11	5.06	5.18	5.30	5.43	5.51	5.70
37		44.24	45.53	46.66	47.85	48.66	50.62	25.05	25.89	26.73	27.68	28.57	28.87
38		88.73	91.20	93.35	95.59	97.16	99.51	46.39	47.88	49.37	51.06	53.33	55.13
39	PLASTICS	179.33	184.56	189.15	193.96	196.54	201.22	101.54	104.93	108.35	112.21	114.47	119.85
40		125.05	128.84	132.22	135.79	138.44	142.50	66.11	68.28	70.48	72.95	73.58	75.99
41	LEATHER GOODS	25.37	24.09	22.72	21.42	20.56	20.22	14.34	13.92	13.48	13.04	12.57	12.51
42		9.95	9.59	9.16	8.75	8.53	8.41	2.40	2.32	2.22	2.13	2.07	1.97
43		0.02	0.02	0.02	0.02	0.02	0.02	0.58	0.58	0.58	0.58	0.56	0.54
44	WOOD PRODUCTS	170.25	172.82	175.03	177.55	185.63	185.69	18.38	18.23	18.05	17.87	17.11	16.53
45		7.16	7.30	7.42	7.55	7.62	7.94	0.69	0.69	0.68	0.67	0.64	0.62
46		14.84	15.00	15.12	15.26	15.82	16.19	1.51	1.49	1.47	1.44	1.39	1.37
47	PAPER	34.67	35.46	36.11	36.80	38.60	39.63	5.62	5.72	5.80	5.89	5.99	6.16
48		626.95	641.18	652.99	665.48	692.50	696.03	101.70	103.45	104.94	106.55	106.98	109.67
49		22.02	22.52	22.94	23.38	24.04	25.09	3.57	3.63	3.69	3.74	3.76	3.90

MARITIME TRADE BETWEEN AUSTRALIA AND ASEAN (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	1.79	1.84	1.89	1.95	2.00	2.09	0.66	0.64	0.62	0.61	0.57	0.55
51		7.49	7.81	8.11	8.50	8.76	8.82	2.78	2.71	2.64	2.57	2.53	2.42
52		22.38	21.64	20.78	19.92	18.97	18.51	30.18	30.58	30.89	31.27	32.80	33.45
53		2.99	2.90	2.78	2.67	2.59	2.51	111.07	114.26	117.11	120.32	123.88	127.54
54		12.94	12.51	12.01	11.52	11.49	11.33	4.57	4.43	4.27	4.11	3.90	3.79
55		23.25	22.48	21.58	20.69	20.26	20.00	8.22	7.96	7.67	7.38	7.11	7.10
56		6.97	6.74	6.47	6.20	6.03	5.79	2.46	2.39	2.30	2.21	2.18	2.17
57		5.07	4.90	4.70	4.51	4.37	4.25	1.79	1.74	1.67	1.61	1.55	1.53
58		3.97	3.84	3.69	3.54	3.43	3.32	1.40	1.36	1.31	1.26	1.24	1.22
59		16.65	16.51	16.28	16.04	15.76	15.28	4.48	4.51	4.53	4.56	4.73	4.77
60		6.47	6.26	6.01	5.76	5.51	5.25	2.29	2.22	2.14	2.06	1.97	1.95
61		16.65	16.02	15.32	14.64	14.06	13.95	1.73	1.67	1.61	1.54	1.53	1.45
62		11.48	11.04	10.55	10.08	9.62	9.26	0.77	0.74	0.72	0.69	0.69	0.67
63	10.29	10.07	9.80	9.53	9.20	9.16	3.38	3.29	3.18	3.08	2.93	2.78	
64	FOOTWEAR	17.72	16.82	15.85	14.93	14.21	13.51	6.59	6.30	5.99	5.69	5.63	5.60
65		3.04	3.02	2.99	2.97	2.90	2.80	0.95	0.97	1.00	1.02	1.05	1.06
66		15.79	15.45	14.99	14.51	14.03	13.44	1.94	1.92	1.89	1.86	1.79	1.73
67		12.78	12.50	12.13	11.74	11.71	11.25	1.57	1.55	1.53	1.50	1.46	1.40
68	STONE & GLASS	54.85	55.30	55.53	55.77	58.22	59.30	5.23	5.26	5.28	5.31	5.34	5.55
69		21.16	21.34	21.43	21.52	21.64	22.59	2.02	2.03	2.04	2.05	2.07	2.09
70		83.14	83.78	84.10	84.43	85.72	86.07	8.14	8.18	8.20	8.24	8.57	8.70
71	PRECIOUS STONES	15.28	15.57	15.78	16.03	16.77	17.60	18.69	18.57	18.33	18.05	17.75	17.18
72	BASE METALS	194.48	198.68	202.50	206.78	210.48	220.29	197.59	203.23	208.25	214.03	223.30	223.86
73		226.71	229.58	231.36	233.31	241.55	246.67	110.66	111.97	112.96	114.21	119.02	122.93
74		1040.22	1069.83	1097.28	1127.55	1139.72	1192.15	663.16	658.41	649.46	638.99	633.69	603.27
75		166.42	171.52	176.03	180.98	183.59	190.51	252.17	250.19	246.59	242.39	235.89	232.56
76		294.57	302.99	310.31	318.37	327.16	330.33	417.81	414.57	408.69	401.84	395.65	376.78
77		---	---	---	---	---	---	---	---	---	---	---	---
78		97.68	100.68	103.33	106.25	110.61	111.79	148.36	147.20	145.08	142.60	140.05	133.82
79		105.65	108.90	111.76	114.92	118.06	121.14	160.47	159.21	156.92	154.24	153.70	149.44
80		63.27	65.20	66.91	68.79	71.28	72.61	95.57	94.82	93.46	91.87	89.80	86.40
81		454.81	469.02	481.64	495.53	510.55	530.97	702.59	697.04	686.98	675.22	660.83	643.85
82		94.89	95.49	95.54	95.60	98.65	102.24	34.02	33.93	33.76	33.63	32.93	31.57
83		55.71	56.07	56.10	56.13	57.35	57.70	19.97	19.92	19.82	19.75	19.10	18.34
84	MACHINE	2273.77	2307.17	2331.48	2358.32	2403.60	2452.64	358.76	357.99	355.64	353.30	335.67	330.74
85		887.58	884.96	878.32	872.09	843.66	816.91	78.38	78.30	77.91	77.48	76.90	74.73
86	VEHICLES	105.20	108.01	110.38	112.85	112.91	118.54	30.67	30.73	30.63	30.50	29.83	28.63
87		2651.56	2722.01	2789.03	2862.92	2942.79	2999.59	120.37	121.71	122.54	123.47	126.39	130.47
88		13.70	14.06	14.33	14.60	14.82	14.92	6.57	6.57	6.55	6.51	6.32	6.08
89		51.43	52.81	53.86	54.89	55.20	57.34	24.69	24.72	24.62	24.49	23.84	23.76
90	CLOCKS & MUSICAL INST.	140.44	143.79	146.46	149.26	154.59	159.90	32.86	32.65	32.29	31.92	31.90	31.17
91		35.43	36.28	36.95	37.66	37.94	39.56	8.34	8.28	8.19	8.09	8.07	7.69
92		25.14	24.60	23.87	23.10	22.22	21.90	3.09	3.06	3.01	2.96	2.93	2.90
93	ARMS	28.42	29.09	29.62	30.18	30.72	31.30	6.80	6.75	6.68	6.61	6.37	6.37
94	MISC. ART.	93.70	92.86	91.36	89.80	86.79	85.23	15.03	14.93	14.76	14.59	13.86	13.61
95		108.40	106.09	102.93	99.62	98.46	95.59	13.31	13.18	12.97	12.75	12.54	11.94
96		76.70	75.05	72.81	70.46	70.32	67.31	9.50	9.41	9.26	9.09	8.78	8.39
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

MARITIME TRADE BETWEEN AUSTRALIA AND EU-27

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.29	0.30	0.30	0.30	0.31	0.32	1.39	1.38	1.39	1.39	1.39	1.40
02		119.86	120.14	120.14	119.78	113.72	110.94	136.51	137.93	140.18	143.22	145.87	148.67
03		188.20	186.61	185.20	183.68	176.43	172.19	31.71	31.70	31.76	31.92	32.07	32.42
04		114.70	115.20	115.69	116.10	119.19	120.15	42.84	42.85	43.03	43.38	44.49	45.66
05		5.20	5.20	5.20	5.21	5.30	5.48	30.07	29.15	28.33	27.58	26.96	26.96
06	VEGETABLE PRODUCTS	2.30	2.26	2.23	2.20	2.10	2.06	1.40	1.39	1.39	1.39	1.34	1.30
07		64.99	64.42	63.90	63.36	62.98	59.89	37.40	36.57	35.82	35.13	33.89	33.88
08		29.83	29.55	29.30	29.05	28.20	26.87	47.09	45.96	44.91	43.94	42.27	41.89
09		31.57	31.17	30.80	30.40	29.46	28.74	10.53	10.47	10.46	10.48	10.84	11.05
10		5.10	4.95	4.84	4.72	4.66	4.60	5.05	5.02	5.03	5.06	5.11	5.18
11		155.17	154.29	153.55	152.77	147.27	146.37	90.27	89.92	89.74	89.78	85.22	86.26
12		25.52	25.17	24.85	24.50	23.56	22.59	11.96	11.91	11.92	11.96	12.10	12.15
13		16.11	15.98	15.86	15.73	15.63	15.42	1.68	1.67	1.67	1.67	1.58	1.52
14		5.43	5.39	5.37	5.34	5.31	5.27	1.68	1.67	1.65	1.64	1.58	1.57
15	FATS & OILS	132.07	130.33	128.83	127.12	124.16	118.99	19.96	20.15	20.46	20.88	21.24	21.30
16	PREPARED FOODSTUFFS	90.23	89.85	89.43	88.87	84.77	83.30	8.83	8.81	8.83	8.87	8.95	8.95
17		10.96	11.02	11.08	11.14	11.49	11.97	12.65	12.68	12.76	12.90	13.16	13.44
18		29.19	28.94	28.71	28.46	27.29	26.31	2.87	2.86	2.86	2.86	2.84	2.78
19		67.50	66.91	66.39	65.83	63.39	61.07	5.85	5.83	5.82	5.83	6.03	6.32
20		185.78	184.17	182.73	181.19	180.34	180.14	16.10	16.04	16.02	16.05	16.94	17.12
21		54.31	53.91	53.56	53.17	52.03	50.18	6.15	6.14	6.14	6.16	6.19	6.50
22		401.50	402.89	404.69	406.68	423.48	427.59	843.02	839.77	838.00	838.19	819.17	855.62
23		56.53	55.83	55.23	54.55	52.76	50.55	2.25	2.25	2.25	2.27	2.34	2.39
24		100.42	100.75	101.18	101.66	105.14	105.32	210.63	209.82	209.37	209.42	217.57	219.88
25	MINERAL PRODUCTS	45.48	44.77	44.08	43.35	42.83	40.81	1900.00	1901.29	1905.96	1914.60	2005.93	2083.96
26		11.70	11.61	11.52	11.43	10.97	10.46	789.09	789.64	791.58	795.18	798.12	811.21
27		99.91	99.96	100.26	100.63	101.88	103.32	3880.10	3928.16	3984.05	4045.60	4151.59	4168.62
28	CHEMICAL PRODUCTS	1421.96	1404.59	1386.59	1365.76	1321.51	1294.15	176.34	179.70	184.10	189.54	193.12	202.41
29		1061.93	1048.88	1035.36	1019.71	1010.74	979.30	117.08	119.34	122.33	126.03	128.79	132.83
30		50.95	50.30	49.63	48.86	46.74	45.01	5.68	5.79	5.93	6.10	6.19	6.46
31		120.91	119.42	117.88	116.10	111.67	108.82	40.37	40.64	41.05	41.59	43.13	45.00
32		216.64	213.98	211.22	208.03	198.54	194.79	23.89	24.36	24.97	25.72	26.45	26.50
33		142.28	140.53	138.72	136.62	130.02	124.12	15.69	16.00	16.40	16.89	17.56	18.36
34		120.63	119.01	117.33	115.42	111.62	109.99	13.32	13.56	13.87	14.27	14.33	14.69
35		67.79	67.08	66.35	65.50	63.12	61.31	8.56	8.68	8.83	9.04	9.28	9.62
36		30.87	30.12	29.35	28.54	28.34	27.71	3.44	3.45	3.48	3.53	3.63	3.77
37		146.57	144.77	142.90	140.74	140.19	138.81	16.17	16.48	16.89	17.40	18.16	18.75
38	284.26	280.51	276.62	272.17	267.57	254.22	30.75	31.30	32.03	32.94	33.44	33.57	
39	PLASTICS	594.12	586.82	579.25	570.49	569.23	543.22	65.53	66.80	68.47	70.54	73.39	75.46
40		383.32	378.64	373.78	368.16	352.18	337.25	43.13	43.94	45.00	46.33	47.31	48.75
41	LEATHER GOODS	28.18	25.50	23.02	20.71	20.01	19.98	34.88	33.44	32.09	30.80	29.40	28.41
42		10.02	9.20	8.43	7.69	7.65	7.36	5.73	5.45	5.18	4.92	4.88	4.78
43		0.03	0.03	0.03	0.03	0.03	0.03	0.94	0.93	0.92	0.92	0.89	0.86
44	WOOD PRODUCTS	126.03	123.76	121.62	119.39	118.36	112.58	13.29	13.18	13.12	13.09	12.45	12.41
45		4.44	4.36	4.28	4.21	4.05	3.92	0.55	0.54	0.54	0.53	0.53	0.50
46		11.49	11.27	11.06	10.85	10.59	10.12	1.02	1.00	1.00	0.99	0.97	0.96
47	PAPER	54.61	53.89	53.15	52.33	51.09	49.88	3.70	3.71	3.73	3.77	3.85	3.98
48		987.43	974.45	961.10	946.15	912.46	891.75	66.92	67.10	67.53	68.22	71.44	74.22
49		34.69	34.23	33.76	33.24	32.16	31.24	2.35	2.36	2.37	2.40	2.40	2.50

MARITIME TRADE BETWEEN AUSTRALIA AND EU-27 (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	2.53	2.36	2.19	2.04	1.95	1.86	19.30	18.44	17.67	16.91	16.60	15.89
51		9.92	9.27	8.65	8.05	8.03	7.95	97.59	93.26	89.29	85.46	85.46	81.78
52		40.97	37.98	35.10	32.30	32.28	31.90	11.90	11.73	11.59	11.46	11.12	10.74
53		5.50	5.11	4.72	4.35	4.26	4.23	2.75	2.72	2.70	2.68	2.59	2.50
54		23.68	21.95	20.28	18.67	18.33	18.11	6.74	6.64	6.56	6.49	6.38	6.37
55		42.54	39.43	36.44	33.54	32.06	30.62	12.11	11.93	11.78	11.65	11.21	11.10
56		12.75	11.82	10.92	10.05	9.80	9.58	3.63	3.58	3.53	3.49	3.43	3.41
57		9.27	8.60	7.94	7.31	6.98	6.78	2.64	2.60	2.57	2.54	2.46	2.40
58		7.27	6.74	6.23	5.73	5.54	5.34	2.07	2.04	2.01	1.99	1.89	1.81
59		27.58	26.56	25.54	24.50	23.59	22.97	3.97	3.94	3.93	3.93	3.88	3.87
60		11.84	10.97	10.14	9.33	8.91	8.89	3.37	3.32	3.28	3.24	3.20	3.08
61		22.82	20.97	19.22	17.56	17.39	17.04	3.49	3.41	3.34	3.27	3.13	3.02
62		14.96	13.72	12.56	11.46	11.16	10.87	1.88	1.83	1.79	1.74	1.71	1.71
63	21.08	19.85	18.65	17.47	16.75	16.15	4.91	4.84	4.79	4.74	4.66	4.43	
64	FOOTWEAR	19.60	17.71	15.97	14.35	14.02	13.46	18.86	17.91	17.01	16.13	15.91	15.86
65		6.95	6.72	6.50	6.28	6.13	6.05	0.80	0.80	0.81	0.82	0.86	0.89
66		13.50	12.70	11.89	11.07	10.86	10.73	1.54	1.48	1.43	1.37	1.37	1.31
67		10.93	10.27	9.62	8.96	8.80	8.76	1.25	1.20	1.16	1.11	1.06	1.05
68	STONE & GLASS	90.33	88.21	86.08	83.85	80.82	76.98	2.88	2.89	2.90	2.93	3.05	3.05
69		34.86	34.04	33.21	32.35	31.06	29.81	1.11	1.11	1.12	1.13	1.16	1.21
70		137.08	133.78	130.48	127.03	122.85	119.97	4.77	4.77	4.79	4.82	4.91	5.15
71	PRECIOUS STONES	5.19	4.99	4.79	4.59	4.57	4.38	12.73	12.55	12.38	12.23	12.11	11.57
72	BASE METALS	419.27	415.59	412.25	408.90	398.02	386.20	111.04	111.18	111.75	112.74	115.00	117.68
73		443.66	433.74	423.77	413.31	393.14	381.78	56.25	56.05	56.05	56.25	58.73	60.41
74		934.60	930.70	927.27	923.27	900.38	862.02	270.79	264.41	258.50	252.61	244.25	239.27
75		30.29	29.89	29.55	29.19	28.21	28.08	98.88	96.36	94.01	91.63	87.98	86.01
76		89.72	87.92	86.21	84.42	83.18	80.79	163.12	159.02	155.18	151.32	146.11	144.74
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78		17.33	17.11	16.93	16.73	16.03	15.63	58.18	56.70	55.32	53.92	51.51	49.13
79		18.75	18.51	18.31	18.09	17.50	17.48	62.93	61.33	59.83	58.32	56.05	54.95
80		11.90	11.74	11.60	11.45	11.31	10.84	37.47	36.51	35.62	34.72	33.68	32.30
81		65.77	65.20	64.79	64.34	63.77	63.15	275.82	268.79	262.19	255.53	254.22	250.26
82		156.13	151.70	147.24	142.62	138.84	134.02	10.65	10.55	10.48	10.44	10.18	9.99
83		91.67	89.07	86.45	83.74	81.34	81.09	6.25	6.19	6.15	6.13	6.03	5.76
84	MACHINE	4268.44	4167.68	4063.69	3950.81	3771.44	3725.80	444.93	441.06	438.67	437.66	426.50	413.92
85		750.81	726.15	701.38	675.36	662.32	645.77	88.80	87.40	86.31	85.47	83.48	81.45
86	VEHICLES	352.78	346.01	338.81	330.62	326.39	322.61	44.51	44.54	44.67	44.91	46.58	47.13
87		3913.88	3893.08	3873.09	3850.00	3809.58	3716.62	122.34	122.51	123.06	124.03	127.25	133.38
88		65.40	63.92	62.34	60.55	59.58	59.10	9.73	9.74	9.76	9.81	9.93	10.18
89		246.34	240.80	234.88	228.14	221.18	214.17	36.59	36.61	36.72	36.91	38.53	39.61
90	CLOCKS & MUSICAL INST.	401.47	391.97	382.06	371.23	363.47	355.47	43.47	43.13	42.94	42.88	42.24	41.17
91		101.51	99.10	96.59	93.85	89.60	85.37	11.13	11.04	10.99	10.96	10.68	10.40
92		21.50	20.22	18.93	17.63	16.90	16.25	2.46	2.36	2.27	2.19	2.10	2.02
93	ARMS	80.43	78.52	76.54	74.37	74.06	73.47	8.64	8.57	8.54	8.53	8.43	8.21
94	MISC. ART.	130.89	125.73	120.50	115.08	114.89	111.34	14.38	14.09	13.83	13.60	13.19	12.63
95		92.71	87.17	81.62	76.02	75.00	72.74	10.59	10.19	9.81	9.43	8.97	8.68
96		65.69	61.74	57.80	53.83	51.35	49.32	7.83	7.53	7.24	6.96	6.73	6.64
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

MARITIME TRADE BETWEEN CHINA AND AUSTRALIA

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.87	0.89	0.90	0.92	0.95	0.98	0.01	0.01	0.01	0.01	0.01	0.01
02		274.71	285.49	297.17	309.53	316.06	322.95	2.50	3.02	3.64	4.41	4.51	4.57
03		31.41	31.66	31.96	32.31	33.50	34.75	151.24	159.57	168.58	178.13	180.50	187.58
04		67.74	66.79	65.97	65.23	62.77	60.57	26.30	29.25	32.63	36.51	36.62	37.32
05		197.71	199.52	201.90	204.78	213.14	220.22	2.55	2.71	2.89	3.09	3.14	3.25
06	VEGETABLE PRODUCTS	6.21	6.39	6.59	6.79	6.93	7.14	4.89	5.38	5.94	6.56	6.66	6.70
07		9.05	9.01	8.99	8.99	8.61	8.51	64.82	68.27	72.00	75.97	78.16	81.90
08		6.55	6.49	6.45	6.41	6.38	6.15	33.83	35.53	37.38	39.36	41.09	41.10
09		3.80	3.85	3.91	3.97	4.17	4.21	26.56	28.58	30.83	33.31	34.94	35.57
10		183.95	186.67	189.57	192.67	194.08	198.58	2.34	2.46	2.59	2.73	2.74	2.81
11		11.88	12.02	12.17	12.34	12.80	12.90	79.42	83.77	88.46	93.44	93.62	94.90
12		4.18	4.28	4.40	4.54	4.65	4.75	21.47	23.40	25.58	28.02	29.28	30.74
13		7.36	7.53	7.73	7.92	8.12	8.28	18.91	19.95	21.08	22.28	22.30	22.71
14		17.51	18.04	18.61	19.18	19.95	20.37	0.48	0.51	0.55	0.59	0.60	0.61
15	FATS & OILS	56.04	57.50	59.16	60.93	63.77	64.73	16.35	17.53	18.84	20.27	20.83	21.56
16	PREPARED FOODSTUFFS	5.22	5.16	5.11	5.07	4.90	4.79	35.75	37.83	40.10	42.54	43.02	43.72
17		31.39	31.19	31.05	30.95	30.44	29.67	2.22	2.51	2.83	3.21	3.34	3.35
18		2.27	2.28	2.30	2.31	2.39	2.41	22.51	23.77	25.14	26.60	27.37	28.16
19		4.31	4.33	4.35	4.38	4.57	4.79	43.48	45.89	48.49	51.24	52.28	53.07
20		12.66	12.70	12.77	12.85	13.37	13.95	127.70	134.76	142.39	150.49	152.49	152.58
21		5.59	5.54	5.50	5.47	5.24	5.02	33.30	35.21	37.28	39.50	39.72	40.28
22		43.74	44.87	46.05	47.30	48.07	48.56	21.14	21.83	22.57	23.36	23.63	24.13
23		6.06	6.04	6.04	6.04	5.94	5.88	8.71	9.28	9.90	10.58	10.87	10.90
24		11.54	11.84	12.15	12.48	12.91	13.22	5.71	5.94	6.19	6.46	6.53	6.75
25	MINERAL PRODUCTS	17109.23	18361.75	19726.99	21224.43	21421.82	21942.37	56.94	59.02	61.26	63.61	66.79	67.78
26		7029.53	7544.18	8105.14	8720.42	8867.79	9211.86	8.89	9.10	9.34	9.59	10.02	10.35
27		3475.33	3817.74	4208.72	4656.13	4708.28	4856.12	194.12	206.60	221.26	238.05	240.14	248.64
28	CHEMICAL PRODUCTS	202.51	217.30	234.29	253.67	260.19	266.31	608.93	655.48	706.61	762.05	794.89	803.40
29		155.38	164.68	175.29	187.18	187.34	192.63	896.97	965.62	1040.94	1122.52	1176.74	1201.21
30		18.73	19.83	21.09	22.50	22.50	22.84	116.91	125.39	134.64	144.63	151.47	156.38
31		287.55	308.45	331.27	356.32	368.11	371.98	66.00	71.04	76.57	82.55	85.46	87.07
32		15.39	16.32	17.37	18.55	19.08	19.25	88.77	95.57	103.03	111.11	112.03	115.20
33		13.77	14.60	15.54	16.59	16.69	17.33	79.41	85.49	92.16	99.39	101.22	104.76
34		10.16	10.77	11.46	12.23	12.43	12.58	72.14	77.45	83.22	89.43	92.15	94.25
35		6.77	6.95	7.18	7.44	7.62	7.63	29.82	32.03	34.45	37.07	37.66	38.23
36		2.17	2.29	2.43	2.58	2.62	2.68	49.19	52.37	55.72	59.24	60.41	62.26
37		14.81	15.70	16.71	17.85	18.06	18.13	85.41	91.95	99.13	106.90	108.84	112.33
38		32.63	34.51	36.64	39.04	40.86	41.52	207.89	223.31	240.17	258.37	263.82	269.46
39	PLASTICS	52.61	55.76	59.36	63.39	66.46	68.12	303.35	326.59	352.08	379.69	387.10	399.02
40		43.86	46.20	48.84	51.76	54.03	55.64	194.69	209.59	225.95	243.66	245.85	256.13
41	LEATHER GOODS	182.20	183.83	185.67	187.60	194.00	197.47	337.35	344.36	351.29	357.82	366.88	376.71
42		11.73	11.63	11.54	11.45	10.98	10.96	108.31	111.73	115.21	118.68	119.32	123.59
43		10.02	10.22	10.42	10.64	10.96	11.42	0.09	0.09	0.10	0.10	0.10	0.11
44	WOOD PRODUCTS	47.72	48.42	49.21	50.02	51.10	51.60	132.53	134.61	136.83	139.00	141.71	147.31
45		3.23	3.30	3.37	3.44	3.44	3.55	5.81	5.89	5.97	6.05	6.21	6.28
46		2.74	2.73	2.73	2.74	2.85	2.98	13.67	13.84	14.03	14.21	14.67	15.06
47	PAPER	5.11	5.23	5.36	5.50	5.72	5.73	31.82	33.90	36.16	38.56	40.06	40.23
48		82.15	84.10	86.19	88.35	91.42	94.71	511.18	544.67	580.86	619.56	640.20	645.89
49		2.54	2.60	2.67	2.73	2.84	2.96	15.81	16.85	17.97	19.17	19.43	20.37

MARITIME TRADE BETWEEN CHINA AND AUSTRALIA (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	85.22	86.01	87.04	88.29	88.46	91.28	11.39	11.82	12.26	12.69	13.04	13.66
51		802.26	809.61	819.31	831.11	858.29	867.04	80.64	83.69	86.80	89.94	90.50	90.94
52		53.26	55.85	58.79	62.06	63.07	66.09	422.23	437.73	453.40	468.87	487.34	489.92
53		210.27	223.84	239.18	256.40	263.76	272.46	69.78	72.34	74.93	77.48	81.06	85.09
54		11.47	11.70	11.96	12.24	12.46	12.57	249.27	258.42	267.66	276.80	277.79	278.02
55		17.37	17.72	18.11	18.54	18.67	19.01	377.54	391.39	405.40	419.23	426.11	443.49
56		5.01	5.11	5.22	5.34	5.46	5.65	108.82	112.82	116.85	120.84	124.73	129.05
57		3.29	3.35	3.43	3.51	3.53	3.61	71.46	74.08	76.73	79.35	79.41	81.49
58		4.59	4.68	4.79	4.90	5.03	5.11	99.74	103.40	107.10	110.76	112.16	117.35
59		3.73	3.85	3.98	4.12	4.18	4.24	91.10	95.57	100.21	104.95	105.92	106.26
60		5.78	5.89	6.03	6.17	6.47	6.75	125.60	130.21	134.87	139.47	140.55	141.90
61		2.69	2.74	2.80	2.86	2.89	3.01	703.91	721.73	739.76	757.58	781.98	799.65
62		0.15	0.15	0.16	0.16	0.16	0.16	672.62	689.00	705.57	721.96	743.54	754.03
63	7.09	7.23	7.39	7.56	7.89	8.14	150.04	155.74	161.52	167.25	171.83	175.37	
64	FOOTWEAR	21.66	21.47	21.31	21.14	21.08	20.05	107.37	109.60	111.80	113.88	115.34	118.50
65		0.71	0.75	0.79	0.85	0.87	0.87	68.80	70.68	72.62	74.56	76.26	79.33
66		0.46	0.46	0.47	0.47	0.49	0.50	90.31	95.82	101.55	107.46	111.75	114.75
67		0.54	0.54	0.55	0.55	0.57	0.59	105.63	112.08	118.78	125.70	127.23	130.89
68	STONE & GLASS	7.66	7.83	8.02	8.23	8.50	8.60	187.29	196.17	205.62	215.53	220.90	222.40
69		3.24	3.31	3.39	3.48	3.52	3.64	79.22	82.97	86.97	91.16	92.29	94.44
70		7.41	7.57	7.75	7.96	8.29	8.69	179.93	188.35	197.30	206.66	212.30	214.61
71	PRECIOUS STONES	270.04	283.97	299.12	315.49	328.27	339.30	60.86	64.82	69.02	73.40	75.26	77.29
72	BASE METALS	25.58	26.84	28.24	29.83	30.59	31.93	632.30	661.28	691.50	722.60	746.59	781.83
73		19.36	19.89	20.48	21.14	21.38	22.35	856.91	906.37	958.03	1011.47	1041.20	1085.25
74		1239.34	1253.01	1267.33	1279.89	1287.70	1296.58	276.63	297.18	319.93	344.66	351.66	363.02
75		334.13	337.81	341.66	345.00	352.72	356.92	48.36	52.14	56.33	60.86	63.53	64.37
76		628.89	635.83	643.08	649.38	664.19	689.69	202.51	216.21	230.95	246.55	254.86	263.24
77		---	---	---	---	---	---	---	---	---	---	---	---
78		220.54	222.97	225.50	227.71	233.17	242.66	30.58	33.00	35.68	38.59	40.28	41.32
79		227.10	229.61	232.22	234.49	239.55	244.39	31.49	33.98	36.75	39.74	40.09	41.99
80		168.17	170.02	171.95	173.64	175.27	177.48	25.69	27.68	29.87	32.24	32.29	32.40
81		1170.67	1183.56	1197.02	1208.71	1239.30	1268.05	112.68	122.60	133.79	146.06	151.12	156.78
82		4.90	5.00	5.10	5.22	5.25	5.46	457.69	484.69	512.83	541.89	555.39	581.71
83	3.03	3.09	3.16	3.23	3.28	3.45	283.18	299.89	317.30	335.28	351.11	363.33	
84	MACHINE	195.56	199.29	203.64	208.47	218.31	228.89	3030.08	3212.98	3406.98	3609.39	3776.50	3943.80
85		63.98	65.35	66.91	68.52	70.09	72.98	2020.99	2106.19	2195.62	2287.17	2360.59	2475.55
86	VEHICLES	4.41	4.44	4.47	4.51	4.54	4.57	226.47	246.06	267.09	289.28	294.81	295.52
87		108.32	109.57	111.01	112.66	117.73	121.83	744.88	797.62	854.61	915.51	941.79	988.59
88		0.83	0.83	0.84	0.84	0.86	0.90	65.06	70.68	76.71	83.06	86.82	91.05
89		2.21	2.21	2.22	2.23	2.30	2.37	182.37	198.30	215.40	233.43	239.69	240.74
90	CLOCKS & MUSICAL INST.	27.27	27.56	27.91	28.29	28.32	28.90	331.31	355.84	381.97	409.43	412.22	417.37
91		13.37	13.50	13.66	13.84	14.50	14.97	156.43	167.89	180.11	192.94	194.08	195.86
92		1.30	1.30	1.31	1.32	1.38	1.42	253.67	269.14	285.25	301.85	306.19	313.11
93	ARMS	8.14	8.23	8.34	8.45	8.70	8.95	104.45	112.09	120.21	128.74	129.39	129.66
94	MISC. ART.	6.79	6.88	6.98	7.10	7.30	7.34	390.13	414.42	439.82	466.08	467.39	471.92
95		2.29	2.30	2.32	2.33	2.37	2.41	446.92	474.18	502.55	531.80	557.11	572.43
96		3.56	3.56	3.58	3.59	3.65	3.76	520.32	551.87	584.70	618.54	648.60	655.02
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

MARITIME TRADE BETWEEN CHINA AND JAPAN

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.01	0.01	0.01	0.01	0.01	0.01	0.25	0.25	0.25	0.25	0.25	0.24
02		0.17	0.16	0.16	0.16	0.16	0.16	1903.53	2084.11	2265.40	2444.22	2507.04	2620.61
03		54.80	54.67	54.56	54.45	53.46	51.94	1571.92	1609.07	1646.66	1684.79	1689.51	1739.01
04		7.80	7.64	7.48	7.32	7.28	7.00	90.77	93.74	96.84	100.12	101.13	102.59
05		0.98	0.98	0.97	0.97	0.96	0.95	34.12	34.78	35.46	36.15	37.36	37.66
06	VEGETABLE PRODUCTS	4.30	4.37	4.43	4.48	4.59	4.79	80.81	85.68	90.93	96.52	97.30	99.59
07		18.97	18.90	18.84	18.79	18.26	18.14	629.84	642.72	655.83	669.22	676.18	694.57
08		7.56	7.52	7.48	7.45	7.31	7.13	382.68	387.82	393.16	398.75	412.63	414.24
09		14.90	15.02	15.13	15.22	15.70	16.07	317.19	332.52	348.79	365.95	374.99	383.13
10		0.11	0.10	0.10	0.10	0.09	0.09	339.82	347.87	356.43	365.77	367.05	381.95
11		27.76	27.71	27.68	27.64	26.72	26.03	669.54	687.78	706.15	724.70	743.83	765.77
12		9.21	9.30	9.40	9.46	9.87	10.19	365.22	385.43	407.15	430.41	441.30	449.78
13		6.85	6.85	6.84	6.84	6.51	6.27	164.29	168.80	173.36	177.97	183.84	188.77
14		1.26	1.29	1.33	1.36	1.42	1.49	19.87	20.72	21.63	22.60	23.06	23.47
15	FATS & OILS	53.91	54.51	55.09	55.58	57.92	59.59	579.38	623.49	669.17	715.41	716.70	745.15
16	PREPARED FOODSTUFFS	12.10	12.07	12.04	12.01	11.72	11.46	856.49	917.61	979.00	1039.71	1078.08	1099.75
17		0.97	0.94	0.92	0.90	0.86	0.85	7.52	7.99	8.52	9.10	9.46	9.50
18		7.96	7.95	7.94	7.92	7.78	7.59	195.27	200.87	206.55	212.30	213.59	215.79
19		14.97	14.93	14.90	14.86	14.28	13.99	370.72	380.88	391.12	401.45	412.93	431.01
20		43.97	43.85	43.75	43.65	43.09	41.67	1088.71	1118.54	1148.60	1178.93	1182.47	1224.45
21		11.40	11.36	11.33	11.30	11.10	10.88	277.39	285.02	292.72	300.49	309.12	319.13
22		11.58	11.83	12.08	12.35	12.67	13.24	101.70	103.34	104.98	106.68	111.04	113.32
23		3.35	3.32	3.29	3.26	3.21	3.12	197.75	209.87	222.47	235.28	243.33	244.18
24		3.48	3.55	3.63	3.70	3.85	3.91	34.22	35.30	36.45	37.66	37.80	37.90
25	MINERAL PRODUCTS	200.97	208.57	216.85	225.90	233.74	235.52	335.92	340.15	344.67	349.53	362.71	368.22
26		58.01	61.21	64.68	68.45	70.55	71.42	94.20	94.68	95.27	95.98	96.95	98.01
27		3273.59	3543.59	3850.78	4201.48	4268.71	4370.73	3261.36	3386.39	3529.63	3688.18	3795.87	3817.13
28	CHEMICAL PRODUCTS	5068.69	5160.71	5251.71	5337.05	5487.03	5618.71	2508.78	2670.14	2843.67	3029.47	3158.23	3261.19
29		7262.53	7373.00	7478.14	7570.30	7877.66	7937.53	3594.83	3827.67	4077.61	4344.88	4504.34	4719.20
30		870.26	883.34	895.78	906.68	906.96	942.15	466.36	493.56	522.68	553.76	571.31	585.60
31		535.16	543.39	551.24	558.15	558.82	559.55	266.08	283.15	301.47	321.07	322.29	334.93
32		720.49	731.45	741.88	751.03	778.89	790.73	354.76	377.81	402.55	429.02	429.62	436.45
33		644.50	654.31	663.64	671.82	683.98	707.71	317.34	337.96	360.10	383.77	401.88	415.79
34		476.63	483.74	490.49	496.40	510.45	514.43	263.07	279.66	297.37	316.24	318.35	331.28
35		190.26	193.11	195.82	198.19	201.68	210.41	143.42	150.85	158.75	167.11	170.28	170.71
36		104.34	105.53	106.66	107.60	109.89	110.60	128.25	135.23	142.45	149.96	156.61	161.05
37		693.19	703.73	713.77	722.57	742.37	769.17	341.32	363.49	387.30	412.76	412.84	419.16
38		1575.94	1597.24	1617.54	1635.23	1650.11	1689.55	819.32	869.46	922.99	979.97	1011.04	1045.21
39	PLASTICS	2462.13	2499.59	2535.24	2566.49	2632.19	2715.37	1212.32	1291.08	1375.65	1466.09	1514.17	1555.06
40		1579.13	1603.16	1626.04	1646.09	1715.72	1719.67	784.70	835.42	889.88	948.12	974.57	997.48
41	LEATHER GOODS	16.18	15.87	15.55	15.22	14.72	14.04	1968.38	2004.02	2035.19	2062.61	2153.57	2259.31
42		12.20	11.99	11.77	11.54	11.14	10.94	536.48	547.67	557.93	567.51	579.77	598.32
43		0.08	0.08	0.09	0.09	0.09	0.09	3.61	3.59	3.57	3.55	3.54	3.51
44	WOOD PRODUCTS	52.62	53.22	53.78	54.26	55.69	58.03	867.05	886.44	906.21	925.84	939.27	957.87
45		0.55	0.55	0.55	0.55	0.52	0.50	39.29	40.14	41.00	41.85	41.94	43.77
46		0.96	0.95	0.94	0.93	0.88	0.88	89.44	91.33	93.25	95.14	99.66	103.81
47	PAPER	34.09	34.46	34.83	35.18	35.45	36.18	37.74	39.70	41.72	43.82	43.91	45.61
48		547.75	553.55	559.51	565.14	566.22	580.20	606.27	637.80	670.26	704.00	706.47	709.08
49		16.94	17.12	17.31	17.48	17.93	18.05	18.75	19.73	20.73	21.78	22.57	23.28

MARITIME TRADE BETWEEN CHINA AND JAPAN (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	18.30	18.42	18.54	18.64	18.81	19.71	44.60	44.58	44.49	44.33	43.95	43.93
51		129.38	130.25	131.08	131.78	135.23	136.49	315.35	315.26	314.60	313.45	303.86	290.64
52		679.87	684.40	688.80	692.48	717.41	718.84	1657.88	1657.45	1654.07	1648.05	1638.33	1590.98
53		112.35	113.10	113.83	114.44	117.40	121.00	280.69	280.89	280.61	279.92	276.61	273.90
54		401.36	404.04	406.64	408.81	423.11	425.48	978.07	977.79	975.77	972.19	945.35	898.84
55		607.90	611.95	615.88	619.17	641.15	658.52	1481.37	1480.94	1477.87	1472.45	1456.99	1454.95
56		175.22	176.39	177.52	178.47	181.42	183.54	426.99	426.87	425.99	424.42	419.97	406.99
57		115.06	115.83	116.57	117.19	119.01	123.91	280.39	280.31	279.73	278.70	266.33	256.26
58		160.60	161.67	162.71	163.58	171.11	172.88	391.37	391.25	390.44	389.01	382.36	381.37
59		141.71	142.83	143.90	144.77	147.65	151.58	293.74	299.10	304.27	309.33	311.21	319.52
60		202.24	203.59	204.90	205.99	215.90	219.55	492.84	492.70	491.68	489.87	472.78	462.19
61		122.95	123.47	123.98	124.39	124.60	126.82	4260.99	4320.70	4374.96	4426.43	4484.86	4623.89
62		35.30	35.22	35.15	35.08	33.74	33.44	4193.54	4255.51	4312.24	4366.43	4555.50	4637.95
63	268.04	269.34	270.62	271.63	284.97	292.61	590.06	590.74	590.38	589.12	585.41	560.41	
64	FOOTWEAR	4.86	4.76	4.65	4.54	4.44	4.35	615.28	626.72	636.74	645.57	655.25	666.19
65		35.72	36.20	36.66	37.07	38.57	40.15	420.04	427.04	433.62	440.03	459.26	473.36
66		27.80	27.29	26.76	26.20	25.10	24.68	197.53	207.12	216.75	226.57	229.22	230.62
67		32.52	31.92	31.31	30.65	30.34	29.11	231.05	242.27	253.54	265.03	275.81	286.51
68	STONE & GLASS	430.69	431.90	433.19	434.42	448.24	466.57	582.89	602.26	622.00	642.33	662.69	666.00
69		182.17	182.68	183.23	183.75	185.97	190.08	246.54	254.74	263.09	271.68	279.40	293.37
70		406.91	408.10	409.38	410.59	411.70	424.75	568.04	585.61	603.45	621.75	651.72	670.75
71	PRECIOUS STONES	120.10	121.80	123.52	125.20	125.98	129.35	171.00	180.62	190.60	200.94	208.68	217.73
72	BASE METALS	6920.42	7026.31	7133.75	7243.51	7330.43	7433.06	2291.53	2383.65	2477.61	2574.19	2591.44	2614.50
73		3069.95	3092.21	3115.49	3139.21	3245.62	3359.87	2350.04	2448.93	2547.81	2647.50	2762.93	2863.78
74		3137.01	3153.95	3171.43	3189.54	3246.63	3335.59	1432.54	1521.36	1615.79	1715.32	1768.49	1779.81
75		365.59	372.05	378.55	385.04	391.28	404.94	223.98	239.87	256.90	274.79	281.41	284.59
76		822.40	834.16	846.06	857.94	878.36	882.05	681.74	722.88	766.12	811.04	843.73	855.96
77		---	---	---	---	---	---	---	---	---	---	---	---
78		239.69	243.96	248.25	252.55	258.98	260.25	144.72	155.07	166.17	177.85	181.34	182.39
79		246.83	251.22	255.65	260.07	267.22	272.86	149.03	159.69	171.12	183.15	190.97	200.17
80		185.63	188.88	192.15	195.41	201.65	202.92	115.90	124.03	132.74	141.88	145.89	148.26
81		1212.54	1235.38	1258.31	1281.25	1308.93	1344.79	652.35	702.29	756.25	813.22	813.30	832.01
82		555.81	554.26	553.00	551.68	537.94	532.29	1069.60	1115.91	1162.03	1208.36	1256.09	1271.03
83	343.89	342.93	342.15	341.33	335.16	320.64	661.78	690.44	718.97	747.64	758.77	780.32	
84	MACHINE	15531.62	15447.44	15370.04	15283.33	14542.09	14329.78	10768.91	11197.32	11620.82	12042.86	12533.00	12995.47
85		6075.06	6071.19	6068.81	6054.39	5768.02	5730.52	5572.00	5780.82	5990.00	6201.36	6397.33	6587.97
86	VEHICLES	271.04	266.73	262.45	258.14	246.45	245.36	771.27	826.95	882.66	938.48	968.79	1001.25
87		6284.14	6258.57	6234.42	6212.22	6019.64	5902.25	3202.44	3375.91	3553.97	3738.41	3836.73	3855.53
88		51.96	50.81	49.66	48.49	46.56	45.79	218.93	234.63	250.30	265.96	276.44	276.88
89		142.64	139.31	136.00	132.62	126.58	124.83	611.58	656.47	701.31	746.16	770.26	793.21
90	CLOCKS & MUSICAL INST.	2241.39	2224.95	2209.57	2193.73	2134.72	2075.16	1376.95	1432.13	1486.21	1539.62	1556.71	1627.38
91		1054.36	1046.63	1039.40	1031.96	1023.60	1020.94	658.75	684.77	710.24	735.36	764.18	787.87
92		78.10	76.65	75.18	73.60	71.14	71.02	554.85	581.79	608.86	636.44	652.41	672.05
93	ARMS	672.14	667.26	662.69	657.99	644.83	635.22	422.60	439.57	456.21	472.65	483.85	498.71
94	MISC. ART.	494.70	490.66	486.74	482.57	479.63	468.79	973.98	1018.21	1062.41	1107.18	1137.19	1157.54
95		137.59	135.04	132.45	129.67	126.92	122.40	977.53	1025.01	1072.69	1121.28	1171.52	1217.79
96		159.00	156.05	153.05	149.83	148.55	141.95	1154.19	1209.46	1264.91	1321.36	1379.77	1445.03
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	

MARITIME TRADE BETWEEN CHINA AND SOUTH KOREA

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.04	0.04	0.04	0.05	0.05	0.05	0.03	0.03	0.03	0.03	0.03	0.03
02		25.56	25.85	26.05	26.15	26.41	27.03	135.17	153.30	173.13	194.84	194.89	202.55
03		280.21	284.80	289.79	295.03	296.27	299.68	797.44	820.40	843.58	867.53	876.55	892.77
04		7.08	7.22	7.37	7.53	7.66	7.86	36.76	38.56	40.48	42.55	44.55	45.32
05		10.21	10.37	10.55	10.73	10.74	10.80	21.41	21.92	22.43	22.97	23.18	24.21
06	VEGETABLE PRODUCTS	24.48	28.80	33.77	39.38	40.14	40.33	38.58	39.57	40.56	41.53	42.07	43.12
07		104.96	109.65	114.55	119.38	121.70	126.77	231.74	236.58	241.69	247.09	250.08	256.49
08		100.80	105.94	111.31	116.56	117.43	119.91	128.09	128.44	129.07	129.94	133.24	137.63
09		69.83	80.84	93.48	107.75	111.71	117.16	145.88	150.11	154.32	158.54	162.35	166.50
10		1273.49	1337.84	1400.33	1458.00	1481.47	1497.03	1253.73	1295.84	1337.30	1379.12	1423.25	1460.68
11		49.89	51.00	52.16	53.37	55.72	55.99	269.57	279.19	288.88	298.81	308.13	308.99
12		235.46	272.09	315.08	365.62	375.27	393.54	296.57	307.98	319.58	331.54	344.27	350.12
13		11.52	11.78	12.04	12.32	12.58	13.08	64.53	66.86	69.20	71.61	73.63	76.29
14		1.94	1.98	2.02	2.07	2.13	2.17	4.54	4.96	5.44	5.96	6.10	6.24
15	FATS & OILS	98.27	98.51	98.67	98.56	94.90	94.65	171.82	188.75	207.57	228.18	234.82	245.41
16	PREPARED FOODSTUFFS	28.52	29.05	29.57	30.09	30.50	30.62	159.46	169.08	179.22	190.03	198.96	200.01
17		73.48	73.56	73.69	73.84	75.36	78.63	12.04	13.11	14.31	15.64	15.90	16.24
18		15.60	16.29	17.05	17.89	18.15	18.81	78.98	81.78	84.59	87.48	90.43	90.66
19		26.24	26.80	27.39	28.00	28.33	28.54	148.60	153.94	159.32	164.83	172.36	177.44
20		77.07	78.71	80.44	82.24	84.55	87.38	436.41	452.09	467.87	484.04	488.69	502.72
21		19.64	20.06	20.50	20.96	21.13	21.18	111.29	115.31	119.36	123.52	127.38	133.60
22		33.16	34.27	35.43	36.66	37.33	39.18	53.04	54.31	55.58	56.89	58.59	59.31
23		20.03	20.14	20.29	20.44	20.51	21.16	67.71	73.03	78.87	85.20	86.37	89.50
24		12.39	13.40	14.53	15.79	16.37	16.76	18.19	18.61	19.02	19.45	19.85	20.55
25	MINERAL PRODUCTS	194.17	207.50	222.14	238.39	239.75	244.45	525.00	545.26	566.79	590.11	606.58	630.66
26		80.33	85.39	90.89	96.95	97.93	98.86	165.83	171.91	178.48	185.72	194.12	202.00
27		11660.55	12956.33	14803.36	17633.45	18053.13	18623.61	3571.51	3753.28	3960.48	4191.84	4370.83	4525.12
28	CHEMICAL PRODUCTS	5220.28	5271.84	5306.16	5322.74	5330.19	5407.48	1647.20	1809.58	1991.18	2195.02	2215.87	2236.26
29		6879.01	6879.78	6844.81	6771.68	6749.33	6532.68	2331.39	2563.87	2824.04	3116.32	3269.01	3361.20
30		819.66	820.07	816.29	808.03	789.44	784.63	297.12	325.14	356.38	391.36	409.60	425.04
31		507.85	508.10	505.75	500.62	478.84	455.14	177.03	194.31	213.64	235.35	242.83	247.03
32		682.38	682.45	678.98	671.72	656.88	650.57	230.55	253.59	279.37	308.34	318.73	326.38
33		610.41	610.48	607.37	600.88	578.95	576.80	206.23	226.84	249.91	275.82	276.82	278.34
34		448.84	448.92	446.68	441.96	440.15	419.73	162.95	178.98	196.85	216.85	226.48	228.40
35		181.68	181.78	180.95	179.14	173.07	171.04	80.63	87.40	94.89	103.24	107.66	109.68
36		91.83	91.94	91.59	90.76	89.02	85.24	61.64	67.13	73.06	79.52	80.08	82.49
37		656.52	656.59	653.25	646.27	644.59	629.57	221.81	243.98	268.79	296.66	307.90	314.86
38		1447.85	1451.21	1447.79	1437.14	1415.73	1382.32	548.41	599.76	656.78	720.43	734.41	766.80
39	PLASTICS	2331.90	2332.15	2320.28	2295.48	2196.77	2164.04	787.85	866.58	954.70	1053.70	1076.67	1086.58
40		1495.27	1495.45	1487.87	1471.99	1463.75	1424.08	505.64	556.15	612.69	676.20	708.79	720.77
41	LEATHER GOODS	92.99	93.84	94.69	95.48	97.19	97.72	714.65	748.27	781.15	813.79	852.85	888.84
42		19.01	19.24	19.48	19.71	19.76	20.07	182.43	191.25	199.97	208.75	216.96	226.98
43		0.61	0.62	0.64	0.65	0.65	0.67	0.43	0.44	0.45	0.46	0.48	0.50
44	WOOD PRODUCTS	53.86	53.90	53.73	53.33	52.76	51.62	193.59	198.61	203.81	209.09	216.95	221.90
45		0.67	0.67	0.67	0.68	0.70	0.72	8.25	8.42	8.59	8.76	9.18	9.54
46		1.42	1.42	1.41	1.41	1.34	1.34	19.27	19.65	20.04	20.42	20.90	21.27
47	PAPER	15.82	16.37	16.95	17.53	17.63	18.49	18.61	19.90	21.27	22.73	23.40	23.55
48		254.20	263.06	272.26	281.71	281.74	292.98	299.05	319.68	341.67	365.16	371.96	375.45
49		7.86	8.14	8.42	8.71	8.79	9.03	9.25	9.89	10.57	11.30	11.31	11.84

MARITIME TRADE BETWEEN CHINA AND SOUTH KOREA (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	13.04	13.34	13.65	13.95	14.17	14.77	23.39	24.15	24.89	25.62	26.33	27.36
51		92.20	94.38	96.55	98.66	99.06	102.53	165.36	170.78	176.03	181.16	183.59	186.03
52		484.21	495.58	506.86	517.82	526.11	550.73	868.92	897.41	924.96	951.94	976.50	1011.46
53		80.85	82.89	84.95	87.00	87.83	90.57	144.00	148.73	153.30	157.79	163.50	166.30
54		285.78	292.47	299.11	305.56	312.10	315.69	512.93	529.75	546.01	561.94	571.43	583.83
55		432.83	442.97	453.02	462.79	482.69	506.44	776.87	802.34	826.98	851.09	889.48	893.12
56		124.76	127.68	130.58	133.40	137.40	141.45	223.93	231.27	238.37	245.32	246.65	251.16
57		81.92	83.84	85.75	87.60	91.81	94.82	147.04	151.87	156.53	161.09	163.14	163.95
58		114.35	117.03	119.69	122.27	126.80	127.61	205.24	211.97	218.48	224.85	230.14	240.70
59		108.67	110.09	111.26	112.12	112.65	114.10	146.71	154.01	161.48	169.22	173.88	177.23
60		144.00	147.37	150.72	153.97	156.18	162.15	258.46	266.93	275.13	283.15	283.24	296.24
61		102.26	104.94	107.70	110.50	115.32	117.06	1159.08	1197.77	1235.57	1273.71	1292.43	1342.83
62		40.40	41.64	42.97	44.40	45.64	45.96	1084.03	1120.28	1155.74	1191.63	1207.48	1249.86
63	191.63	196.51	201.45	206.39	208.39	209.97	310.17	320.87	331.30	341.58	350.25	355.82	
64	FOOTWEAR	27.47	27.69	27.92	28.12	28.69	29.41	226.58	237.28	247.74	258.12	268.14	275.30
65		34.50	34.62	34.60	34.41	34.35	33.42	114.81	119.33	123.91	128.67	134.74	136.89
66		9.62	9.85	10.09	10.33	10.62	10.67	76.46	82.50	88.75	95.27	98.51	99.72
67		11.26	11.52	11.80	12.09	12.17	12.22	89.44	96.51	103.81	111.44	112.76	115.15
68	STONE & GLASS	129.50	134.38	139.68	145.45	146.57	147.98	629.01	659.90	691.61	724.74	728.15	762.30
69		54.78	56.84	59.08	61.52	63.72	66.32	266.05	279.12	292.53	306.55	310.93	323.34
70		128.94	133.63	138.71	144.20	147.39	154.39	591.35	620.06	649.48	680.19	698.89	701.90
71	PRECIOUS STONES	93.60	97.06	100.67	104.47	106.28	110.25	170.17	186.40	203.97	223.01	223.25	232.67
72	BASE METALS	3530.57	3726.26	3941.78	4180.97	4185.15	4350.04	9669.36	10213.59	10781.79	11383.90	11710.62	11937.80
73		1750.81	1835.82	1929.32	2032.65	2095.25	2141.98	3513.06	3711.92	3917.87	4134.26	4315.34	4477.16
74		1656.78	1714.00	1774.32	1838.53	1893.13	1983.63	1944.32	2132.44	2337.31	2560.72	2632.93	2694.54
75		293.82	305.72	318.26	331.56	339.91	345.38	445.67	491.28	541.12	595.55	619.61	645.26
76		634.53	660.38	687.78	716.96	723.56	740.35	980.41	1073.67	1174.94	1284.94	1288.80	1344.22
77		---	---	---	---	---	---	---	---	---	---	---	---
78		192.95	200.77	209.00	217.72	226.09	233.23	292.46	322.47	355.28	391.11	403.36	408.80
79		198.70	206.74	215.22	224.21	234.10	234.26	301.17	332.07	365.86	402.76	408.60	411.13
80		148.87	154.90	161.26	168.00	168.04	169.63	226.03	249.07	274.25	301.73	306.77	310.91
81		987.96	1027.88	1069.90	1114.37	1164.62	1212.37	1489.41	1645.42	1816.27	2003.09	2081.01	2087.26
82		338.38	352.72	368.45	385.69	389.12	407.18	586.81	617.93	649.18	681.00	690.20	707.18
83		209.36	218.24	227.97	238.63	242.38	253.72	363.07	382.33	401.66	421.35	441.66	446.78
84	MACHINE	11800.01	12294.20	12837.94	13430.09	14080.11	14672.88	5909.31	6349.36	6809.26	7291.48	7528.45	7851.42
85		5269.78	5526.77	5809.03	6110.09	6242.07	6446.81	2964.61	3163.00	3370.50	3587.20	3712.03	3723.91
86	VEHICLES	42.47	43.55	44.70	45.94	47.55	49.04	422.37	461.01	500.77	542.01	547.10	574.19
87		2119.95	2174.32	2232.01	2294.35	2303.76	2338.32	1727.60	1853.31	1984.78	2124.35	2132.43	2163.35
88		4.51	4.64	4.77	4.92	5.13	5.20	119.90	130.87	142.14	153.82	161.40	164.37
89		8.68	8.94	9.23	9.55	9.83	10.10	335.28	366.40	398.39	431.54	431.84	444.84
90	CLOCKS & MUSICAL INST.	1646.36	1709.93	1779.87	1856.74	1899.63	1946.17	767.71	827.86	890.75	956.82	970.12	972.55
91		775.32	805.24	838.16	874.34	917.79	924.77	365.17	393.60	423.31	454.51	475.91	498.81
92		27.03	27.67	28.33	29.02	30.35	31.61	214.78	231.75	249.29	267.62	268.87	280.28
93	ARMS	492.67	511.72	532.67	555.71	567.93	571.74	235.97	254.21	273.25	293.24	303.27	310.97
94	MISC. ART.	324.58	335.84	348.07	361.35	368.43	375.54	429.60	462.41	496.42	532.04	546.83	560.93
95		47.62	48.75	49.92	51.13	53.46	55.70	378.40	408.30	439.19	471.49	484.17	484.17
96		56.12	57.43	58.79	60.20	60.41	62.13	446.29	481.25	517.34	555.06	578.09	606.82
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

MARITIME TRADE BETWEEN CHINA AND U.S.

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	1.32	1.34	1.36	1.38	1.43	1.46	0.11	0.12	0.12	0.12	0.13	0.13
02		414.72	397.77	382.69	369.47	362.41	355.56	81.95	100.20	122.24	148.31	151.74	151.83
03		244.82	243.79	243.22	243.17	234.64	229.80	1349.18	1443.64	1542.33	1640.09	1688.64	1696.41
04		135.92	132.51	129.43	126.70	125.22	119.51	113.18	124.01	135.96	148.77	155.50	158.75
05		7.07	7.08	7.09	7.12	7.24	7.26	23.42	25.27	27.25	29.24	29.89	31.27
06	VEGETABLE PRODUCTS	35.17	35.98	36.87	37.72	39.00	39.55	51.60	57.26	63.74	71.00	72.04	74.48
07		123.81	122.71	121.89	121.17	118.76	116.93	611.24	652.26	695.45	739.04	773.33	786.56
08		83.70	82.72	81.96	81.16	78.13	76.99	342.30	364.03	387.14	411.03	413.62	424.25
09		72.18	73.22	74.33	75.33	75.86	79.50	256.62	279.81	305.45	332.95	336.05	339.61
10		5.48	5.39	5.30	5.20	4.98	4.77	84.05	88.15	92.93	98.00	99.40	100.57
11		118.53	117.96	117.62	117.55	112.12	110.95	694.16	742.80	793.61	843.94	846.98	874.25
12		6486.44	6919.36	7393.80	7909.84	8102.84	8196.02	187.57	205.72	226.17	248.62	251.01	252.49
13		43.66	43.88	44.20	44.63	45.61	47.72	168.66	180.48	192.83	205.06	212.17	218.30
14		51.41	52.49	53.74	55.11	55.34	55.62	4.12	4.37	4.64	4.93	5.15	5.30
15	FATS & OILS	177.27	172.54	168.56	164.96	162.54	155.34	137.27	151.15	166.41	182.61	188.71	188.73
16	PREPARED FOODSTUFFS	141.94	135.96	130.60	125.85	122.83	121.29	335.88	363.08	392.35	422.57	430.13	440.33
17		9.68	9.28	8.92	8.58	8.31	7.96	8.97	10.17	11.54	13.08	13.18	13.40
18		34.73	34.59	34.52	34.52	33.77	32.88	201.40	215.73	230.75	245.71	252.49	253.27
19		64.75	64.39	64.16	64.08	63.32	62.76	387.69	414.90	443.33	471.48	481.81	486.53
20		190.14	189.09	188.42	188.18	182.10	179.15	1138.52	1218.44	1301.92	1384.60	1398.17	1400.83
21		52.71	52.27	51.93	51.72	51.27	50.26	291.10	311.68	333.20	354.56	362.01	363.74
22		34.35	35.00	35.69	36.45	37.30	37.77	43.84	46.11	48.44	50.70	50.72	52.19
23		50.33	48.86	47.58	46.38	44.34	43.52	74.19	80.06	86.36	92.83	94.59	94.96
24		11.44	11.70	11.96	12.23	12.77	12.99	14.39	15.54	16.82	18.22	19.05	19.16
25	MINERAL PRODUCTS	1531.88	1648.95	1777.74	1920.64	1976.15	2012.11	507.24	532.88	559.66	586.24	605.59	633.63
26		622.94	671.18	724.22	783.05	814.76	853.38	100.35	103.90	107.77	111.79	114.89	119.88
27		852.29	931.37	1023.69	1131.73	1168.51	1181.13	1865.08	2007.95	2166.65	2338.78	2344.63	2388.00
28	CHEMICAL PRODUCTS	3155.11	3254.97	3371.61	3507.82	3608.84	3740.56	5143.09	5621.69	6140.15	6683.14	6895.67	7211.49
29		4663.09	4805.48	4971.80	5165.97	5375.71	5389.69	7571.57	8277.45	9041.64	9841.46	10162.29	10471.23
30		550.45	567.10	586.55	609.29	630.92	652.62	995.72	1086.90	1185.11	1287.22	1304.99	1348.18
31		366.41	378.76	393.05	409.61	413.54	424.87	558.08	609.91	666.03	724.78	750.43	785.70
32		462.32	476.45	492.96	512.22	522.26	531.19	749.23	819.13	894.80	974.01	987.26	989.13
33		413.56	426.20	440.97	458.20	474.42	482.49	670.21	732.74	800.43	871.29	906.40	947.91
34		304.46	313.71	324.51	337.13	337.70	345.34	700.31	760.76	824.87	890.28	892.32	892.32
35		133.42	136.90	141.03	145.91	145.96	147.50	249.62	271.78	295.66	320.46	322.57	335.38
36		63.21	64.98	67.06	69.51	71.92	74.26	662.88	711.49	760.52	807.21	811.08	815.14
37		444.81	458.40	474.28	492.81	503.90	519.22	720.84	788.09	860.89	937.10	940.76	951.67
38		981.32	1009.28	1042.20	1080.94	1097.37	1121.84	1787.19	1950.42	2125.91	2308.07	2421.39	2464.50
39	PLASTICS	1579.90	1628.19	1684.58	1750.42	1762.67	1765.32	2560.35	2799.20	3057.81	3328.49	3430.35	3588.14
40		1041.76	1073.41	1110.34	1153.40	1182.47	1194.18	1643.45	1796.67	1962.57	2136.22	2148.18	2236.26
41	LEATHER GOODS	585.01	578.91	574.12	570.75	554.83	541.96	7233.20	7449.45	7645.05	7795.86	7801.32	8016.63
42		66.28	64.63	63.21	62.01	60.59	59.77	1906.20	1990.83	2072.03	2142.58	2154.15	2189.05
43		18.69	18.98	19.28	19.58	19.98	20.98	1.62	1.65	1.69	1.71	1.74	1.78
44	WOOD PRODUCTS	147.64	149.15	151.07	153.37	157.36	164.06	2996.83	3134.19	3266.35	3382.39	3537.30	3686.93
45		8.63	8.74	8.86	9.01	9.21	9.59	134.48	140.55	146.37	151.45	154.54	157.62
46		6.40	6.32	6.24	6.17	6.13	6.10	317.59	331.92	345.65	357.62	369.85	385.24
47	PAPER	113.34	114.32	115.59	117.20	118.78	123.33	261.72	284.86	309.45	334.62	339.17	350.90
48		1820.85	1836.60	1856.94	1882.90	1945.23	1998.52	4204.63	4576.41	4971.42	5375.79	5441.37	5483.27
49		56.33	56.81	57.44	58.25	60.18	60.19	130.07	141.57	153.79	166.30	168.46	168.69

MARITIME TRADE BETWEEN CHINA AND U.S. (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	5.50	5.47	5.45	5.45	5.40	5.14	104.88	113.14	121.62	129.85	132.67	138.15
51		41.84	41.65	41.54	41.56	43.75	43.91	742.91	801.66	861.97	920.62	921.63	933.52
52		472.21	490.05	509.94	531.98	532.78	545.20	3876.08	4178.04	4487.18	4786.84	4905.56	5069.89
53		1951.94	2070.10	2198.10	2335.88	2375.82	2385.56	640.73	690.65	741.75	791.29	815.35	818.20
54		93.03	92.15	91.53	91.25	89.44	86.83	2288.25	2466.50	2649.01	2825.91	2842.30	2977.88
55		140.90	139.56	138.63	138.20	137.02	132.56	3465.72	3735.71	4012.12	4280.06	4451.69	4645.78
56		40.61	40.23	39.96	39.84	38.78	36.92	998.97	1076.79	1156.46	1233.69	1241.47	1294.48
57		26.67	26.42	26.24	26.16	25.84	25.77	655.99	707.09	759.41	810.12	847.47	850.52
58		37.23	36.87	36.62	36.51	34.89	34.62	915.62	986.95	1059.98	1130.76	1184.36	1226.64
59		59.31	60.13	61.20	62.56	63.67	66.53	1032.80	1110.03	1188.27	1263.12	1315.03	1337.25
60		46.88	46.43	46.12	45.98	43.98	43.67	1153.02	1242.84	1334.80	1423.94	1429.21	1496.67
61		24.21	23.95	23.76	23.65	23.07	22.30	7808.19	8375.24	8952.25	9500.44	9659.10	9920.86
62		3.74	3.67	3.61	3.57	3.52	3.48	7570.67	8117.70	8674.08	9201.86	9633.43	9715.31
63	69.04	68.39	67.95	67.78	65.98	63.31	1390.17	1499.23	1610.93	1719.29	1737.68	1823.53	
64	FOOTWEAR	118.67	115.66	113.06	110.87	106.42	105.89	2303.38	2372.30	2434.63	2482.68	2531.59	2544.24
65		21.10	21.72	22.46	23.32	23.91	24.54	763.18	819.03	876.04	930.45	966.37	1000.68
66		8.90	8.77	8.67	8.61	8.37	8.09	1354.56	1449.29	1543.24	1630.51	1702.58	1754.68
67		10.41	10.25	10.14	10.07	9.71	9.51	1584.45	1695.26	1805.15	1907.23	1919.82	1949.39
68	STONE & GLASS	167.88	169.10	170.91	173.50	178.15	184.10	1412.52	1508.09	1606.50	1702.99	1775.20	1787.80
69		71.01	71.52	72.29	73.39	73.48	75.39	597.45	637.88	679.50	720.32	756.26	790.90
70		156.08	157.15	158.77	161.11	165.70	171.07	1373.28	1467.13	1563.73	1658.36	1676.11	1691.19
71	PRECIOUS STONES	48.67	50.58	52.80	55.41	57.13	57.80	844.81	907.28	970.39	1030.72	1077.51	1123.63
72	BASE METALS	784.77	814.28	849.67	892.73	926.56	955.66	4977.49	5252.56	5530.49	5798.05	5941.27	6200.31
73		719.88	725.63	735.01	749.18	777.80	789.00	7530.57	8086.73	8649.36	9190.60	9481.94	9700.02
74		821.82	828.99	839.34	854.14	858.92	870.00	3565.95	3905.62	4271.99	4656.47	4758.91	4941.17
75		93.45	95.78	98.67	102.30	104.67	107.08	400.87	441.64	486.12	533.53	543.72	567.38
76		229.76	234.12	239.78	247.11	252.32	258.23	1724.09	1874.19	2031.91	2191.97	2220.90	2313.07
77		---	---	---	---	---	---	---	---	---	---	---	---
78		61.03	62.57	64.48	66.87	69.54	70.91	252.97	279.00	307.48	337.92	339.00	340.05
79		62.85	64.43	66.40	68.86	71.41	73.84	260.51	287.31	316.63	347.98	364.90	372.52
80		47.69	48.86	50.32	52.15	54.25	54.27	213.56	234.97	258.26	282.99	291.51	292.50
81		300.00	308.15	318.20	330.66	334.93	341.32	911.07	1016.56	1134.76	1264.83	1300.50	1364.88
82		222.15	222.14	223.03	225.12	226.92	235.30	3979.80	4281.14	4585.04	4876.01	5009.61	5085.75
83		137.45	137.44	137.99	139.29	144.90	144.99	2462.39	2648.83	2836.86	3016.89	3034.99	3143.03
84	MACHINE	7853.37	7809.61	7796.64	7819.96	7701.10	8073.83	39501.23	42507.53	45571.90	48535.68	48792.92	50066.41
85		4109.74	4124.83	4154.82	4198.11	4327.41	4403.57	30161.81	31996.34	33833.74	35554.01	36801.96	37512.23
86	VEHICLES	1478.37	1444.38	1416.04	1395.05	1382.77	1376.55	1235.14	1375.35	1527.08	1687.07	1700.40	1711.45
87		3044.48	3008.21	2981.27	2967.65	2929.37	2924.10	9780.22	10666.74	11607.09	12572.43	12924.45	13476.33
88		424.80	414.87	406.58	400.41	386.12	379.21	332.40	370.76	412.28	456.10	469.01	474.68
89		1213.32	1184.95	1161.26	1143.63	1127.96	1083.52	916.71	1023.74	1139.80	1262.47	1283.93	1296.00
90	CLOCKS & MUSICAL INST.	967.99	958.74	953.46	953.37	920.77	896.37	3896.87	4249.94	4613.26	4970.82	5046.38	5073.63
91		458.36	453.94	451.39	451.29	436.58	416.37	1858.97	2024.56	2194.83	2362.19	2376.13	2421.75
92		24.99	24.63	24.35	24.17	23.26	22.78	3804.94	4071.03	4334.94	4580.08	4631.83	4632.30
93	ARMS	290.02	287.28	285.74	285.75	288.04	288.87	1200.05	1308.19	1419.43	1528.84	1552.84	1556.26
94	MISC. ART.	204.06	202.53	201.82	202.16	197.41	188.35	5552.80	5955.01	6356.43	6733.11	6997.72	7067.70
95		44.03	43.39	42.90	42.59	41.44	39.53	6703.56	7172.36	7637.32	8069.21	8265.29	8342.15
96		55.84	54.97	54.29	53.85	52.54	51.12	7833.81	8377.75	8916.97	9417.42	9767.75	10238.55
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

MARITIME TRADE BETWEEN CHINA AND ASEAN

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.05
02		2.61	2.74	2.83	2.94	3.08	3.18	244.25	278.75	317.16	359.12	376.75	392.99
03		301.58	309.47	316.58	324.32	325.33	336.03	513.13	541.58	570.12	600.25	626.78	634.99
04		17.49	17.94	18.32	18.74	19.13	19.58	214.72	244.98	279.46	319.61	328.62	329.80
05		6.93	7.11	7.28	7.46	7.75	8.09	8.76	9.24	9.73	10.24	10.25	10.27
06	VEGETABLE PRODUCTS	557.71	597.80	637.80	681.48	701.65	735.61	118.77	127.78	137.66	148.31	149.41	150.14
07		695.71	712.57	727.45	742.91	753.98	771.93	739.40	752.85	766.57	780.90	783.72	812.63
08		779.01	797.72	814.22	831.29	833.71	866.30	751.29	759.26	767.54	776.07	784.61	797.56
09		102.27	109.39	116.18	123.58	124.41	130.25	345.34	370.60	398.08	427.63	447.51	451.50
10		254.08	256.10	257.09	258.22	268.96	277.33	1171.84	1303.33	1437.46	1581.29	1617.82	1647.58
11		123.55	126.87	129.83	133.03	137.15	139.67	274.11	289.08	304.06	319.88	324.55	339.81
12		339.93	355.90	370.98	387.72	401.48	404.17	341.52	367.01	394.88	425.19	431.06	444.59
13		576.94	616.76	656.52	699.92	709.58	713.27	63.43	66.97	70.52	74.26	74.87	75.51
14		1831.77	1956.37	2080.43	2215.75	2285.76	2379.25	5.01	5.40	5.82	6.29	6.54	6.69
15	FATS & OILS	3995.48	4072.51	4128.23	4184.14	4220.13	4361.08	197.20	216.98	238.55	262.21	267.01	274.11
16	PREPARED FOODSTUFFS	55.08	56.56	57.86	59.28	62.24	63.83	183.62	199.66	216.78	235.20	237.57	245.22
17		75.92	78.68	81.05	83.62	86.41	87.60	53.50	58.93	65.01	71.86	75.13	77.76
18		37.20	38.36	39.40	40.54	42.31	43.77	84.79	89.75	94.81	100.17	104.38	106.95
19		67.46	69.26	70.86	72.59	73.82	77.34	145.26	153.38	161.52	170.11	171.02	173.50
20		198.12	203.40	208.10	213.17	223.34	231.20	426.60	450.43	474.33	499.58	521.41	537.31
21		50.54	51.89	53.08	54.37	55.32	57.48	116.88	124.23	131.78	139.91	146.63	153.65
22		36.22	37.45	38.66	39.94	40.59	42.03	161.90	167.40	172.53	178.00	179.65	184.50
23		1450.70	1489.12	1520.90	1554.06	1609.08	1660.89	63.43	68.96	75.00	81.60	81.61	83.59
24		13.85	14.59	15.30	16.07	16.78	16.87	60.18	63.01	65.90	69.00	70.62	71.88
25	MINERAL PRODUCTS	4569.41	4942.45	5346.34	5794.70	5813.24	6084.72	259.10	274.90	290.30	307.05	319.51	327.09
26		1879.11	2032.78	2199.16	2383.86	2476.83	2580.61	58.25	61.68	64.97	68.61	69.22	71.47
27		17408.05	19538.52	21947.26	24762.95	25037.82	25871.58	7207.98	7862.44	8573.28	9402.97	9696.35	9811.73
28	CHEMICAL PRODUCTS	4400.06	4738.89	5086.31	5469.37	5741.74	5846.82	3245.37	3559.25	3889.91	4257.64	4421.56	4597.54
29		5906.27	6352.49	6804.20	7299.63	7405.48	7477.31	4236.56	4646.88	5078.24	5555.36	5774.80	5859.69
30		697.39	749.91	803.05	861.32	902.40	925.15	557.05	608.81	662.77	722.12	756.42	784.71
31		506.98	545.75	585.43	629.04	636.46	667.26	312.62	342.83	374.59	409.71	419.79	423.77
32		585.66	629.92	674.73	723.87	745.66	773.18	419.59	460.26	503.02	550.31	555.54	576.15
33		523.89	563.48	603.57	647.53	650.96	669.19	375.34	411.72	449.96	492.27	510.63	529.22
34		386.47	415.57	445.02	477.31	480.46	504.00	293.78	322.40	352.47	385.68	389.92	409.34
35		162.14	173.94	185.86	198.92	202.68	209.26	136.89	149.78	163.39	178.46	183.26	192.06
36		82.20	88.13	94.08	100.60	104.73	107.12	104.66	115.21	126.22	138.28	144.88	151.27
37		563.46	606.05	649.16	696.44	725.97	749.57	403.69	442.82	483.95	529.46	540.36	543.17
38		1206.26	1296.39	1387.48	1487.37	1497.93	1501.82	975.00	1066.66	1162.35	1267.71	1279.38	1279.76
39	PLASTICS	2001.36	2152.62	2305.75	2473.70	2575.12	2580.27	1433.87	1572.85	1718.96	1880.58	1900.70	1928.07
40		2293.58	2462.58	2632.82	2819.17	2932.79	2957.13	920.42	1009.58	1103.30	1206.97	1257.30	1269.50
41	LEATHER GOODS	132.25	135.74	138.42	141.18	143.67	147.09	798.60	857.48	914.74	973.80	1000.38	1020.79
42		27.46	28.22	28.80	29.41	30.21	31.56	241.23	259.40	277.33	296.09	308.58	319.35
43		0.46	0.47	0.49	0.51	0.52	0.54	0.48	0.49	0.51	0.52	0.54	0.54
44	WOOD PRODUCTS	2276.52	2432.86	2588.96	2759.28	2807.57	2926.33	323.98	338.64	352.83	367.30	385.08	393.90
45		212.02	226.86	241.69	257.87	266.02	277.75	13.74	14.31	14.84	15.38	15.60	16.31
46		11.41	11.57	11.69	11.81	11.86	12.26	31.97	33.28	34.53	35.78	37.36	38.02
47	PAPER	149.86	157.67	165.08	172.99	176.75	184.54	65.45	71.17	77.07	83.52	84.60	85.50
48		2407.65	2533.09	2652.09	2779.22	2819.24	2830.23	1051.53	1143.42	1238.16	1341.82	1349.34	1389.95
49		74.48	78.36	82.04	85.97	88.63	89.84	32.53	35.37	38.30	41.51	42.60	43.39

MARITIME TRADE BETWEEN CHINA AND ASEAN (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	5.47	5.71	5.92	6.14	6.33	6.61	57.88	61.40	64.66	67.95	69.87	71.34
51		38.69	40.36	41.85	43.42	43.50	44.28	409.27	434.14	457.23	480.48	502.25	525.35
52		203.41	212.18	220.04	228.28	233.21	236.99	2153.09	2284.00	2405.55	2527.98	2562.36	2624.11
53		35.30	36.93	38.42	40.01	40.96	42.22	371.85	395.01	416.65	438.62	459.58	471.67
54		119.92	125.08	129.70	134.54	140.73	145.53	1269.50	1346.63	1418.23	1490.34	1536.24	1608.60
55		181.62	189.44	196.43	203.77	212.31	217.17	1922.75	2039.57	2148.02	2257.23	2258.58	2357.28
56		52.35	54.60	56.62	58.73	61.21	63.28	554.22	587.89	619.15	650.63	668.98	695.20
57		34.38	35.86	37.18	38.57	39.65	40.80	363.93	386.05	406.57	427.24	431.39	450.24
58		47.98	50.05	51.90	53.83	55.35	56.51	507.98	538.84	567.49	596.35	603.92	611.17
59		77.76	82.46	87.04	92.00	93.56	94.99	326.95	350.02	372.36	395.57	410.64	425.18
60		60.42	63.03	65.35	67.79	69.61	69.67	639.68	678.55	714.63	750.96	774.92	799.09
61		49.84	51.82	53.60	55.50	56.51	57.06	2176.90	2312.37	2443.59	2579.72	2644.21	2773.25
62		24.13	25.00	25.79	26.65	26.79	27.59	1965.62	2088.38	2208.00	2332.58	2437.31	2501.90
63	79.18	82.62	85.72	88.98	89.05	92.17	766.80	813.99	857.89	902.21	942.26	959.32	
64	FOOTWEAR	40.56	41.61	42.40	43.21	43.70	45.44	253.21	271.96	290.19	309.00	315.24	321.26
65		28.60	30.66	32.75	35.04	36.32	37.28	208.24	221.90	235.34	249.47	250.77	259.04
66		16.36	16.91	17.36	17.83	18.47	19.36	121.17	133.87	147.03	161.33	167.04	172.67
67		19.14	19.77	20.30	20.85	21.70	22.76	141.73	156.59	171.99	188.71	195.56	203.50
68	STONE & GLASS	97.79	102.06	105.98	110.19	113.36	114.35	647.13	690.95	735.00	782.41	817.70	852.45
69		41.36	43.17	44.83	46.61	48.63	49.44	273.72	292.25	310.88	330.94	338.45	338.82
70		93.54	97.62	101.36	105.38	110.48	110.53	637.98	680.83	723.66	769.57	792.19	796.15
71	PRECIOUS STONES	107.51	115.29	123.21	131.95	136.39	138.11	173.14	192.40	212.46	234.49	235.12	238.55
72	BASE METALS	291.29	310.63	330.58	352.95	360.68	375.54	10813.44	11601.71	12355.90	13159.16	13611.84	13761.57
73		425.56	446.59	466.35	487.91	511.23	533.73	4896.65	5263.78	5620.19	5998.65	6187.61	6451.82
74		653.54	697.63	739.94	786.39	823.12	860.73	2131.52	2347.15	2569.14	2812.92	2880.99	2933.72
75		168.57	180.35	191.66	204.08	212.06	219.38	399.57	444.59	491.46	543.13	543.57	546.23
76		355.41	379.28	402.11	427.12	438.23	443.31	1046.66	1154.01	1264.68	1385.71	1408.16	1421.82
77		---	---	---	---	---	---	---	---	---	---	---	---
78		110.81	118.56	126.01	134.18	134.49	137.76	260.20	289.64	320.31	354.13	368.93	384.13
79		114.11	122.09	129.76	138.18	141.15	145.08	267.95	298.27	329.85	364.68	373.50	377.27
80		85.31	91.26	96.97	103.24	106.15	109.54	204.69	227.62	251.49	277.78	290.14	303.52
81		571.22	611.62	650.47	693.14	727.17	738.66	1250.02	1396.24	1549.04	1717.97	1784.11	1827.82
82		158.75	165.88	172.34	179.26	182.22	186.97	1213.31	1306.65	1399.33	1497.58	1542.81	1562.40
83	98.22	102.64	106.63	110.91	115.80	117.51	750.70	808.45	865.79	926.59	944.38	953.25	
84	MACHINE	9414.27	9954.74	10473.63	11026.23	11044.97	11342.08	16729.74	18104.69	19454.63	20875.93	21138.97	21231.98
85		9812.32	10423.09	11017.24	11643.71	11899.87	11935.57	10557.90	11417.97	12268.13	13165.50	13438.02	13646.31
86	VEHICLES	32.96	34.35	35.54	36.83	37.71	39.05	2446.19	2693.51	2941.47	3204.81	3354.48	3369.57
87		264.43	274.79	284.26	294.63	303.76	313.12	5047.99	5493.06	5937.29	6412.71	6586.50	6711.64
88		9.57	9.98	10.33	10.71	11.04	11.32	708.87	780.59	852.47	928.76	967.31	995.26
89		25.60	26.70	27.63	28.65	29.03	29.31	2008.26	2212.19	2416.67	2633.77	2683.02	2777.46
90	CLOCKS & MUSICAL INST.	611.65	640.27	666.57	695.28	717.67	750.90	1840.78	1991.43	2138.29	2292.35	2325.36	2333.27
91		288.50	301.98	314.37	327.89	342.71	345.01	869.79	940.85	1010.11	1082.74	1083.29	1095.74
92		45.95	47.49	48.75	50.08	50.65	51.43	340.36	376.03	413.01	453.18	467.18	480.54
93	ARMS	183.40	191.99	199.87	208.47	208.74	210.60	563.45	609.42	654.25	701.28	732.91	742.29
94	MISC. ART.	176.05	183.94	191.10	198.85	199.51	200.17	790.35	864.07	938.76	1018.87	1025.59	1062.51
95		80.96	83.66	85.89	88.23	90.57	94.13	599.64	662.49	727.64	798.41	833.30	869.30
96		95.15	98.31	100.92	103.65	107.45	111.85	702.74	776.07	852.03	934.50	956.36	1001.89
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

MARITIME TRADE BETWEEN CHINA AND EU-27

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.44	0.45	0.46	0.47	0.47	0.49	0.12	0.12	0.12	0.12	0.12	0.13
02		120.63	123.16	125.47	127.57	128.15	129.87	65.57	77.78	92.60	110.78	112.08	116.07
03		204.08	204.03	204.03	204.02	197.37	195.32	747.17	785.10	825.97	870.84	881.90	917.88
04		183.87	178.70	173.44	168.09	160.20	156.33	97.90	107.58	118.75	131.86	132.66	139.22
05		11.68	11.62	11.54	11.46	11.11	10.85	13.11	13.75	14.44	15.19	15.34	15.42
06	VEGETABLE PRODUCTS	31.94	32.59	33.26	33.88	34.56	35.84	167.57	185.84	206.90	231.37	242.66	252.49
07		55.61	55.51	55.41	55.30	53.32	51.38	565.26	589.83	616.05	644.62	651.90	653.59
08		20.27	20.21	20.16	20.11	19.15	18.53	469.84	488.56	508.42	529.96	554.71	573.57
09		60.03	60.40	60.80	61.10	63.81	65.31	466.31	514.63	570.13	634.43	643.12	650.96
10		27.23	27.60	27.98	28.35	29.19	29.28	35.36	38.24	41.66	45.56	45.85	47.59
11		131.98	133.05	134.12	135.20	136.97	138.62	380.34	399.70	420.57	443.49	453.07	464.17
12		43.46	43.88	44.34	44.74	45.61	46.70	889.85	977.40	1077.65	1193.31	1235.43	1282.25
13		34.47	34.95	35.45	35.93	37.35	38.71	101.84	107.01	112.58	118.72	124.11	128.00
14		46.90	48.47	50.09	51.69	53.63	56.27	35.03	36.83	38.81	41.03	42.75	42.99
15	FATS & OILS	71.93	72.05	72.22	72.31	73.93	75.32	194.38	213.73	235.71	260.94	270.90	271.69
16	PREPARED FOODSTUFFS	40.45	40.22	39.99	39.75	39.70	39.05	189.53	201.85	215.60	231.27	232.75	243.57
17		17.32	16.76	16.19	15.61	15.00	14.85	8.75	9.80	11.01	12.43	12.94	13.52
18		24.86	24.84	24.83	24.80	24.45	23.45	122.03	129.19	137.03	145.77	149.75	152.72
19		45.71	45.65	45.58	45.50	43.24	43.20	211.38	222.20	233.86	246.66	247.57	249.28
20		134.24	134.06	133.86	133.63	133.00	127.67	620.76	652.53	686.77	724.36	746.67	758.54
21		41.85	41.55	41.25	40.93	40.36	39.97	160.36	168.79	177.91	187.96	188.58	194.03
22		525.67	537.96	550.32	562.97	590.94	603.24	43.22	44.39	45.66	47.09	49.22	51.48
23		21.75	21.59	21.47	21.33	20.59	20.59	64.40	69.48	75.24	81.85	83.13	84.37
24		139.89	143.13	146.39	149.73	156.21	160.58	34.81	37.96	41.58	45.80	46.08	47.63
25	MINERAL PRODUCTS	1509.48	1622.38	1745.79	1882.00	1931.50	1983.26	1369.28	1416.21	1468.38	1527.48	1573.45	1620.50
26		606.66	653.11	703.91	759.98	773.58	812.03	342.51	348.00	354.33	361.78	367.75	371.54
27		388.10	414.32	443.64	476.46	498.04	521.35	1424.78	1537.12	1666.59	1816.26	1852.40	1873.34
28	CHEMICAL PRODUCTS	2566.14	2653.51	2742.81	2832.25	2957.15	3078.10	5311.01	5755.55	6252.80	6815.18	7032.58	7150.73
29		3804.69	3933.12	4064.15	4195.09	4264.72	4371.34	7795.94	8449.19	9179.62	10005.47	10358.67	10548.23
30		452.36	467.41	482.75	498.06	522.71	524.86	1033.05	1118.94	1214.60	1322.31	1351.01	1402.08
31		302.85	314.10	325.71	337.53	338.54	345.88	584.73	632.84	686.64	747.49	767.00	768.92
32		377.25	390.00	403.00	415.99	436.42	441.39	772.40	837.16	909.57	991.44	999.28	1025.36
33		337.47	348.87	360.50	372.12	377.18	394.68	690.94	748.87	813.64	886.88	915.44	916.26
34		253.19	261.50	269.98	278.43	284.83	287.77	744.28	804.31	870.55	944.52	990.70	1025.97
35		111.70	114.79	117.94	121.08	126.43	132.57	232.56	251.25	272.11	295.66	305.57	311.86
36		64.44	65.97	67.51	69.01	71.80	72.04	743.80	799.76	859.92	925.41	930.13	937.76
37		362.96	375.22	387.73	400.23	416.44	425.68	743.13	805.44	875.10	953.87	978.01	1001.97
38		867.94	893.34	919.06	944.57	985.95	992.65	1974.01	2133.84	2311.77	2512.33	2591.22	2685.02
39	PLASTICS	1289.19	1332.74	1377.17	1421.56	1456.25	1511.44	2639.53	2860.83	3108.28	3388.06	3420.59	3437.01
40		853.62	882.48	911.93	941.35	953.96	986.59	1711.49	1854.27	2013.90	2194.37	2263.28	2316.46
41	LEATHER GOODS	145.85	145.52	145.03	144.36	141.28	138.63	12854.05	13752.88	14691.12	15672.99	16122.80	16575.85
42		26.97	26.58	26.14	25.64	24.53	23.82	3127.45	3346.66	3576.78	3819.67	3957.94	4035.12
43		6.17	6.29	6.41	6.52	6.68	6.92	1.64	1.65	1.67	1.68	1.73	1.77
44	WOOD PRODUCTS	164.61	166.66	168.70	170.55	173.71	173.83	1765.20	1812.78	1862.47	1916.27	1981.62	2055.73
45		9.44	9.60	9.76	9.91	10.38	10.50	80.31	82.40	84.57	86.92	87.42	90.68
46		9.17	9.09	9.01	8.91	8.57	8.23	180.85	185.36	190.03	195.05	198.43	199.97
47	PAPER	48.96	49.70	50.39	51.00	51.59	54.07	193.93	208.44	224.50	242.62	247.40	253.78
48		786.50	798.44	809.51	819.33	836.62	850.17	3115.59	3348.63	3606.67	3897.79	3923.90	3927.43
49		24.33	24.70	25.04	25.35	26.57	26.80	96.38	103.59	111.57	120.58	126.03	131.91

MARITIME TRADE BETWEEN CHINA AND EU-27 (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	9.52	9.49	9.44	9.38	8.96	8.90	113.92	122.79	132.33	142.70	147.77	149.87
51		74.52	74.26	73.81	73.29	70.10	68.49	806.11	868.78	936.30	1009.63	1056.78	1075.28
52		243.87	244.12	243.97	243.31	239.74	239.38	4224.41	4553.56	4908.21	5293.44	5442.18	5539.60
53		62.51	64.21	66.01	67.97	68.35	70.05	698.40	752.81	811.44	875.12	878.36	908.40
54		141.77	141.75	141.48	140.89	137.52	131.82	2493.87	2688.19	2897.56	3124.97	3234.35	3266.04
55		214.72	214.70	214.28	213.39	206.30	200.49	3777.15	4071.46	4388.57	4733.01	4882.09	4910.41
56		61.89	61.88	61.77	61.51	60.52	58.24	1088.74	1173.57	1264.97	1364.25	1385.26	1423.91
57		40.64	40.64	40.56	40.39	39.77	39.10	714.93	770.64	830.66	895.85	913.23	948.76
58		56.73	56.72	56.61	56.38	55.51	54.08	997.90	1075.65	1159.43	1250.43	1262.18	1274.18
59		71.23	72.07	72.85	73.52	77.12	80.61	1143.48	1230.49	1324.02	1425.61	1428.32	1469.03
60		71.43	71.43	71.29	70.99	68.56	68.08	1256.63	1354.54	1460.04	1574.63	1609.43	1663.19
61		104.53	103.70	102.74	101.63	100.61	97.36	13466.13	14370.68	15329.56	16357.13	16604.12	16956.13
62		75.82	74.97	74.04	73.02	70.07	68.82	13390.11	14283.40	15229.56	16242.81	16395.49	16782.42
63	115.33	115.24	114.94	114.39	112.36	107.19	1519.59	1638.05	1765.74	1904.57	1920.76	1959.17	
64	FOOTWEAR	24.08	23.54	22.96	22.32	21.88	21.40	4097.82	4384.74	4684.23	4997.64	5235.03	5375.86
65		24.23	24.72	25.21	25.70	25.93	26.11	1325.02	1414.01	1508.44	1609.76	1649.36	1670.14
66		38.02	37.76	37.43	37.02	35.84	34.09	1540.93	1654.81	1776.40	1907.80	1985.26	2012.85
67		44.47	44.17	43.79	43.31	42.52	42.02	1802.45	1935.66	2077.88	2231.58	2318.39	2373.57
68	STONE & GLASS	233.65	235.48	237.06	238.43	239.12	246.85	2726.87	2900.99	3091.92	3305.02	3372.77	3489.13
69		98.83	99.60	100.27	100.85	104.00	106.92	1153.38	1227.03	1307.79	1397.93	1437.21	1437.35
70		217.71	219.37	220.80	222.02	222.35	226.58	2574.37	2740.16	2921.80	3124.28	3140.21	3172.87
71	PRECIOUS STONES	104.69	107.78	110.97	114.27	117.23	119.39	995.21	1070.91	1152.22	1240.55	1255.94	1295.87
72	BASE METALS	3478.48	3601.95	3733.05	3873.87	3993.18	4175.27	11548.49	12072.52	12617.49	13194.47	13491.35	13575.00
73		2188.59	2226.66	2265.11	2304.55	2338.66	2438.29	10887.62	11581.37	12319.68	13119.84	13535.74	14002.72
74		3269.17	3300.23	3328.93	3356.65	3450.64	3465.48	2319.02	2515.69	2732.74	2975.22	3027.58	3079.66
75		251.64	258.79	266.06	273.40	279.74	290.57	579.77	631.15	687.54	750.09	763.97	780.09
76		617.60	632.24	646.96	661.69	674.46	680.60	2327.99	2510.89	2709.03	2926.75	3052.01	3200.34
77		---	---	---	---	---	---	---	---	---	---	---	---
78		164.36	169.07	173.85	178.69	179.37	183.69	367.85	400.73	436.85	476.94	485.24	486.06
79		169.26	174.10	179.03	184.01	192.15	199.02	378.81	412.67	449.86	491.14	514.86	521.30
80		128.40	132.02	135.68	139.39	146.35	152.92	306.86	333.76	363.26	395.96	399.85	402.88
81		808.37	832.83	857.76	883.03	884.80	909.84	1401.91	1538.06	1688.80	1857.08	1949.56	2028.71
82		593.81	598.74	603.11	606.93	624.90	628.08	5077.48	5431.51	5809.43	6220.13	6492.57	6726.95
83	367.40	370.45	373.15	375.52	389.75	403.16	3141.54	3360.59	3594.42	3848.52	3930.11	4118.76	
84	MACHINE	13657.91	13631.43	13579.82	13502.90	13316.56	13200.70	37578.38	40172.92	42974.65	46062.17	46877.47	48804.13
85		3256.46	3264.24	3266.18	3260.24	3178.41	3023.62	22394.55	23585.99	24850.30	26224.11	26722.37	27652.30
86	VEHICLES	2047.09	2019.25	1986.97	1950.69	1886.51	1803.88	2510.06	2759.36	3032.99	3337.36	3397.10	3508.19
87		9673.49	9665.38	9643.96	9614.44	9314.47	9002.43	5533.69	5977.71	6463.91	7005.42	7065.67	7316.50
88		560.68	552.44	542.95	532.31	505.86	493.06	734.97	808.13	888.42	977.68	997.24	1042.41
89		1601.15	1577.61	1550.48	1520.05	1496.03	1462.07	2064.81	2271.14	2497.62	2749.51	2786.63	2920.39
90	CLOCKS & MUSICAL INST.	2132.44	2127.06	2117.69	2104.47	2027.02	1930.74	4542.29	4899.53	5287.99	5718.43	5855.10	6080.53
91		1003.32	1000.78	996.36	990.13	961.32	918.73	2203.45	2376.03	2563.44	2770.71	2803.68	2908.54
92		106.78	106.06	105.15	104.00	103.55	103.31	4328.45	4648.34	4989.88	5358.98	5464.55	5647.62
93	ARMS	640.40	638.90	636.21	632.37	619.09	594.38	1406.91	1516.89	1636.40	1768.74	1803.94	1815.31
94	MISC. ART.	495.93	494.65	492.49	489.40	476.82	456.41	6359.18	6832.07	7338.27	7887.27	8265.07	8475.83
95		188.13	186.86	185.25	183.22	177.30	169.66	7625.88	8189.48	8791.20	9441.48	9691.68	10152.04
96		218.13	216.64	214.76	212.39	212.35	208.63	8974.25	9636.82	10343.92	11107.66	11159.87	11265.88
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

MARITIME TRADE BETWEEN JAPAN AND AUSTRALIA

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.10	0.10	0.10	0.10	0.09	0.09	0.01	0.01	0.01	0.01	0.01	0.01
02		884.23	873.99	864.42	855.45	833.21	816.55	0.07	0.07	0.07	0.07	0.07	0.06
03		231.35	226.28	221.65	217.35	206.96	198.62	7.42	7.35	7.29	7.23	7.00	6.99
04		238.92	238.11	237.71	237.62	233.41	227.60	1.10	1.10	1.10	1.09	1.08	1.07
05		10.83	10.65	10.49	10.34	9.96	9.64	0.51	0.52	0.52	0.53	0.54	0.55
06	VEGETABLE PRODUCTS	12.02	11.52	11.06	10.61	10.11	10.07	0.11	0.11	0.11	0.11	0.11	0.10
07		51.34	49.62	48.01	46.47	45.02	44.19	2.43	2.41	2.39	2.37	2.28	2.17
08		33.86	32.58	31.40	30.28	28.83	27.55	0.83	0.82	0.82	0.81	0.77	0.76
09		60.40	58.00	55.79	53.63	51.59	49.87	1.19	1.18	1.17	1.16	1.14	1.13
10		426.35	424.32	424.19	425.91	426.21	428.30	0.01	0.01	0.01	0.01	0.01	0.01
11		62.58	60.86	59.23	57.65	56.86	55.13	4.48	4.44	4.41	4.38	4.20	4.17
12		88.06	85.91	84.00	82.18	78.47	77.20	0.48	0.48	0.47	0.47	0.47	0.44
13		8.67	8.41	8.18	7.95	7.57	7.28	0.61	0.61	0.60	0.60	0.57	0.55
14		0.72	0.71	0.69	0.68	0.67	0.65	0.02	0.02	0.01	0.01	0.01	0.01
15	FATS & OILS	228.82	226.07	223.51	221.10	212.75	207.77	1.94	1.89	1.84	1.78	1.72	1.64
16	PREPARED FOODSTUFFS	31.13	30.01	28.94	27.89	26.52	26.38	1.94	1.92	1.91	1.89	1.82	1.81
17		188.65	183.42	178.76	174.10	165.60	160.64	0.09	0.09	0.09	0.09	0.09	0.10
18		16.72	16.21	15.73	15.26	14.83	14.17	1.09	1.08	1.07	1.06	1.01	0.97
19		34.04	33.05	32.11	31.20	30.27	30.24	2.45	2.42	2.40	2.38	2.36	2.27
20		92.92	90.20	87.63	85.15	83.04	81.60	6.68	6.61	6.56	6.50	6.48	6.18
21		32.70	32.04	31.43	30.86	30.40	29.31	1.59	1.57	1.56	1.55	1.50	1.44
22		59.71	59.07	58.44	57.84	56.83	56.50	4.12	4.14	4.15	4.18	4.22	4.28
23		6.74	6.51	6.29	6.08	5.96	5.84	0.48	0.47	0.47	0.46	0.45	0.44
24		19.29	18.97	18.67	18.39	18.28	17.41	1.11	1.11	1.12	1.12	1.18	1.18
25	MINERAL PRODUCTS	3945.88	3907.15	3871.45	3838.00	3830.71	3790.11	8.55	8.39	8.25	8.11	8.02	7.94
26		1696.43	1679.78	1664.45	1650.07	1608.99	1608.66	2.30	2.28	2.25	2.23	2.21	2.13
27		14291.90	14319.84	14410.44	14521.32	15121.05	15370.54	467.65	483.46	502.72	524.96	528.53	542.95
28	CHEMICAL PRODUCTS	109.31	110.73	112.51	114.56	116.34	118.79	233.45	229.08	224.94	220.66	210.65	208.12
29		39.97	40.03	40.22	40.50	42.44	44.46	188.75	183.48	178.19	172.55	165.90	165.87
30		1.43	1.43	1.44	1.45	1.52	1.54	6.85	6.66	6.46	6.26	6.00	5.76
31		69.54	68.91	68.34	67.82	64.69	63.99	20.01	19.45	18.89	18.30	17.71	17.06
32		5.58	5.59	5.62	5.67	5.80	5.90	27.09	26.34	25.58	24.77	23.86	22.71
33		4.14	4.15	4.18	4.21	4.23	4.37	20.13	19.57	19.00	18.40	17.89	17.50
34		3.66	3.66	3.67	3.69	3.72	3.76	17.25	16.75	16.25	15.71	15.61	15.38
35		14.27	14.14	14.04	13.95	13.72	13.27	6.27	6.10	5.93	5.75	5.53	5.36
36		1.13	1.10	1.07	1.05	1.03	1.00	4.08	3.93	3.77	3.61	3.52	3.42
37		3.62	3.63	3.65	3.68	3.69	3.70	17.58	17.09	16.60	16.07	16.05	15.59
38		7.10	7.10	7.13	7.17	7.35	7.58	36.58	35.56	34.53	33.45	31.95	31.00
39	PLASTICS	16.50	16.53	16.63	16.76	16.92	17.64	80.15	77.91	75.67	73.27	71.39	70.62
40		12.31	12.33	12.39	12.48	13.08	13.68	57.95	56.33	54.70	52.97	52.80	51.96
41	LEATHER GOODS	3.62	3.37	3.13	2.91	2.80	2.79	0.14	0.13	0.11	0.10	0.10	0.10
42		0.53	0.49	0.45	0.42	0.40	0.39	0.46	0.43	0.40	0.36	0.36	0.35
43		0.02	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
44	WOOD PRODUCTS	6.50	6.30	6.10	5.90	5.62	5.58	1.51	1.47	1.43	1.39	1.33	1.32
45		0.19	0.18	0.18	0.17	0.17	0.16	0.00	0.00	0.00	0.00	0.00	0.00
46		0.49	0.47	0.45	0.44	0.42	0.41	0.01	0.01	0.01	0.01	0.01	0.01
47	PAPER	0.23	0.22	0.22	0.22	0.22	0.21	5.89	5.79	5.69	5.59	5.41	5.29
48		3.54	3.50	3.46	3.42	3.35	3.34	92.81	91.12	89.56	87.96	84.75	84.41
49		0.07	0.07	0.07	0.07	0.07	0.06	1.88	1.85	1.81	1.78	1.72	1.65

MARITIME TRADE BETWEEN JAPAN AND AUSTRALIA (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	0.15	0.14	0.13	0.13	0.12	0.12	0.07	0.07	0.06	0.06	0.06	0.06
51		1.00	0.94	0.88	0.83	0.81	0.77	0.39	0.37	0.34	0.32	0.31	0.31
52		8.43	7.96	7.53	7.13	7.07	6.99	4.21	3.93	3.66	3.40	3.38	3.32
53		13.24	12.90	12.61	12.34	11.87	11.39	0.36	0.34	0.31	0.29	0.29	0.29
54		2.67	2.44	2.23	2.04	2.00	1.90	2.57	2.40	2.24	2.08	2.07	2.01
55		3.63	3.32	3.03	2.77	2.64	2.53	3.50	3.26	3.04	2.82	2.82	2.77
56		1.17	1.07	0.98	0.89	0.86	0.86	1.12	1.05	0.98	0.91	0.90	0.86
57		0.72	0.66	0.60	0.55	0.53	0.53	0.69	0.65	0.60	0.56	0.55	0.52
58		0.95	0.87	0.80	0.73	0.72	0.70	0.92	0.86	0.80	0.74	0.72	0.69
59		1.33	1.26	1.19	1.14	1.09	1.04	3.39	3.23	3.09	2.94	2.79	2.68
60		1.19	1.09	0.99	0.91	0.88	0.84	1.15	1.07	1.00	0.93	0.90	0.86
61		0.35	0.32	0.30	0.27	0.27	0.26	0.34	0.32	0.30	0.28	0.27	0.27
62		0.09	0.08	0.08	0.07	0.07	0.06	0.09	0.08	0.08	0.07	0.07	0.07
63	1.29	1.18	1.08	0.99	0.94	0.89	2.47	2.36	2.25	2.14	2.11	2.08	
64	FOOTWEAR	0.88	0.80	0.72	0.66	0.63	0.61	0.05	0.05	0.04	0.04	0.04	0.04
65		0.23	0.23	0.23	0.23	0.24	0.25	1.03	1.00	0.97	0.94	0.91	0.90
66		0.70	0.66	0.62	0.58	0.56	0.54	1.46	1.35	1.25	1.16	1.14	1.08
67		0.91	0.85	0.80	0.75	0.74	0.71	1.88	1.75	1.62	1.49	1.48	1.43
68	STONE & GLASS	4.73	4.61	4.51	4.40	4.38	4.23	17.93	17.42	16.94	16.45	16.34	15.61
69		1.34	1.31	1.28	1.25	1.24	1.21	5.08	4.93	4.80	4.66	4.49	4.39
70		4.78	4.65	4.54	4.43	4.23	4.17	17.80	17.29	16.81	16.33	15.73	15.17
71	PRECIOUS STONES	73.22	71.42	69.73	68.01	67.85	65.90	6.75	6.54	6.34	6.15	6.04	5.76
72	BASE METALS	38.44	38.32	38.32	38.41	39.05	39.85	326.41	317.50	308.80	299.97	286.42	279.91
73		12.49	12.35	12.24	12.16	11.68	11.53	131.06	127.09	123.26	119.40	115.25	112.86
74		386.37	370.21	354.89	338.98	332.74	328.48	1392.34	1378.55	1367.31	1356.48	1305.61	1288.51
75		123.87	118.61	113.63	108.45	105.76	103.10	20.30	19.87	19.49	19.11	18.26	17.93
76		192.10	183.95	176.23	168.21	164.35	157.25	36.85	35.96	35.18	34.40	33.49	32.77
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78		46.06	44.11	42.26	40.33	39.27	37.58	7.50	7.35	7.21	7.07	6.80	6.64
79		85.17	81.56	78.13	74.57	72.56	71.88	13.88	13.58	13.33	13.07	12.92	12.89
80		54.29	51.99	49.81	47.54	47.12	45.33	8.97	8.77	8.61	8.44	8.13	8.09
81		391.23	374.63	358.90	342.54	327.95	325.72	61.12	59.88	58.81	57.73	55.34	53.14
82		1.32	1.27	1.23	1.20	1.15	1.13	17.37	16.69	16.04	15.40	14.97	14.45
83	1.21	1.17	1.13	1.10	1.09	1.08	15.97	15.34	14.75	14.16	13.50	13.16	
84	MACHINE	41.72	40.69	39.75	38.86	37.85	36.20	1087.23	1059.72	1034.24	1008.62	1005.90	973.01
85		8.79	8.46	8.15	7.85	7.70	7.48	261.99	249.26	237.39	225.67	223.48	219.19
86	VEHICLES	15.55	15.15	14.71	14.22	14.12	13.58	144.10	141.35	138.82	136.23	131.97	131.01
87		40.93	40.26	39.59	38.90	38.64	38.54	4890.57	4842.97	4804.01	4766.53	4640.21	4454.14
88		4.68	4.55	4.42	4.27	4.24	4.18	19.35	18.74	18.15	17.54	17.03	16.52
89		12.82	12.49	12.11	11.70	11.45	11.17	53.18	51.50	49.88	48.19	48.05	46.11
90	CLOCKS & MUSICAL INST.	3.21	3.07	2.94	2.81	2.78	2.72	76.82	74.64	72.57	70.45	69.72	67.43
91		0.66	0.64	0.61	0.58	0.58	0.57	15.93	15.48	15.05	14.61	14.50	14.27
92		3.07	2.89	2.72	2.56	2.53	2.43	6.39	5.93	5.50	5.07	5.01	4.83
93	ARMS	0.97	0.93	0.89	0.85	0.85	0.83	23.37	22.71	22.07	21.43	20.63	20.22
94	MISC. ART.	5.50	5.20	4.92	4.64	4.55	4.51	27.46	26.28	25.15	24.02	23.13	22.68
95		3.64	3.43	3.23	3.03	2.99	2.85	7.56	7.02	6.51	6.00	5.97	5.93
96		6.14	5.78	5.44	5.11	5.09	5.02	12.68	11.78	10.92	10.07	9.81	9.68
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

MARITIME TRADE BETWEEN JAPAN AND CHINA

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.06	0.06	0.06	0.06	0.06	0.06	0.00	0.00	0.00	0.00	0.00	0.00
02		1157.68	1272.02	1387.81	1503.18	1530.54	1586.86	0.27	0.26	0.25	0.24	0.23	0.23
03		1512.75	1553.91	1595.97	1639.04	1647.56	1668.16	63.23	63.08	62.96	62.85	62.08	61.43
04		77.73	80.08	82.49	84.98	86.90	90.01	8.13	7.96	7.80	7.64	7.57	7.57
05		28.47	29.16	29.87	30.60	31.43	32.05	0.94	0.94	0.94	0.94	0.90	0.88
06	VEGETABLE PRODUCTS	60.70	64.55	68.71	73.17	73.32	75.99	3.50	3.55	3.60	3.64	3.79	3.93
07		600.67	615.26	630.27	645.76	675.01	691.68	21.86	21.79	21.72	21.66	20.68	19.70
08		392.37	399.67	407.33	415.39	420.83	439.94	9.02	8.97	8.93	8.89	8.47	8.36
09		358.89	378.18	398.83	420.78	436.18	447.79	20.10	20.28	20.45	20.57	21.46	22.41
10		339.53	349.05	359.28	370.52	371.97	379.41	0.26	0.25	0.24	0.23	0.22	0.22
11		681.56	702.06	722.88	744.08	765.73	775.76	35.40	35.34	35.30	35.25	34.13	33.73
12		332.38	352.35	373.92	397.17	398.99	409.37	11.16	11.35	11.55	11.72	12.20	12.36
13		105.30	108.51	111.77	115.10	119.57	119.89	5.28	5.27	5.27	5.26	5.19	4.97
14		29.38	30.64	32.01	33.45	34.20	34.57	0.99	1.01	1.04	1.06	1.07	1.08
15	FATS & OILS	631.24	680.93	732.77	785.70	805.42	830.47	45.81	46.31	46.79	47.20	47.43	48.56
16	PREPARED FOODSTUFFS	921.20	990.76	1061.23	1131.64	1142.05	1173.00	15.95	15.90	15.85	15.81	15.16	14.73
17		8.85	9.37	9.96	10.59	11.05	11.13	0.93	0.91	0.89	0.86	0.86	0.82
18		184.57	190.46	196.49	202.66	212.32	221.56	9.39	9.38	9.36	9.35	9.16	9.01
19		402.28	414.45	426.81	439.39	446.25	465.66	20.31	20.26	20.21	20.17	20.11	19.95
20		1097.95	1131.17	1164.92	1199.26	1255.15	1270.46	55.45	55.30	55.17	55.05	54.18	52.49
21		255.90	263.65	271.52	279.54	281.38	292.16	13.13	13.08	13.05	13.01	12.40	11.97
22		101.66	103.48	105.31	107.22	108.23	109.39	15.37	15.69	16.03	16.38	17.11	17.64
23		211.82	225.51	239.84	254.54	264.03	264.03	4.04	4.00	3.97	3.94	3.94	3.82
24		39.48	40.96	42.54	44.23	44.59	45.75	4.89	4.99	5.10	5.20	5.27	5.47
25	MINERAL PRODUCTS	541.83	548.35	555.33	562.84	582.94	584.51	168.79	175.72	183.27	191.56	200.81	209.47
26		169.04	169.78	170.69	171.79	171.96	176.15	52.02	55.06	58.36	61.96	64.16	64.99
27		3139.98	3253.68	3381.83	3520.88	3598.34	3680.38	3018.68	3277.72	3573.35	3911.81	3918.06	3939.22
28	CHEMICAL PRODUCTS	3190.00	3398.24	3622.23	3862.18	3951.40	3982.22	4521.38	4608.94	4696.32	4779.54	4916.24	5122.23
29		2927.50	3120.15	3327.15	3548.73	3682.88	3815.83	4090.02	4155.07	4217.36	4272.63	4402.51	4561.89
30		116.44	123.40	130.86	138.84	139.85	143.67	151.71	154.09	156.36	158.38	158.51	164.17
31		314.19	334.52	356.36	379.76	382.68	401.47	433.77	440.76	447.46	453.43	462.87	477.21
32		418.45	446.06	475.72	507.48	526.61	543.73	587.23	596.57	605.51	613.45	618.73	627.45
33		310.89	331.41	353.45	377.04	382.32	388.78	436.29	443.23	449.88	455.77	470.18	481.98
34		323.78	344.14	365.80	388.84	400.66	407.67	369.79	375.50	380.97	385.80	394.52	401.18
35		135.74	143.15	151.04	159.41	166.09	171.51	131.92	133.97	135.93	137.67	139.56	139.92
36		206.74	217.87	229.29	241.15	249.61	252.96	78.55	79.37	80.15	80.79	82.65	85.65
37		271.55	289.47	308.72	329.33	330.02	342.06	381.08	387.14	392.94	398.10	401.08	409.18
38		587.32	623.70	662.56	703.97	710.80	719.26	766.18	777.12	787.62	796.89	816.50	835.36
39	PLASTICS	1237.95	1319.62	1407.39	1501.34	1513.50	1532.12	1737.27	1764.90	1791.36	1814.84	1872.74	1917.50
40		907.88	967.37	1031.29	1099.72	1104.01	1113.62	1256.44	1276.43	1295.58	1312.57	1318.35	1361.85
41	LEATHER GOODS	2265.54	2312.28	2354.24	2392.27	2427.92	2501.24	7.29	7.16	7.02	6.88	6.86	6.74
42		478.33	489.82	500.56	510.77	519.82	538.01	6.45	6.33	6.21	6.08	5.93	5.66
43		0.26	0.26	0.26	0.26	0.25	0.24	0.01	0.01	0.01	0.01	0.01	0.01
44	WOOD PRODUCTS	1110.28	1142.36	1175.59	1209.40	1243.63	1297.73	44.06	44.41	44.74	45.00	46.91	48.25
45		29.71	30.55	31.42	32.31	32.56	34.13	0.43	0.43	0.43	0.42	0.42	0.41
46		94.05	96.69	99.41	102.17	107.02	111.48	1.24	1.23	1.21	1.20	1.15	1.09
47	PAPER	54.29	57.26	60.35	63.57	63.68	66.36	37.03	37.44	37.85	38.23	39.23	40.13
48		854.96	901.82	950.36	1001.13	1011.04	1030.86	583.20	589.56	596.03	602.13	617.96	631.81
49		17.32	18.27	19.25	20.28	21.04	21.11	11.81	11.94	12.07	12.20	12.24	12.69

MARITIME TRADE BETWEEN JAPAN AND CHINA (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	27.18	27.20	27.19	27.13	26.47	25.46	9.49	9.55	9.62	9.67	10.00	10.19
51		152.21	152.37	152.27	151.94	144.84	138.51	53.16	53.52	53.85	54.13	56.11	57.61
52		1632.49	1634.24	1633.18	1629.61	1599.79	1559.80	570.22	573.98	577.60	580.60	603.53	615.00
53		140.77	140.96	140.91	140.65	138.66	132.21	48.83	49.15	49.46	49.71	50.28	50.78
54		996.67	997.73	997.08	994.89	992.31	965.71	348.20	350.50	352.71	354.54	364.68	382.15
55		1355.33	1356.77	1355.88	1352.91	1300.42	1242.55	473.51	476.62	479.63	482.12	489.98	511.59
56		436.03	436.49	436.20	435.25	430.03	412.48	152.33	153.34	154.30	155.11	158.10	159.11
57		268.78	269.06	268.89	268.30	266.98	255.37	93.90	94.52	95.12	95.61	99.73	104.67
58		355.64	356.02	355.79	355.01	338.86	331.23	124.25	125.07	125.86	126.51	132.71	138.20
59		364.44	374.01	383.46	392.94	412.08	424.15	115.32	116.14	116.91	117.54	120.57	123.07
60		444.61	445.08	444.79	443.81	424.42	408.54	155.33	156.35	157.34	158.16	164.15	165.07
61		2016.12	2047.07	2075.64	2103.12	2204.49	2231.39	37.07	37.27	37.46	37.61	38.18	39.78
62		1567.61	1592.73	1616.04	1638.58	1676.92	1695.87	4.41	4.39	4.38	4.37	4.23	4.17
63	478.53	479.78	480.22	479.95	471.40	454.06	179.42	180.34	181.23	181.95	187.48	190.33	
64	FOOTWEAR	877.84	896.14	912.58	927.47	940.92	959.27	2.62	2.56	2.51	2.44	2.35	2.29
65		434.94	442.69	450.03	457.24	457.51	466.30	23.05	23.40	23.73	24.02	24.16	24.90
66		225.15	236.45	247.86	259.54	269.42	270.37	17.52	17.20	16.87	16.52	16.31	15.75
67		290.66	305.25	319.98	335.05	351.37	362.79	22.62	22.20	21.78	21.32	21.19	20.81
68	STONE & GLASS	694.50	719.25	744.59	770.80	794.54	828.23	299.50	300.43	301.43	302.38	314.36	325.61
69		196.68	203.69	210.87	218.29	219.88	230.31	84.82	85.08	85.37	85.64	88.25	92.50
70		725.06	749.53	774.52	800.31	805.83	837.91	309.45	310.47	311.54	312.55	325.49	328.19
71	PRECIOUS STONES	301.32	317.85	334.87	352.49	355.80	365.76	99.82	101.07	102.32	103.55	108.65	110.57
72	BASE METALS	1938.93	2017.62	2097.89	2180.39	2186.27	2247.27	5575.28	5662.94	5752.05	5843.27	5908.13	6119.64
73		2378.56	2481.33	2584.19	2687.96	2779.62	2820.48	2135.55	2153.17	2171.50	2190.22	2230.31	2313.94
74		1210.86	1290.46	1375.47	1465.15	1486.40	1520.43	2424.48	2436.40	2448.72	2461.55	2566.66	2640.32
75		282.59	302.75	324.37	347.11	347.59	358.26	309.15	314.69	320.26	325.83	326.87	331.22
76		719.23	762.96	808.94	856.72	879.08	922.95	562.63	570.99	579.43	587.86	608.20	611.48
77		---	---	---	---	---	---	---	---	---	---	---	---
78		102.79	110.18	118.12	126.47	130.84	134.50	114.29	116.35	118.42	120.49	124.80	129.76
79		190.05	203.73	218.41	233.85	242.90	243.00	211.32	215.13	218.96	222.80	229.30	234.51
80		127.48	136.47	146.11	156.24	163.03	168.24	136.57	139.00	141.44	143.88	148.60	152.77
81		736.05	792.79	854.16	918.99	930.66	959.88	930.12	947.75	965.45	983.16	992.01	1002.43
82		901.35	941.41	981.41	1021.70	1070.95	1102.76	269.25	268.55	267.98	267.37	266.44	253.46
83		828.51	865.33	902.10	939.14	983.56	1001.26	247.49	246.85	246.32	245.77	240.70	239.28
84	MACHINE	12738.68	13249.54	13755.81	14261.65	14810.72	14828.50	10841.32	10781.75	10726.84	10666.21	10179.83	10090.25
85		6843.82	7103.65	7364.61	7629.03	7646.58	7866.80	3737.48	3733.64	3730.69	3720.79	3560.42	3498.47
86	VEHICLES	465.11	498.96	532.90	566.99	587.07	600.10	132.15	130.88	129.63	128.39	124.94	120.90
87		2357.54	2484.05	2613.99	2748.75	2782.01	2784.51	5627.30	5607.06	5588.00	5570.75	5375.77	5237.08
88		140.62	150.64	160.66	170.69	173.60	175.61	14.97	14.68	14.39	14.09	14.06	13.77
89		371.34	398.88	426.45	454.08	476.37	485.09	35.80	34.97	34.14	33.30	31.87	30.32
90	CLOCKS & MUSICAL INST.	1122.48	1168.45	1213.65	1258.42	1278.81	1309.76	1118.13	1109.97	1102.31	1094.41	1057.09	1014.49
91		238.51	248.07	257.46	266.73	268.41	281.00	231.90	230.21	228.63	226.99	224.81	220.29
92		986.52	1036.05	1086.03	1137.20	1147.89	1196.67	76.78	75.36	73.92	72.37	72.17	69.35
93	ARMS	348.92	363.23	377.30	391.24	409.78	413.88	340.53	338.07	335.77	333.39	333.19	327.39
94	MISC. ART.	1754.22	1838.69	1923.68	2010.34	2089.95	2170.41	389.55	386.00	382.51	378.79	373.98	373.23
95		1167.89	1226.53	1285.70	1346.27	1400.39	1423.36	90.90	89.22	87.51	85.67	83.33	81.44
96		1996.85	2095.98	2195.93	2298.16	2349.64	2424.59	152.54	149.73	146.86	143.78	138.66	137.04
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	

MARITIME TRADE BETWEEN JAPAN AND SOUTH KOREA

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
02		2.00	1.94	1.86	1.77	1.76	1.69	0.53	0.50	0.47	0.44	0.43	0.41
03		214.66	212.03	209.55	207.17	201.83	200.01	181.71	178.85	176.00	173.26	170.82	168.96
04		8.19	8.22	8.24	8.26	8.28	8.44	3.61	3.53	3.45	3.37	3.28	3.24
05		6.25	6.18	6.11	6.05	5.78	5.49	5.81	5.73	5.65	5.58	5.54	5.39
06	VEGETABLE PRODUCTS	3.06	3.33	3.60	3.86	3.90	3.97	1.57	1.45	1.34	1.23	1.17	1.13
07		62.69	62.53	62.29	61.97	60.09	58.94	14.82	14.41	14.00	13.59	12.94	12.59
08		55.66	55.79	55.81	55.74	54.89	54.54	5.12	4.97	4.83	4.69	4.61	4.46
09		20.63	21.64	22.68	23.70	24.23	24.63	10.57	9.94	9.34	8.75	8.68	8.55
10		0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
11		53.76	53.15	52.53	51.89	51.40	50.66	26.32	25.64	24.96	24.27	23.95	23.04
12		13.00	13.62	14.26	14.90	15.28	15.90	10.11	9.69	9.28	8.87	8.47	8.15
13		6.55	6.47	6.38	6.29	6.19	5.90	3.84	3.74	3.64	3.54	3.44	3.38
14		0.05	0.05	0.05	0.05	0.05	0.05	0.77	0.77	0.78	0.79	0.82	0.82
15	FATS & OILS	4.89	4.65	4.40	4.14	4.00	3.82	24.58	24.22	23.85	23.45	22.71	22.03
16	PREPARED FOODSTUFFS	21.40	21.09	20.78	20.44	19.62	18.99	11.83	11.49	11.16	10.83	10.35	9.93
17		1.04	1.04	1.03	1.03	1.03	0.99	2.33	2.32	2.32	2.31	2.30	2.24
18		11.89	11.77	11.66	11.54	11.29	11.20	6.71	6.52	6.32	6.12	6.00	5.99
19		26.12	25.77	25.41	25.05	24.09	24.08	14.84	14.44	14.03	13.62	13.48	13.05
20		71.30	70.34	69.37	68.36	66.53	64.16	40.51	39.40	38.29	37.17	37.12	35.75
21		16.78	16.56	16.34	16.11	15.49	14.95	9.48	9.22	8.96	8.70	8.69	8.68
22		105.59	105.32	105.05	104.84	103.86	101.25	15.99	15.97	15.94	15.91	15.64	15.60
23		4.43	4.37	4.30	4.24	4.12	4.01	4.39	4.28	4.18	4.06	3.89	3.83
24		28.95	28.97	28.98	29.02	29.46	30.43	4.55	4.51	4.47	4.43	4.29	4.21
25	MINERAL PRODUCTS	37.14	36.91	36.73	36.59	35.32	33.88	134.20	132.87	131.60	130.41	127.00	121.21
26		11.54	11.44	11.36	11.29	10.80	10.77	25.08	25.46	25.87	26.32	26.81	27.99
27		2569.94	2598.65	2633.45	2673.53	2683.43	2716.70	962.65	998.96	1039.05	1083.57	1098.96	1116.10
28	CHEMICAL PRODUCTS	580.84	561.22	541.10	520.54	518.04	493.79	2294.62	2276.42	2256.87	2234.62	2231.71	2211.85
29		370.52	349.74	328.04	305.53	296.92	295.02	2116.72	2096.92	2075.58	2051.34	1984.06	1916.20
30		13.56	12.79	11.99	11.16	10.76	10.60	76.76	76.03	75.24	74.35	71.63	69.72
31		39.47	37.28	34.98	32.61	31.48	30.02	224.40	222.33	220.09	217.55	214.59	206.23
32		53.08	50.10	46.98	43.75	42.15	41.38	303.89	301.05	297.98	294.51	290.35	277.46
33		39.44	37.22	34.91	32.51	31.75	30.85	225.78	223.67	221.39	218.81	217.08	208.27
34		33.86	31.97	30.00	27.95	27.35	26.78	190.46	188.60	186.60	184.34	181.56	181.14
35		14.67	13.98	13.25	12.51	12.32	12.22	68.68	68.01	67.29	66.48	63.65	63.24
36		8.18	7.75	7.31	6.85	6.71	6.63	38.37	37.82	37.23	36.60	35.31	33.95
37		34.45	32.51	30.49	28.39	27.31	26.28	197.21	195.36	193.38	191.12	182.80	177.36
38		71.97	68.28	64.43	60.45	57.52	55.81	401.18	396.81	392.16	386.99	374.88	369.71
39	PLASTICS	157.04	148.21	139.00	129.44	128.23	123.79	899.03	890.63	881.57	871.27	836.07	807.40
40		113.54	107.16	100.50	93.59	92.51	91.95	650.27	644.20	637.66	630.23	626.70	620.81
41	LEATHER GOODS	6.65	6.16	5.70	5.26	5.05	4.84	2.77	2.59	2.43	2.27	2.19	2.11
42		2.47	2.33	2.19	2.06	2.03	1.97	2.20	2.06	1.93	1.80	1.79	1.77
43		0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
44	WOOD PRODUCTS	5.44	5.23	5.01	4.78	4.68	4.58	19.01	18.79	18.56	18.31	18.01	17.56
45		0.08	0.07	0.07	0.07	0.07	0.07	0.13	0.12	0.12	0.12	0.12	0.12
46		0.25	0.24	0.23	0.23	0.22	0.22	0.30	0.29	0.28	0.27	0.27	0.27
47	PAPER	4.00	3.99	3.97	3.95	3.85	3.85	10.53	10.43	10.32	10.20	9.93	9.92
48		63.01	62.80	62.53	62.21	61.68	59.47	165.91	164.19	162.50	160.70	154.34	147.31
49		1.28	1.27	1.27	1.26	1.24	1.19	3.36	3.33	3.29	3.25	3.21	3.06

MARITIME TRADE BETWEEN JAPAN AND SOUTH KOREA (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	0.47	0.43	0.40	0.36	0.34	0.33	0.63	0.59	0.55	0.50	0.49	0.48
51		2.65	2.42	2.22	2.02	2.00	1.95	3.53	3.29	3.05	2.83	2.71	2.61
52		28.37	26.00	23.77	21.66	21.54	20.71	37.90	35.27	32.75	30.31	30.27	29.56
53		2.43	2.23	2.04	1.85	1.78	1.78	3.25	3.02	2.80	2.60	2.54	2.50
54		17.33	15.88	14.51	13.23	12.89	12.54	23.14	21.54	20.00	18.51	17.84	17.37
55		23.56	21.59	19.74	17.99	17.64	16.88	31.47	29.29	27.19	25.17	25.01	23.83
56		7.58	6.95	6.35	5.79	5.61	5.59	10.12	9.42	8.75	8.10	7.78	7.67
57		4.67	4.28	3.91	3.57	3.41	3.26	6.24	5.81	5.39	4.99	4.80	4.67
58		6.18	5.67	5.18	4.72	4.65	4.52	8.26	7.69	7.14	6.60	6.44	6.43
59		8.81	8.27	7.73	7.19	7.15	7.15	27.85	27.15	26.44	25.71	24.89	23.84
60		7.73	7.08	6.47	5.90	5.80	5.65	10.32	9.61	8.92	8.26	8.10	7.73
61		13.88	13.08	12.30	11.56	11.51	10.97	5.07	4.73	4.40	4.09	4.03	3.92
62		10.02	9.47	8.94	8.43	8.40	8.01	2.42	2.26	2.10	1.96	1.87	1.81
63	10.20	9.50	8.83	8.21	8.05	7.99	16.76	15.86	14.99	14.14	13.53	13.38	
64	FOOTWEAR	2.59	2.40	2.22	2.04	1.95	1.89	0.84	0.77	0.71	0.65	0.64	0.62
65		4.66	4.40	4.14	3.89	3.86	3.70	11.97	11.82	11.66	11.49	11.28	10.96
66		3.11	2.98	2.85	2.71	2.59	2.52	5.86	5.52	5.18	4.84	4.82	4.82
67		4.01	3.84	3.67	3.50	3.48	3.31	7.56	7.13	6.69	6.25	5.99	5.77
68	STONE & GLASS	52.20	51.66	51.17	50.72	50.20	50.00	369.52	359.77	349.89	339.88	337.37	323.64
69		14.78	14.63	14.49	14.36	14.22	13.58	104.65	101.89	99.09	96.26	93.26	89.52
70		52.22	51.63	51.09	50.60	48.33	47.13	365.74	356.05	346.23	336.29	333.34	326.80
71	PRECIOUS STONES	16.98	16.67	16.36	16.04	15.91	15.18	34.04	33.48	32.87	32.22	30.81	29.28
72	BASE METALS	1616.92	1622.81	1631.33	1642.63	1680.74	1749.99	4413.35	4330.68	4247.21	4164.18	4049.25	4026.98
73		614.58	613.65	613.63	614.52	584.96	588.76	1266.21	1239.21	1212.10	1185.07	1127.71	1090.95
74		233.46	231.88	230.42	228.84	218.35	212.92	612.01	606.12	599.74	592.84	577.07	571.12
75		52.34	51.75	51.19	50.58	49.43	49.29	95.74	94.84	93.82	92.65	90.99	89.87
76		114.07	112.84	111.72	110.55	109.06	106.68	165.81	163.64	161.31	158.75	154.77	149.72
77		---	---	---	---	---	---	---	---	---	---	---	---
78		19.19	18.98	18.77	18.55	18.36	17.93	35.46	35.13	34.76	34.33	33.71	33.27
79		35.49	35.09	34.71	34.30	33.02	31.95	65.57	64.96	64.28	63.48	60.59	60.09
80		23.36	23.10	22.85	22.58	22.27	22.02	42.19	41.78	41.33	40.80	40.31	39.27
81		146.99	145.29	143.68	141.89	137.20	133.00	292.75	290.33	287.54	284.25	277.77	268.72
82		105.73	104.75	103.90	103.17	100.38	97.44	56.43	53.95	51.53	49.15	46.98	45.21
83	97.18	96.28	95.51	94.83	94.26	89.82	51.87	49.59	47.36	45.17	44.98	44.15	
84	MACHINE	1319.59	1299.35	1280.62	1262.88	1226.38	1211.42	3307.72	3219.80	3131.31	3039.53	2917.65	2912.39
85		488.29	480.36	473.08	466.16	463.36	459.70	971.50	941.49	911.68	880.83	859.42	833.64
86	VEHICLES	13.66	13.73	13.78	13.83	14.43	14.60	71.90	70.15	68.22	66.15	63.64	61.39
87		346.58	346.72	346.98	347.38	350.47	365.75	1263.61	1248.54	1232.89	1216.90	1158.85	1106.36
88		2.71	2.72	2.73	2.73	2.78	2.89	16.44	15.94	15.40	14.82	14.26	13.69
89		7.19	7.24	7.27	7.30	7.47	7.75	44.84	43.51	42.05	40.46	38.91	37.90
90	CLOCKS & MUSICAL INST.	131.76	129.58	127.54	125.60	120.12	114.89	363.32	353.84	344.25	334.29	325.83	320.69
91		27.33	26.88	26.46	26.06	25.44	25.36	75.35	73.39	71.40	69.34	67.55	65.56
92		13.61	13.04	12.47	11.89	11.47	11.25	25.66	24.21	22.72	21.21	20.65	19.94
93	ARMS	41.43	40.77	40.14	39.55	38.60	37.96	110.09	107.20	104.28	101.26	101.22	100.39
94	MISC. ART.	54.04	52.59	51.17	49.77	48.70	47.55	132.44	127.90	123.29	118.56	113.19	112.39
95		16.11	15.44	14.76	14.08	13.69	13.05	30.38	28.66	26.89	25.10	23.90	23.67
96		27.14	26.00	24.85	23.69	23.21	22.07	50.98	48.09	45.13	42.13	40.13	38.99
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

MARITIME TRADE BETWEEN JAPAN AND U.S.

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.02	0.02	0.02	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00
02		477.85	439.80	403.84	370.21	358.59	354.75	5.68	5.79	5.90	5.97	6.15	6.37
03		395.55	381.07	367.51	354.86	339.61	333.97	113.63	114.36	114.97	115.05	120.40	126.01
04		140.77	137.73	134.98	132.63	131.12	129.32	5.48	5.50	5.51	5.49	5.46	5.21
05		6.36	6.15	5.95	5.76	5.48	5.35	2.35	2.37	2.40	2.41	2.51	2.62
06	VEGETABLE PRODUCTS	63.42	61.25	59.16	57.03	55.24	53.01	1.56	1.56	1.55	1.53	1.49	1.46
07		347.60	333.64	320.47	307.89	298.77	294.65	28.88	28.94	28.96	28.84	27.75	26.58
08		326.00	312.65	300.02	287.86	286.40	284.22	11.49	11.51	11.52	11.48	10.90	10.87
09		218.36	209.95	201.68	193.12	183.92	180.78	14.53	14.52	14.49	14.39	14.08	13.53
10		4241.37	4161.94	4083.38	4006.62	3940.51	3786.04	0.47	0.46	0.44	0.43	0.41	0.39
11		367.42	357.21	347.58	338.66	331.88	328.90	49.54	49.70	49.78	49.61	51.20	48.57
12		910.54	890.09	869.78	848.50	820.50	797.36	7.64	7.64	7.64	7.61	7.47	7.42
13		55.51	53.71	52.07	50.56	49.90	47.79	6.87	6.88	6.89	6.86	7.00	6.91
14		119.07	116.02	113.36	110.96	106.01	101.00	0.50	0.50	0.49	0.49	0.48	0.46
15	FATS & OILS	240.78	224.94	210.05	195.82	192.47	188.35	29.42	29.09	28.73	28.22	27.14	26.88
16	PREPARED FOODSTUFFS	282.45	260.79	240.40	221.30	211.72	210.13	21.66	21.71	21.73	21.64	20.83	20.38
17		15.57	15.25	14.96	14.72	14.45	14.24	0.13	0.13	0.13	0.13	0.14	0.14
18		61.75	59.41	57.19	55.10	52.72	52.65	12.16	12.18	12.19	12.14	11.68	11.19
19		126.12	121.34	116.86	112.68	108.99	105.81	27.28	27.35	27.37	27.25	27.26	26.04
20		344.24	331.18	318.94	307.53	298.61	296.22	74.46	74.64	74.70	74.37	70.00	66.68
21		85.80	82.66	79.72	76.98	76.94	74.00	17.38	17.42	17.44	17.36	17.53	16.59
22		1633.56	1610.45	1588.15	1567.89	1494.83	1446.55	41.50	42.00	42.45	42.74	44.61	46.79
23		84.84	80.21	75.88	71.75	70.59	67.79	8.35	8.33	8.30	8.23	8.22	7.89
24		450.39	443.74	437.29	431.37	427.57	418.72	11.25	11.38	11.50	11.57	12.07	12.58
25	MINERAL PRODUCTS	527.30	523.41	520.16	517.53	496.62	476.36	58.71	58.37	57.94	57.24	55.08	53.02
26		220.56	219.18	218.05	217.15	216.74	212.73	11.00	10.96	10.91	10.82	10.55	10.14
27		1770.39	1813.73	1867.31	1928.64	2020.83	2044.48	1869.30	1951.05	2040.85	2134.01	2236.87	2321.42
28	CHEMICAL PRODUCTS	1796.26	1754.06	1718.44	1689.23	1629.60	1567.83	1863.91	1845.01	1821.61	1787.73	1744.65	1669.45
29		1612.30	1569.76	1533.04	1502.02	1474.08	1461.99	1647.75	1623.87	1595.12	1556.11	1518.61	1474.11
30		58.29	56.74	55.40	54.27	51.77	51.36	60.07	59.19	58.13	56.70	55.23	55.14
31		178.29	173.76	169.86	166.56	159.67	159.03	174.30	171.78	168.74	164.62	164.34	162.84
32		230.92	224.83	219.58	215.15	213.12	205.56	236.48	233.06	228.93	223.33	218.03	216.38
33		171.57	167.04	163.14	159.85	158.31	154.99	175.70	173.15	170.09	165.92	165.69	163.92
34		146.97	142.92	139.41	136.43	132.09	131.02	152.70	150.21	147.28	143.40	142.99	136.90
35		69.28	67.34	65.62	64.13	63.14	60.13	55.14	54.39	53.48	52.23	51.35	49.34
36		34.77	33.41	32.20	31.14	30.83	29.54	41.08	39.80	38.42	36.80	35.31	34.34
37		149.85	145.90	142.50	139.62	134.33	132.24	153.47	151.24	148.56	144.93	143.75	139.28
38		294.56	286.31	279.15	273.08	269.48	266.59	329.14	324.48	318.85	311.15	295.87	289.74
39	PLASTICS	683.15	665.15	649.61	636.49	629.56	611.80	699.62	689.48	677.26	660.69	643.38	627.43
40		563.21	548.47	535.73	524.90	503.70	483.04	505.85	498.51	489.68	477.70	461.27	454.81
41	LEATHER GOODS	17.26	15.63	14.16	12.86	12.78	12.44	0.72	0.66	0.60	0.54	0.54	0.52
42		6.11	5.58	5.09	4.66	4.60	4.42	6.40	6.01	5.60	5.17	5.00	4.83
43		0.03	0.03	0.03	0.03	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00
44	WOOD PRODUCTS	159.54	155.24	151.44	148.00	143.27	142.25	22.73	22.57	22.35	21.97	20.94	19.95
45		7.76	7.56	7.38	7.22	7.22	7.20	0.30	0.30	0.30	0.30	0.28	0.27
46		1.90	1.82	1.75	1.69	1.63	1.59	0.96	0.96	0.96	0.95	0.91	0.87
47	PAPER	45.62	44.26	43.00	41.88	40.55	40.03	14.40	14.42	14.41	14.33	13.89	13.58
48		718.48	697.07	677.25	659.51	633.00	613.12	226.78	227.12	227.01	225.60	221.95	219.48
49		14.55	14.12	13.72	13.36	12.88	12.42	4.59	4.60	4.60	4.57	4.39	4.21

MARITIME TRADE BETWEEN JAPAN AND U.S. (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	0.38	0.34	0.30	0.27	0.26	0.25	1.31	1.27	1.23	1.18	1.13	1.10
51		2.13	1.89	1.68	1.49	1.44	1.40	7.33	7.13	6.91	6.64	6.55	6.23
52		29.81	27.02	24.56	22.37	21.57	20.73	78.66	76.50	74.09	71.18	70.83	67.60
53		24.03	23.22	22.44	21.68	21.12	21.08	6.74	6.55	6.34	6.09	5.94	5.86
54		13.95	12.37	10.97	9.75	9.31	9.10	48.03	46.71	45.24	43.47	42.39	41.77
55		18.97	16.82	14.92	13.26	12.61	12.15	65.32	63.52	61.53	59.11	57.06	55.15
56		6.10	5.41	4.80	4.26	4.07	3.87	21.01	20.44	19.79	19.02	18.38	17.70
57		3.76	3.33	2.96	2.63	2.59	2.49	12.95	12.60	12.20	11.72	11.63	11.54
58		4.98	4.41	3.91	3.48	3.43	3.37	17.14	16.67	16.14	15.51	15.46	14.90
59		27.16	25.80	24.58	23.50	22.41	21.78	38.04	36.74	35.34	33.72	32.61	31.91
60		6.22	5.52	4.89	4.35	4.29	4.10	21.43	20.84	20.18	19.39	19.20	18.86
61		9.32	8.38	7.54	6.81	6.49	6.26	8.61	8.37	8.11	7.79	7.48	7.48
62		6.56	5.91	5.33	4.82	4.64	4.46	3.45	3.35	3.25	3.12	3.03	2.93
63	11.39	10.35	9.42	8.62	8.48	8.08	37.06	36.25	35.33	34.17	32.85	31.99	
64	FOOTWEAR	5.62	5.02	4.50	4.03	3.97	3.82	0.27	0.24	0.22	0.20	0.19	0.18
65		10.36	9.96	9.61	9.30	9.11	8.87	9.73	9.58	9.40	9.15	8.99	8.88
66		12.36	11.41	10.54	9.75	9.60	9.34	20.38	19.12	17.83	16.43	16.30	15.78
67		15.96	14.73	13.61	12.59	12.11	11.76	26.32	24.69	23.01	21.22	20.63	20.27
68	STONE & GLASS	99.27	95.38	91.90	88.85	84.84	84.13	178.78	177.18	175.18	172.19	164.41	158.33
69		28.11	27.01	26.03	25.16	24.66	23.72	50.63	50.18	49.61	48.76	46.38	44.65
70		98.56	94.66	91.16	88.10	87.12	85.07	178.41	176.77	174.75	171.72	169.28	162.16
71	PRECIOUS STONES	38.46	36.94	35.62	34.48	33.80	33.40	32.38	31.09	29.75	28.28	27.51	26.16
72	BASE METALS	110.09	108.71	107.85	107.61	105.02	100.80	985.97	967.62	947.53	923.37	904.90	872.23
73		272.71	258.89	246.59	235.96	234.47	227.69	874.32	857.78	839.11	815.51	811.27	803.64
74		429.73	418.94	410.00	402.80	385.23	375.37	9680.52	9787.28	9878.31	9920.99	10196.79	10574.07
75		76.86	74.82	73.23	72.01	70.50	69.06	46.90	46.72	46.51	46.15	45.30	44.29
76		147.74	143.11	139.33	136.30	132.43	129.09	140.87	139.03	136.98	134.30	129.55	128.63
77		---	---	---	---	---	---	---	---	---	---	---	---
78		28.35	27.60	27.02	26.58	26.43	26.38	16.88	16.83	16.77	16.65	16.62	15.89
79		52.42	51.04	49.96	49.14	48.92	48.81	31.22	31.12	31.00	30.78	29.86	28.53
80		34.06	33.14	32.43	31.88	30.70	29.79	21.44	21.34	21.22	21.04	20.23	20.00
81		226.88	221.24	216.94	213.71	208.01	206.63	110.20	110.50	110.80	110.82	116.27	119.45
82		92.06	87.36	83.16	79.51	78.20	74.46	218.32	213.33	207.81	201.04	194.09	186.01
83		84.62	80.30	76.44	73.08	72.53	69.04	200.68	196.09	191.02	184.80	180.71	178.00
84	MACHINE	3092.71	2910.36	2745.57	2599.19	2565.14	2527.18	10559.44	10467.12	10347.15	10160.92	9965.83	9764.52
85		909.08	855.03	806.31	762.93	751.56	744.35	2199.57	2143.26	2082.20	2007.80	1913.03	1851.05
86	VEHICLES	1580.46	1509.55	1441.92	1379.16	1369.37	1362.66	1769.76	1771.20	1769.59	1758.84	1713.11	1658.29
87		2302.68	2213.45	2129.53	2052.99	2034.52	1935.64	35859.73	36238.99	36559.16	36698.80	37986.93	39783.71
88		483.75	461.95	441.17	421.87	404.11	395.06	366.09	364.50	362.27	358.13	341.44	328.80
89		1330.00	1270.10	1212.96	1159.92	1112.37	1070.77	1005.95	1001.61	995.50	984.12	979.59	955.10
90	CLOCKS & MUSICAL INST.	296.04	277.60	261.01	246.35	237.11	233.41	889.83	878.18	863.69	843.07	808.51	776.17
91		61.34	57.52	54.08	51.04	49.81	49.78	184.44	182.04	179.05	174.79	168.67	167.58
92		54.16	50.00	46.18	42.72	42.56	42.43	89.32	83.80	78.11	72.01	70.62	69.52
93	ARMS	90.37	84.77	79.73	75.27	72.77	69.62	270.94	267.38	262.95	256.66	245.09	240.58
94	MISC. ART.	153.42	142.97	133.46	124.95	119.07	113.71	339.02	328.16	316.40	302.62	297.54	296.77
95		64.12	59.20	54.67	50.57	50.50	50.24	105.74	99.20	92.47	85.25	83.76	82.90
96		107.78	99.49	91.88	84.99	82.27	81.46	177.33	166.37	155.07	142.97	138.89	134.46
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

MARITIME TRADE BETWEEN JAPAN AND ASEAN

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
02		233.02	232.40	227.26	220.91	211.96	204.18	4.16	4.01	3.86	3.71	3.71	3.62
03		860.17	855.76	847.85	840.54	811.88	779.16	76.74	76.21	75.51	74.79	72.68	71.15
04		52.59	52.48	52.12	51.80	51.19	48.68	8.59	8.56	8.51	8.46	8.25	8.21
05		14.38	14.32	14.20	14.11	13.51	12.85	1.20	1.20	1.19	1.18	1.13	1.13
06	VEGETABLE PRODUCTS	131.95	134.46	136.28	138.33	138.65	141.45	1.02	0.98	0.94	0.90	0.88	0.87
07		549.45	548.30	544.22	540.77	538.17	537.79	24.72	24.49	24.21	23.92	23.39	23.02
08		464.24	464.16	461.37	459.28	457.40	438.51	9.40	9.28	9.15	9.01	8.68	8.63
09		215.15	216.98	217.11	217.28	226.04	226.38	11.01	10.79	10.56	10.31	10.10	10.06
10		90.74	92.26	92.94	93.65	98.33	101.28	1.67	1.57	1.49	1.41	1.37	1.32
11		430.23	427.73	423.34	419.16	418.32	410.62	41.90	41.60	41.20	40.79	40.06	39.29
12		150.77	152.97	153.92	154.97	158.07	161.31	4.55	4.43	4.31	4.18	4.12	4.07
13		178.38	180.30	181.51	183.01	183.23	190.54	6.06	6.01	5.94	5.88	5.82	5.74
14		568.93	580.12	589.16	599.43	600.69	605.26	0.56	0.55	0.55	0.54	0.53	0.53
15	FATS & OILS	489.02	490.53	487.49	483.84	460.57	457.99	23.24	22.87	22.42	21.93	20.94	20.13
16	PREPARED FOODSTUFFS	320.73	319.24	314.51	309.22	297.69	287.30	19.55	19.34	19.07	18.81	18.22	18.03
17		222.13	224.55	226.12	227.90	237.06	237.46	0.80	0.80	0.80	0.79	0.77	0.74
18		116.30	115.73	114.62	113.57	110.89	110.80	10.56	10.47	10.36	10.24	9.99	9.76
19		254.42	252.93	250.32	247.83	239.63	228.58	23.84	23.65	23.40	23.14	22.69	22.11
20		694.41	690.34	683.21	676.42	649.63	634.82	65.06	64.54	63.86	63.17	62.12	61.86
21		162.12	161.18	159.52	157.94	157.03	155.88	15.36	15.24	15.08	14.92	14.52	14.39
22		55.77	55.61	55.31	55.05	54.77	54.05	21.82	22.01	22.13	22.27	22.99	23.89
23		251.78	253.44	253.39	253.37	246.93	236.21	5.69	5.63	5.56	5.48	5.39	5.20
24		21.81	21.95	21.97	22.00	22.77	23.49	5.83	5.87	5.89	5.92	6.05	6.24
25	MINERAL PRODUCTS	1910.30	1905.02	1899.53	1895.90	1804.33	1768.42	87.47	88.09	88.35	88.72	89.44	90.75
26		807.55	805.40	803.24	801.88	790.89	763.84	19.10	19.59	19.98	20.41	20.43	21.10
27		29175.65	30448.47	31681.26	32991.85	33150.22	34217.65	2363.70	2510.06	2659.94	2832.29	2945.01	3078.72
28	CHEMICAL PRODUCTS	1469.43	1495.39	1515.61	1537.21	1562.27	1577.58	1999.82	1992.12	1974.05	1954.21	1868.42	1838.90
29		1143.78	1163.34	1177.17	1191.69	1208.49	1258.16	1721.66	1703.88	1676.10	1645.06	1644.57	1603.79
30		41.73	42.39	42.85	43.33	45.40	45.69	63.04	62.36	61.32	60.15	60.15	59.32
31		151.01	153.00	154.39	155.88	160.80	163.84	182.43	180.57	177.66	174.40	167.58	163.09
32		163.02	165.84	167.83	169.93	171.48	175.17	247.11	244.56	240.57	236.12	229.63	222.07
33		121.12	123.21	124.70	126.25	131.05	133.54	183.60	181.70	178.74	175.43	168.17	165.83
34		108.25	109.78	110.75	111.77	114.82	116.53	156.74	155.05	152.44	149.54	144.99	139.47
35		63.66	64.13	64.29	64.49	67.41	69.96	57.26	56.68	55.77	54.76	53.50	50.84
36		35.79	35.56	35.10	34.64	34.34	32.84	35.88	35.32	34.55	33.71	33.53	32.72
37		105.79	107.62	108.92	110.28	112.79	114.71	160.36	158.71	156.12	153.23	151.85	148.89
38		217.95	221.17	223.27	225.50	230.06	234.43	336.33	332.47	326.70	320.35	313.36	304.28
39	PLASTICS	482.29	490.62	496.53	502.73	526.11	543.94	731.07	723.52	711.72	698.54	669.83	668.76
40		681.30	693.98	703.67	714.32	722.04	744.78	528.74	523.28	514.74	505.21	489.20	478.87
41	LEATHER GOODS	130.14	122.83	114.94	107.43	105.97	105.36	2.92	2.77	2.62	2.46	2.43	2.38
42		29.63	28.16	26.54	24.98	24.53	24.07	3.85	3.71	3.55	3.38	3.22	3.21
43		0.04	0.04	0.04	0.04	0.04	0.03	0.00	0.00	0.00	0.00	0.00	0.00
44	WOOD PRODUCTS	1060.07	1067.57	1071.30	1076.51	1115.58	1116.36	20.64	20.35	19.96	19.54	18.60	18.28
45		46.31	46.87	47.27	47.74	48.21	49.92	0.24	0.23	0.23	0.22	0.21	0.21
46		39.24	38.82	38.26	37.72	36.78	36.02	0.71	0.69	0.67	0.66	0.63	0.63
47	PAPER	14.80	14.92	14.94	14.97	15.11	15.62	21.62	21.69	21.66	21.63	21.05	20.76
48		233.14	234.89	235.33	235.71	242.85	245.74	340.47	341.53	341.15	340.67	329.02	318.79
49		4.72	4.76	4.77	4.77	4.93	4.95	6.90	6.92	6.91	6.90	6.57	6.41

MARITIME TRADE BETWEEN JAPAN AND ASEAN (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	1.69	1.58	1.46	1.36	1.33	1.30	2.04	1.95	1.85	1.75	1.71	1.63
51		9.48	8.85	8.20	7.59	7.37	7.31	11.43	10.92	10.36	9.78	9.50	9.47
52		101.87	95.15	88.18	81.60	81.47	79.69	122.59	117.14	111.08	104.95	100.58	95.78
53		9.30	8.72	8.12	7.56	7.52	7.17	10.50	10.03	9.51	8.99	8.93	8.77
54		62.09	57.99	53.73	49.71	48.87	46.52	74.86	71.53	67.83	64.09	63.07	60.05
55		84.44	78.86	73.07	67.60	66.57	66.08	101.80	97.27	92.24	87.15	85.20	81.54
56		27.16	25.37	23.51	21.75	21.03	20.36	32.75	31.29	29.68	28.04	27.29	26.88
57		16.74	15.64	14.49	13.41	12.79	12.65	20.19	19.29	18.29	17.28	16.75	16.20
58		22.16	20.69	19.17	17.74	17.67	17.15	26.71	25.52	24.20	22.87	22.04	21.95
59		38.83	37.72	36.41	35.15	34.13	33.17	38.00	36.96	35.72	34.42	34.22	33.02
60		27.70	25.87	23.97	22.18	21.14	20.10	33.39	31.91	30.26	28.59	27.36	26.40
61		95.43	90.75	85.69	80.89	77.05	74.15	8.37	8.00	7.59	7.17	7.05	6.99
62		73.10	69.59	65.79	62.18	61.05	58.70	1.28	1.22	1.16	1.09	1.07	1.07
63	34.02	32.07	30.02	28.09	27.70	27.46	45.90	44.09	42.05	39.97	38.96	37.13	
64	FOOTWEAR	49.58	46.74	43.68	40.77	40.56	40.15	1.05	0.99	0.93	0.87	0.85	0.85
65		25.63	24.79	23.85	22.96	22.33	22.16	9.55	9.44	9.27	9.09	8.92	8.90
66		24.59	23.82	22.84	21.87	20.88	20.52	11.36	10.97	10.52	10.04	9.94	9.87
67		31.75	30.75	29.49	28.23	27.46	27.17	14.66	14.16	13.58	12.97	12.83	12.59
68	STONE & GLASS	163.24	162.55	160.93	159.37	156.78	149.96	222.25	219.65	216.24	212.79	207.39	207.20
69		46.23	46.03	45.58	45.13	44.11	42.45	62.94	62.21	61.24	60.26	58.41	57.03
70		163.62	162.78	161.01	159.31	151.67	151.38	222.39	219.69	216.17	212.62	211.43	211.35
71	PRECIOUS STONES	122.55	123.07	122.88	122.71	118.23	114.77	94.82	94.62	93.75	92.75	91.75	89.77
72	BASE METALS	157.60	159.97	161.87	164.18	171.29	176.99	5438.58	5419.91	5361.89	5301.92	5202.24	5044.61
73		411.71	408.89	403.52	398.33	384.35	376.55	1961.67	1941.73	1909.66	1877.08	1818.51	1745.41
74		1156.83	1175.39	1186.88	1198.77	1251.27	1313.34	2696.01	2698.97	2685.97	2671.89	2610.70	2609.92
75		304.60	309.79	312.91	316.07	326.50	342.14	327.52	327.98	326.10	323.82	320.06	313.34
76		521.41	528.99	533.05	537.17	555.54	570.81	587.92	586.72	581.61	575.91	559.04	548.47
77		---	---	---	---	---	---	---	---	---	---	---	---
78		112.87	114.81	115.97	117.15	121.61	121.62	121.14	121.33	120.65	119.82	114.41	112.00
79		208.70	212.28	214.44	216.62	221.06	228.95	223.99	224.34	223.08	221.55	218.62	212.85
80		134.14	136.41	137.77	139.14	144.89	152.01	144.58	144.76	143.91	142.88	140.31	133.87
81		934.77	951.42	961.72	972.13	972.52	983.99	989.91	992.43	987.71	981.73	947.66	920.18
82		159.98	158.54	156.05	153.60	147.87	145.61	259.23	253.11	246.09	239.12	231.95	222.58
83		147.05	145.73	143.44	141.19	134.24	128.16	238.28	232.65	226.20	219.80	217.05	216.72
84	MACHINE	3647.81	3617.66	3564.78	3513.72	3486.67	3446.22	7053.55	6896.42	6701.55	6500.59	6355.62	6317.49
85		1886.03	1870.57	1844.19	1818.80	1748.42	1717.82	2495.79	2435.57	2362.24	2285.20	2182.59	2155.96
86	VEHICLES	50.32	51.16	51.56	51.92	52.22	52.70	545.45	534.63	520.49	505.64	488.75	481.13
87		969.27	978.29	983.43	989.59	1031.94	1046.49	6757.92	6748.08	6702.97	6657.59	6484.49	6180.37
88		11.42	11.61	11.68	11.72	11.91	12.48	136.45	133.07	128.84	124.37	118.95	117.12
89		30.45	31.03	31.28	31.48	32.45	32.58	374.07	364.83	353.23	341.02	331.06	323.08
90	CLOCKS & MUSICAL INST.	321.52	318.51	313.36	308.34	305.97	304.13	678.01	661.65	641.62	621.05	609.00	584.03
91		66.89	66.25	65.16	64.10	61.18	58.76	140.60	137.21	133.06	128.80	127.26	122.36
92		107.76	104.35	100.10	95.83	94.41	90.74	49.76	48.08	46.10	44.01	43.92	42.75
93	ARMS	99.00	98.09	96.51	94.98	93.30	89.91	208.20	203.18	197.04	190.75	185.54	179.71
94	MISC. ART.	239.73	234.02	226.55	219.10	218.58	213.33	238.46	232.11	224.44	216.49	212.75	212.32
95		127.57	123.54	118.50	113.45	113.20	109.96	58.90	56.92	54.57	52.10	49.90	47.52
96		216.09	209.21	200.63	192.03	190.13	186.20	98.83	95.49	91.56	87.41	87.34	84.98
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

MARITIME TRADE BETWEEN JAPAN AND EU-27

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
02		284.26	260.91	237.28	213.56	204.08	199.04	1.76	1.73	1.71	1.69	1.69	1.68
03		213.83	206.61	199.46	192.33	192.25	187.33	43.18	42.94	42.75	42.64	41.06	40.25
04		306.48	303.16	299.41	295.37	291.89	279.78	1.91	1.89	1.88	1.86	1.79	1.71
05		3.00	2.90	2.80	2.70	2.64	2.52	1.11	1.11	1.11	1.11	1.08	1.03
06	VEGETABLE PRODUCTS	17.34	16.51	15.71	14.91	14.82	14.18	2.88	2.85	2.82	2.79	2.76	2.71
07		102.78	99.13	95.58	92.10	91.04	90.43	7.60	7.52	7.45	7.40	7.26	7.14
08		63.95	61.58	59.32	57.14	54.78	54.03	2.87	2.83	2.80	2.78	2.75	2.62
09		91.56	87.40	83.33	79.25	77.03	75.71	13.73	13.59	13.47	13.34	12.76	12.33
10		22.11	21.72	21.32	20.94	20.03	19.55	0.20	0.20	0.19	0.19	0.18	0.18
11		232.15	226.65	221.11	215.58	206.98	200.89	13.26	13.13	13.02	12.94	12.87	12.24
12		52.56	50.08	47.66	45.24	43.54	43.37	9.06	9.00	8.95	8.90	8.67	8.48
13		18.96	18.33	17.70	17.08	16.32	15.86	2.01	1.99	1.97	1.96	1.95	1.86
14		6.44	6.26	6.08	5.89	5.81	5.67	0.95	0.94	0.93	0.92	0.90	0.88
15	FATS & OILS	174.05	162.97	152.00	140.92	137.09	137.06	20.20	19.77	19.37	18.98	18.57	18.27
16	PREPARED FOODSTUFFS	201.08	186.99	172.78	158.54	155.50	150.96	6.64	6.57	6.51	6.46	6.24	6.05
17		36.52	36.11	35.66	35.18	34.32	34.04	0.93	0.92	0.91	0.91	0.86	0.86
18		34.15	32.95	31.76	30.57	30.26	29.39	3.64	3.60	3.57	3.54	3.52	3.47
19		72.27	69.81	67.37	64.93	61.98	60.36	7.35	7.28	7.22	7.17	6.83	6.72
20		197.26	190.53	183.87	177.21	169.62	167.49	20.07	19.87	19.70	19.57	19.39	18.87
21		59.88	58.18	56.47	54.75	52.40	50.05	4.70	4.66	4.62	4.58	4.40	4.21
22		1161.21	1146.72	1131.57	1116.40	1080.79	1039.29	10.20	10.13	10.08	10.04	9.64	9.60
23		52.48	49.46	46.49	43.50	42.98	41.11	2.77	2.74	2.73	2.71	2.58	2.49
24		316.08	311.96	307.68	303.39	294.72	293.30	3.49	3.47	3.44	3.43	3.42	3.26
25	MINERAL PRODUCTS	130.46	128.59	126.77	125.01	124.40	119.82	60.54	59.83	59.23	58.75	56.81	54.63
26		48.08	47.65	47.23	46.84	45.51	44.07	14.67	14.53	14.41	14.32	14.13	13.62
27		833.77	839.37	846.72	855.31	875.41	903.95	751.92	772.87	797.74	827.35	846.96	861.35
28	CHEMICAL PRODUCTS	1861.17	1818.83	1775.10	1728.65	1710.16	1640.90	1770.11	1728.80	1688.83	1650.01	1598.53	1561.61
29		1718.67	1677.82	1635.50	1590.51	1525.62	1449.65	1636.61	1595.65	1555.69	1516.49	1471.90	1418.47
30		62.50	60.98	59.41	57.74	55.44	53.29	59.83	58.33	56.86	55.43	53.02	50.43
31		183.06	178.74	174.26	169.51	167.07	163.86	173.34	169.01	164.78	160.64	152.67	149.01
32		246.45	240.60	234.53	228.08	223.41	215.34	234.98	229.10	223.36	217.73	209.24	202.08
33		183.11	178.76	174.25	169.46	166.60	158.63	174.58	170.21	165.95	161.77	156.27	154.21
34		157.89	153.92	149.82	145.49	145.38	141.57	151.92	147.91	144.00	140.16	137.31	134.88
35		73.96	72.29	70.56	68.73	68.39	66.16	52.66	51.35	50.08	48.83	47.64	46.57
36		39.70	38.21	36.70	35.17	34.06	32.87	41.31	39.75	38.23	36.74	35.87	34.18
37		159.93	156.13	152.20	148.01	141.74	139.48	152.49	148.67	144.95	141.30	138.48	132.03
38		315.71	307.70	299.43	290.71	281.61	267.67	322.38	314.36	306.60	299.06	297.66	288.70
39	PLASTICS	729.11	711.79	693.85	674.77	645.22	635.54	695.17	677.77	660.80	644.14	614.96	600.39
40		529.53	516.97	503.96	490.13	485.67	480.23	503.04	490.45	478.18	466.13	452.75	437.77
41	LEATHER GOODS	272.60	245.12	219.49	195.66	193.10	188.17	8.17	7.68	7.21	6.75	6.63	6.53
42		47.36	42.76	38.44	34.40	33.51	32.70	7.62	7.16	6.72	6.29	5.99	5.74
43		0.04	0.04	0.04	0.04	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00
44	WOOD PRODUCTS	241.16	232.88	224.71	216.41	215.24	204.67	16.43	16.05	15.69	15.33	14.92	14.77
45		6.23	6.01	5.80	5.59	5.35	5.30	0.16	0.15	0.15	0.15	0.15	0.14
46		19.81	19.11	18.42	17.72	17.41	16.82	0.35	0.34	0.33	0.33	0.32	0.31
47	PAPER	20.24	19.77	19.26	18.71	18.45	18.15	9.90	9.77	9.66	9.58	9.27	8.85
48		318.72	311.27	303.27	294.73	281.26	269.05	155.83	153.83	152.18	150.90	144.66	142.48
49		6.46	6.30	6.14	5.97	5.78	5.59	3.16	3.12	3.08	3.06	3.04	3.04

MARITIME TRADE BETWEEN JAPAN AND EU-27 (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	1.12	1.01	0.90	0.80	0.76	0.74	1.64	1.60	1.55	1.51	1.50	1.43
51		6.31	5.65	5.04	4.47	4.38	4.20	9.22	8.95	8.70	8.44	8.37	8.02
52		67.26	60.20	53.68	47.67	46.60	44.28	98.68	95.89	93.14	90.39	87.69	86.18
53		6.38	5.76	5.19	4.67	4.44	4.26	8.46	8.22	7.99	7.75	7.58	7.54
54		40.95	36.64	32.66	29.00	28.11	27.32	60.26	58.55	56.87	55.19	52.75	51.05
55		55.68	49.83	44.42	39.43	38.49	37.01	81.94	79.62	77.34	75.05	71.42	69.42
56		17.91	16.03	14.29	12.69	12.45	12.11	26.36	25.61	24.88	24.15	23.28	23.01
57		11.04	9.88	8.81	7.82	7.72	7.62	16.25	15.79	15.34	14.88	14.28	14.16
58		14.61	13.07	11.66	10.35	10.31	9.95	21.50	20.89	20.29	19.69	19.00	18.21
59		35.21	33.24	31.33	29.45	28.88	28.66	40.43	38.89	37.39	35.92	34.25	33.08
60		18.27	16.34	14.57	12.93	12.89	12.88	26.88	26.12	25.37	24.62	24.11	22.97
61		93.14	84.56	76.50	68.97	65.57	63.17	10.62	10.27	9.94	9.60	9.47	9.08
62		72.80	66.13	59.87	54.00	53.83	52.96	4.18	4.03	3.88	3.73	3.70	3.63
63	24.39	22.10	19.96	17.96	17.60	17.19	41.30	40.17	39.08	38.02	37.70	36.01	
64	FOOTWEAR	105.32	94.61	84.63	75.36	74.43	71.61	3.07	2.88	2.70	2.52	2.51	2.50
65		28.65	26.65	24.75	22.94	21.98	21.27	9.87	9.61	9.36	9.11	8.94	8.75
66		16.85	15.68	14.52	13.38	12.95	12.95	20.95	19.68	18.44	17.24	16.91	16.85
67		21.75	20.24	18.74	17.27	16.46	15.67	27.05	25.41	23.81	22.25	21.89	21.61
68	STONE & GLASS	119.71	115.12	110.50	105.86	103.31	99.48	150.40	147.79	145.47	143.44	136.64	134.52
69		33.90	32.60	31.29	29.98	28.97	27.98	42.59	41.85	41.20	40.62	38.83	38.48
70		119.80	115.10	110.39	105.66	102.14	100.30	150.87	148.23	145.87	143.80	141.37	140.59
71	PRECIOUS STONES	39.69	38.02	36.36	34.68	33.53	32.65	34.73	33.21	31.73	30.30	29.44	29.07
72	BASE METALS	252.04	248.19	244.44	240.81	237.36	236.48	520.49	505.12	490.12	475.60	466.61	451.63
73		385.44	369.45	353.49	337.59	330.33	319.26	651.02	632.36	614.95	598.72	584.11	578.97
74		1565.35	1535.16	1503.66	1470.67	1433.16	1408.66	3614.56	3571.67	3536.85	3511.46	3490.39	3357.76
75		81.86	79.95	78.04	76.00	74.64	71.11	51.16	50.24	49.36	48.53	46.72	44.87
76		167.69	162.97	158.27	153.36	148.19	141.82	132.01	128.97	126.11	123.41	123.14	117.71
77		---	---	---	---	---	---	---	---	---	---	---	---
78		30.11	29.41	28.72	27.97	27.44	27.04	18.59	18.26	17.95	17.65	16.79	16.08
79		55.67	54.38	53.10	51.72	49.44	47.26	34.38	33.77	33.19	32.64	31.20	30.49
80		36.40	35.54	34.69	33.77	32.54	31.83	23.10	22.68	22.27	21.89	21.18	21.04
81		235.87	230.79	225.76	220.29	214.30	206.91	132.26	130.24	128.30	126.45	123.46	120.27
82		131.12	125.50	119.89	114.28	109.56	107.25	168.93	163.77	158.97	154.48	148.54	142.33
83		120.52	115.36	110.20	105.04	103.01	99.72	155.28	150.54	146.12	141.99	141.14	135.11
84	MACHINE	3228.36	3064.28	2900.05	2736.09	2610.23	2494.07	8373.29	8150.07	7947.46	7763.69	7523.79	7230.37
85		737.08	697.72	658.50	619.34	618.22	616.68	2289.67	2199.48	2115.79	2037.20	1970.99	1906.73
86	VEHICLES	363.32	351.49	338.41	324.25	313.13	299.79	1203.14	1176.08	1150.90	1127.37	1112.49	1090.58
87		5136.90	5033.92	4924.98	4811.16	4573.01	4494.35	13635.90	13462.20	13318.99	13210.72	12778.73	12276.53
88		87.33	84.12	80.55	76.67	73.38	70.98	306.27	298.67	291.50	284.66	281.76	276.32
89		239.51	230.75	220.99	210.38	205.18	196.01	841.26	820.38	800.69	781.92	773.79	759.71
90	CLOCKS & MUSICAL INST.	328.92	310.64	292.41	274.27	261.95	249.80	806.65	785.85	767.00	749.94	738.32	714.91
91		69.09	65.20	61.33	57.49	57.07	56.19	167.19	162.89	158.99	155.47	148.71	148.23
92		73.81	68.69	63.61	58.62	57.66	55.07	91.80	86.23	80.82	75.53	74.40	70.91
93	ARMS	100.87	95.30	89.74	84.21	82.54	81.05	245.04	238.73	233.00	227.82	221.92	213.59
94	MISC. ART.	191.70	179.79	167.95	156.26	150.11	149.58	322.97	309.98	297.65	285.91	285.28	271.76
95		87.38	81.31	75.30	69.40	67.25	66.01	108.68	102.08	95.67	89.41	87.17	85.30
96		151.14	140.49	129.98	119.67	118.20	114.81	182.38	171.31	160.56	150.06	147.37	147.31
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

MARITIME TRADE BETWEEN SOUTH KOREA AND AUSTRALIA

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.02	0.02	0.02	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00
02		677.86	677.74	679.19	682.30	692.53	700.08	0.13	0.14	0.15	0.16	0.16	0.16
03		11.26	11.03	10.81	10.59	10.48	10.31	15.81	16.01	16.24	16.47	16.54	17.21
04		46.48	46.55	46.69	46.89	48.64	49.77	5.06	5.24	5.43	5.63	5.75	5.96
05		0.52	0.52	0.52	0.53	0.54	0.56	0.24	0.24	0.25	0.26	0.26	0.26
06	VEGETABLE PRODUCTS	4.23	4.15	4.08	4.01	4.00	3.89	0.06	0.06	0.07	0.08	0.08	0.08
07		5.53	5.33	5.15	4.98	4.91	4.79	5.86	5.96	6.06	6.17	6.44	6.45
08		3.39	3.22	3.07	2.93	2.92	2.83	2.30	2.35	2.41	2.46	2.52	2.59
09		9.54	8.86	8.22	7.62	7.28	6.94	1.86	1.91	1.97	2.03	2.13	2.16
10		176.30	163.51	150.81	138.53	133.92	132.78	0.01	0.02	0.02	0.02	0.02	0.02
11		10.74	10.63	10.52	10.42	9.95	9.71	8.72	8.83	8.95	9.08	9.09	9.26
12		7.84	7.29	6.79	6.31	6.21	5.95	0.74	0.77	0.81	0.84	0.88	0.92
13		5.72	5.78	5.84	5.91	6.15	6.40	1.72	1.74	1.76	1.79	1.80	1.82
14		15.51	15.78	16.09	16.41	16.56	16.78	0.00	0.00	0.00	0.00	0.00	0.00
15	FATS & OILS	98.64	98.61	98.81	99.24	103.50	106.98	1.03	0.99	0.95	0.91	0.88	0.84
16	PREPARED FOODSTUFFS	3.21	3.13	3.05	2.97	2.83	2.72	3.78	3.83	3.88	3.94	4.08	4.27
17		309.21	311.03	313.16	315.38	329.64	343.22	0.40	0.41	0.43	0.45	0.46	0.48
18		1.91	1.85	1.80	1.74	1.74	1.73	2.33	2.37	2.40	2.44	2.51	2.59
19		3.46	3.38	3.31	3.24	3.24	3.12	5.01	5.07	5.15	5.22	5.45	5.55
20		9.52	9.31	9.12	8.92	8.74	8.70	13.79	13.97	14.17	14.37	14.98	15.30
21		4.56	4.52	4.47	4.43	4.41	4.20	3.75	3.80	3.86	3.92	4.03	4.22
22		52.67	52.79	52.90	53.05	53.19	54.46	4.32	4.37	4.43	4.49	4.67	4.82
23		3.67	3.69	3.71	3.73	3.74	3.83	0.83	0.84	0.85	0.87	0.87	0.88
24		16.03	16.01	16.00	16.00	15.33	15.08	1.21	1.23	1.25	1.27	1.28	1.33
25	MINERAL PRODUCTS	2176.81	2228.91	2285.38	2347.55	2379.94	2419.21	1.83	1.82	1.81	1.80	1.80	1.79
26		891.30	912.64	935.77	961.23	989.97	997.00	0.44	0.43	0.41	0.39	0.37	0.37
27		6373.90	6515.51	6678.00	6884.42	7040.69	7055.48	325.50	333.76	344.01	355.87	363.45	370.58
28	CHEMICAL PRODUCTS	104.80	108.55	112.89	117.78	118.11	119.16	125.66	121.89	117.99	113.85	109.17	106.91
29		112.22	116.15	120.78	126.05	126.48	128.60	146.54	140.12	133.26	125.89	124.67	120.79
30		9.33	9.65	10.02	10.45	10.52	10.75	12.29	11.75	11.17	10.55	10.10	9.61
31		42.84	43.95	45.18	46.55	48.72	49.97	10.17	9.73	9.25	8.74	8.32	8.14
32		11.55	11.96	12.43	12.98	13.13	13.27	15.08	14.42	13.71	12.95	12.83	12.35
33		8.54	8.84	9.20	9.60	9.82	9.95	11.15	10.66	10.14	9.58	9.47	9.12
34		6.76	7.00	7.28	7.59	7.72	7.81	8.89	8.50	8.08	7.63	7.36	7.11
35		4.88	4.97	5.07	5.20	5.31	5.35	4.22	4.08	3.94	3.78	3.75	3.58
36		1.33	1.37	1.42	1.47	1.48	1.51	1.87	1.79	1.71	1.62	1.55	1.55
37		3.58	3.71	3.86	4.03	4.13	4.17	4.68	4.47	4.25	4.02	3.87	3.69
38		15.45	15.98	16.61	17.32	18.01	18.64	21.25	20.40	19.50	18.53	17.87	17.00
39	PLASTICS	34.62	35.84	37.27	38.90	40.44	40.61	45.20	43.22	41.10	38.82	38.46	37.82
40		31.77	32.72	33.83	35.07	36.02	36.90	29.02	27.75	26.39	24.92	24.73	24.00
41	LEATHER GOODS	4.60	4.34	4.08	3.84	3.69	3.53	0.80	0.75	0.70	0.65	0.63	0.62
42		0.37	0.35	0.33	0.30	0.30	0.29	0.19	0.18	0.18	0.17	0.16	0.16
43		0.05	0.05	0.05	0.05	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00
44	WOOD PRODUCTS	30.61	30.82	31.09	31.40	32.82	33.19	1.29	1.26	1.22	1.18	1.15	1.12
45		1.66	1.67	1.70	1.72	1.79	1.88	0.02	0.02	0.02	0.02	0.02	0.01
46		0.45	0.45	0.44	0.43	0.41	0.40	0.02	0.02	0.02	0.02	0.02	0.02
47	PAPER	1.09	1.09	1.10	1.11	1.11	1.16	8.97	9.05	9.13	9.22	9.27	9.39
48		17.82	17.89	18.00	18.11	18.12	18.56	146.69	147.91	149.30	150.65	151.87	153.74
49		0.73	0.74	0.74	0.74	0.78	0.78	6.03	6.08	6.13	6.19	6.33	6.34

MARITIME TRADE BETWEEN SOUTH KOREA AND AUSTRALIA (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	0.10	0.09	0.09	0.08	0.08	0.08	0.23	0.22	0.21	0.20	0.19	0.18
51		0.45	0.42	0.40	0.38	0.37	0.36	1.06	1.01	0.97	0.93	0.89	0.87
52		9.61	9.29	9.00	8.72	8.42	8.05	12.23	11.60	10.99	10.37	9.91	9.70
53		19.67	19.52	19.40	19.30	18.66	18.00	1.43	1.36	1.28	1.21	1.20	1.19
54		3.21	3.02	2.85	2.69	2.57	2.53	7.53	7.14	6.76	6.38	6.28	6.09
55		4.72	4.45	4.20	3.96	3.85	3.73	11.07	10.50	9.95	9.39	9.22	8.99
56		1.26	1.19	1.13	1.06	1.04	1.03	2.97	2.82	2.67	2.52	2.41	2.36
57		0.88	0.83	0.78	0.74	0.74	0.72	2.07	1.96	1.86	1.75	1.75	1.70
58		1.09	1.02	0.97	0.91	0.88	0.85	2.55	2.42	2.29	2.16	2.15	2.12
59		1.27	1.26	1.26	1.26	1.24	1.26	2.60	2.50	2.40	2.29	2.28	2.19
60		1.48	1.40	1.32	1.25	1.19	1.17	3.49	3.31	3.13	2.96	2.90	2.87
61		0.68	0.64	0.60	0.57	0.56	0.54	2.46	2.34	2.22	2.11	2.07	1.99
62		0.07	0.07	0.07	0.06	0.06	0.06	0.98	0.94	0.90	0.85	0.84	0.82
63	1.91	1.81	1.71	1.62	1.54	1.48	4.80	4.59	4.38	4.18	4.14	4.02	
64	FOOTWEAR	1.22	1.13	1.06	0.98	0.97	0.97	0.25	0.23	0.22	0.20	0.19	0.19
65		0.44	0.46	0.47	0.49	0.52	0.52	0.68	0.65	0.62	0.58	0.56	0.54
66		0.14	0.14	0.13	0.13	0.12	0.12	0.44	0.42	0.41	0.39	0.38	0.37
67		0.14	0.14	0.13	0.13	0.13	0.12	0.44	0.42	0.41	0.39	0.38	0.37
68	STONE & GLASS	1.59	1.58	1.57	1.55	1.53	1.46	5.92	5.95	6.00	6.05	6.18	6.40
69		0.55	0.54	0.54	0.54	0.51	0.50	2.04	2.05	2.06	2.08	2.15	2.17
70		1.64	1.62	1.60	1.58	1.54	1.50	5.92	5.93	5.96	5.99	6.12	6.33
71	PRECIOUS STONES	27.70	27.78	27.88	27.99	28.79	29.85	3.11	3.11	3.11	3.11	3.25	3.29
72	BASE METALS	265.11	268.33	272.49	277.62	279.78	289.24	188.73	190.67	193.06	195.73	202.66	210.65
73		70.57	71.34	72.36	73.62	73.94	76.62	82.28	83.03	83.97	85.03	87.64	90.95
74		338.70	333.85	329.00	323.48	316.75	316.63	361.68	367.00	373.27	380.04	392.85	411.07
75		82.04	80.48	78.91	77.11	74.18	71.27	17.79	17.81	17.89	17.98	18.40	19.26
76		141.44	138.77	136.05	132.95	128.72	124.44	35.46	35.53	35.70	35.90	36.23	37.54
77		---	---	---	---	---	---	---	---	---	---	---	---
78		54.05	53.03	51.99	50.81	50.30	48.83	11.66	11.68	11.73	11.79	11.81	12.29
79		48.01	47.10	46.18	45.12	43.38	42.40	10.36	10.37	10.42	10.47	10.63	10.81
80		20.92	20.53	20.12	19.67	19.23	18.98	4.57	4.58	4.60	4.62	4.74	4.75
81		269.42	264.32	259.15	253.25	245.65	234.18	55.94	56.00	56.24	56.52	58.70	61.52
82		0.96	0.93	0.91	0.89	0.88	0.85	15.67	15.75	15.87	16.00	16.38	17.19
83		0.74	0.73	0.71	0.69	0.67	0.67	12.19	12.25	12.34	12.44	12.79	13.25
84	MACHINE	59.87	59.80	59.78	59.77	59.38	56.90	412.09	414.50	418.03	422.01	437.75	442.52
85		6.49	6.45	6.42	6.39	6.27	6.02	129.07	127.61	126.52	125.51	124.33	118.37
86	VEHICLES	9.88	9.86	9.83	9.79	9.65	9.40	21.06	21.44	21.87	22.33	22.68	23.21
87		218.92	219.95	221.17	222.62	232.15	233.40	996.23	1013.42	1033.10	1054.31	1105.23	1139.05
88		2.33	2.32	2.30	2.27	2.26	2.16	1.59	1.62	1.66	1.69	1.74	1.76
89		4.97	4.95	4.90	4.85	4.76	4.60	3.33	3.40	3.48	3.56	3.56	3.61
90	CLOCKS & MUSICAL INST.	5.99	5.94	5.90	5.85	5.63	5.51	33.09	33.60	34.20	34.84	35.73	35.78
91		3.42	3.39	3.36	3.33	3.21	3.15	18.70	18.99	19.34	19.70	20.34	20.75
92		0.49	0.47	0.45	0.44	0.42	0.41	1.50	1.46	1.41	1.36	1.35	1.29
93	ARMS	1.53	1.52	1.51	1.50	1.47	1.46	8.66	8.79	8.94	9.11	9.43	9.67
94	MISC. ART.	1.93	1.90	1.88	1.85	1.77	1.76	7.95	7.94	7.94	7.94	8.04	8.22
95		1.04	1.01	0.97	0.93	0.93	0.92	3.22	3.12	3.01	2.90	2.86	2.84
96		1.26	1.22	1.17	1.13	1.08	1.06	3.75	3.63	3.51	3.38	3.22	3.16
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

MARITIME TRADE BETWEEN SOUTH KOREA AND CHINA

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.01	0.01	0.01	0.01	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00
02		113.77	129.55	146.91	166.04	172.19	175.89	0.93	0.94	0.94	0.95	0.98	1.02
03		791.69	818.27	845.38	873.60	891.25	922.62	78.30	79.89	81.57	83.32	86.11	89.59
04		35.34	37.01	38.76	40.63	41.94	42.82	7.32	7.43	7.54	7.65	7.73	7.93
05		18.92	19.49	20.07	20.69	21.14	21.77	1.25	1.27	1.30	1.33	1.33	1.39
06	VEGETABLE PRODUCTS	19.07	19.61	20.16	20.72	20.79	21.45	7.11	8.35	9.78	11.39	11.64	11.79
07		227.22	232.82	238.74	245.02	249.14	249.43	36.46	37.55	38.69	39.83	40.33	41.72
08		126.37	127.37	128.66	130.21	133.85	140.21	21.81	22.67	23.56	24.44	25.31	26.36
09		144.15	148.73	153.33	157.98	164.76	169.42	42.93	49.35	56.72	65.02	66.37	69.52
10		1423.98	1475.61	1526.86	1578.86	1598.28	1606.11	0.03	0.03	0.03	0.03	0.03	0.03
11		264.35	274.52	284.84	295.48	298.46	307.30	42.00	42.92	43.89	44.90	47.05	48.02
12		310.58	323.74	337.24	351.26	363.28	379.30	30.25	35.13	40.73	47.04	49.10	51.00
13		53.73	55.83	57.97	60.17	62.68	63.15	8.15	8.33	8.51	8.71	8.73	8.79
14		4.34	4.75	5.20	5.69	5.76	5.76	0.59	0.62	0.65	0.68	0.69	0.69
15	FATS & OILS	143.64	158.14	174.30	192.08	201.16	205.19	41.02	41.20	41.24	41.09	42.20	42.75
16	PREPARED FOODSTUFFS	149.03	158.11	167.72	177.99	185.27	187.38	17.70	18.06	18.45	18.85	19.19	19.65
17		1.03	1.14	1.26	1.40	1.41	1.42	55.44	55.49	55.56	55.65	56.91	56.96
18		75.60	78.49	81.43	84.45	88.27	91.80	12.13	12.59	13.09	13.63	14.08	14.15
19		155.48	161.50	167.62	173.93	179.56	185.11	23.35	23.85	24.36	24.90	25.71	25.90
20		427.97	444.57	461.41	478.77	486.43	496.35	64.29	65.64	67.05	68.53	69.63	71.69
21		110.78	115.09	119.47	123.98	128.91	133.31	16.74	17.09	17.45	17.83	17.88	18.76
22		68.65	70.49	72.34	74.27	76.62	77.21	34.37	35.52	36.71	37.98	39.15	40.56
23		62.33	67.27	72.69	78.60	78.98	81.42	4.97	5.05	5.14	5.23	5.33	5.36
24		24.94	25.59	26.24	26.91	27.69	28.17	12.40	13.21	14.09	15.07	15.59	15.94
25	MINERAL PRODUCTS	664.00	690.31	718.28	748.60	767.46	792.40	101.27	107.43	114.12	121.47	126.65	128.48
26		210.89	218.71	227.17	236.47	239.64	249.04	44.09	46.36	48.77	51.37	51.83	51.85
27		3506.02	3679.11	3873.03	4084.18	4199.35	4401.34	8669.18	9370.13	10162.22	11060.98	11152.79	11513.02
28	CHEMICAL PRODUCTS	1974.34	2170.46	2389.95	2636.53	2731.70	2824.31	4863.62	4922.53	4967.03	4996.74	5139.14	5229.08
29		2711.36	2984.59	3290.63	3634.72	3800.10	3926.26	6141.57	6149.57	6126.39	6069.72	5776.56	5736.70
30		238.89	261.90	287.60	316.42	325.47	338.16	513.94	514.80	513.09	508.62	502.77	499.76
31		196.00	215.26	236.82	261.06	267.16	274.40	428.09	428.73	427.22	423.38	411.70	402.93
32		278.71	306.84	338.36	373.80	389.09	392.44	633.05	633.87	631.48	625.64	621.38	608.64
33		206.14	226.95	250.26	276.48	285.35	289.49	468.22	468.83	467.06	462.74	458.99	452.06
34		181.68	199.63	219.60	241.93	245.32	254.56	371.75	372.29	370.97	367.63	360.57	344.81
35		82.87	90.05	98.02	106.91	108.89	109.25	147.54	147.79	147.31	146.04	139.57	136.13
36		79.22	86.20	93.68	101.79	104.82	106.15	75.41	75.66	75.58	75.13	73.70	71.82
37		86.45	95.18	104.96	115.95	119.62	119.77	196.37	196.62	195.88	194.07	193.12	189.53
38		447.66	489.77	536.52	588.69	616.72	647.43	876.91	879.77	878.59	873.07	855.26	812.84
39	PLASTICS	835.40	919.74	1014.22	1120.45	1150.25	1173.14	1897.52	1899.99	1892.82	1875.30	1782.28	1712.59
40		537.27	591.49	652.22	720.51	733.62	743.23	1218.52	1220.12	1215.53	1204.31	1171.67	1169.56
41	LEATHER GOODS	956.02	1002.97	1049.18	1095.36	1118.25	1126.53	137.34	138.37	139.42	140.34	143.99	144.85
42		124.85	131.30	137.73	144.25	145.75	146.87	17.12	17.35	17.58	17.82	18.20	18.86
43		0.26	0.27	0.27	0.28	0.29	0.29	0.01	0.01	0.01	0.01	0.01	0.01
44	WOOD PRODUCTS	216.00	223.34	231.03	239.00	242.01	243.63	36.03	36.10	36.01	35.74	35.43	35.36
45		6.36	6.55	6.74	6.94	7.21	7.36	0.12	0.12	0.13	0.13	0.13	0.14
46		9.38	9.65	9.93	10.21	10.71	10.92	0.12	0.12	0.12	0.12	0.11	0.11
47	PAPER	21.50	23.05	24.71	26.50	27.55	27.99	10.02	10.36	10.71	11.07	11.44	11.63
48		351.39	376.77	403.94	433.13	433.95	435.91	163.83	169.37	175.12	180.99	188.25	190.28
49		14.44	15.48	16.60	17.79	17.95	18.63	6.73	6.96	7.19	7.44	7.46	7.73

MARITIME TRADE BETWEEN SOUTH KOREA AND CHINA (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	14.22	14.70	15.18	15.64	15.75	16.21	7.61	7.79	7.96	8.13	8.17	8.24
51		65.72	67.96	70.15	72.30	72.55	74.74	35.20	36.01	36.81	37.59	39.42	41.30
52		772.83	799.25	824.96	850.28	860.40	880.19	414.32	423.93	433.45	442.70	451.51	452.28
53		90.42	93.51	96.52	99.49	101.35	104.48	50.02	51.45	52.93	54.48	54.74	56.15
54		475.53	491.79	507.61	523.19	527.37	539.77	254.71	260.58	266.38	272.01	274.65	284.23
55		699.55	723.47	746.74	769.66	778.59	783.96	374.70	383.33	391.87	400.15	415.64	428.81
56		187.65	194.07	200.31	206.46	215.17	218.55	100.51	102.83	105.12	107.34	108.99	111.48
57		130.55	135.01	139.36	143.63	149.70	156.30	69.93	71.54	73.13	74.68	75.67	78.70
58		160.97	166.48	171.83	177.10	180.98	185.78	86.22	88.21	90.17	92.08	94.44	95.06
59		135.62	143.28	151.17	159.42	165.16	170.46	83.01	84.16	85.13	85.88	89.98	91.13
60		220.24	227.77	235.10	242.31	246.85	247.56	117.97	120.69	123.37	125.98	130.57	135.27
61		1082.77	1120.29	1157.15	1194.53	1195.36	1220.22	150.62	154.87	159.33	164.01	170.91	177.43
62		921.89	953.88	985.32	1017.29	1038.04	1047.90	95.79	98.71	101.85	105.22	106.67	109.22
63	286.59	297.16	307.55	317.87	328.58	340.18	164.66	168.77	172.92	177.05	183.00	191.29	
64	FOOTWEAR	296.35	310.93	325.28	339.61	342.26	347.26	42.69	43.01	43.33	43.62	44.63	46.32
65		115.53	120.24	125.00	129.98	130.91	131.53	34.67	35.03	35.30	35.46	36.79	37.99
66		87.32	94.33	101.58	109.18	110.42	111.28	12.65	12.95	13.26	13.58	14.02	14.14
67		87.31	94.32	101.57	109.18	111.37	113.14	12.65	12.95	13.26	13.58	14.10	14.23
68	STONE & GLASS	716.44	753.52	791.77	831.91	848.89	887.60	78.80	81.74	84.93	88.39	91.02	92.70
69		246.60	259.37	272.53	286.35	291.73	298.79	27.12	28.14	29.23	30.42	30.76	32.19
70		699.52	735.42	772.40	811.18	814.10	830.70	84.60	87.62	90.87	94.37	97.54	100.63
71	PRECIOUS STONES	119.95	131.07	143.04	155.97	161.66	166.43	53.63	55.57	57.59	59.72	61.79	63.15
72	BASE METALS	10160.56	10736.99	11338.92	11976.74	12089.32	12257.36	3130.56	3303.91	3494.81	3706.69	3832.34	3990.62
73		3746.27	3961.84	4185.14	4419.67	4618.11	4695.70	1359.14	1425.88	1499.28	1580.43	1582.48	1641.51
74		1625.02	1787.04	1963.85	2156.86	2253.70	2305.09	1680.78	1735.86	1793.88	1855.70	1941.43	1992.30
75		441.76	486.85	536.13	589.93	597.25	603.94	270.26	281.20	292.72	304.93	312.10	322.27
76		926.31	1012.91	1106.78	1208.62	1219.02	1221.46	515.76	536.71	558.87	582.43	602.00	604.95
77		---	---	---	---	---	---	---	---	---	---	---	---
78		288.94	318.53	350.88	386.22	403.13	416.15	177.43	184.61	192.17	200.19	208.25	214.36
79		256.61	282.89	311.63	343.01	345.13	349.79	157.58	163.96	170.67	177.79	178.25	181.07
80		113.78	125.34	137.96	151.75	154.40	158.49	69.26	72.07	75.02	78.15	81.36	82.48
81		1365.10	1508.57	1665.77	1837.73	1917.49	1976.16	861.67	896.50	933.16	971.95	993.92	1031.49
82		536.86	565.99	595.33	625.29	626.60	655.30	163.92	170.80	178.33	186.57	191.36	195.27
83		417.41	440.07	462.88	486.17	490.64	500.31	127.45	132.80	138.65	145.06	149.86	153.44
84	MACHINE	8411.24	9046.12	9710.62	10408.36	10894.43	11224.53	9644.55	10044.17	10483.55	10962.05	11261.31	11673.47
85		2141.29	2286.79	2439.14	2598.48	2683.19	2816.54	2186.10	2291.43	2407.00	2530.21	2570.69	2688.43
86	VEHICLES	248.04	270.90	294.46	318.91	322.49	330.26	66.85	68.61	70.47	72.50	75.30	75.85
87		1075.40	1155.53	1239.38	1328.29	1351.27	1395.19	2704.18	2771.32	2842.29	2918.85	2942.78	2960.74
88		90.48	98.75	107.26	116.09	119.23	123.95	10.71	11.02	11.37	11.73	11.88	12.12
89		188.35	205.95	224.05	242.83	252.88	254.85	19.65	20.26	20.91	21.62	22.41	22.49
90	CLOCKS & MUSICAL INST.	1072.32	1157.16	1245.98	1339.42	1380.67	1434.24	1263.41	1311.94	1365.30	1423.92	1447.13	1511.96
91		611.50	659.62	709.98	762.93	775.06	810.79	715.31	742.75	772.93	806.08	833.17	850.91
92		301.44	325.63	350.67	376.92	385.70	386.78	43.69	44.71	45.78	46.89	48.58	49.56
93	ARMS	279.71	301.59	324.48	348.55	364.86	368.14	322.62	335.03	348.67	363.66	379.11	394.09
94	MISC. ART.	613.43	661.46	711.34	763.70	786.07	821.29	272.24	281.22	290.94	301.42	309.86	310.60
95		645.64	697.44	751.07	807.29	842.41	870.97	93.57	95.77	98.06	100.43	100.93	101.65
96		762.86	823.66	886.59	952.52	972.62	987.99	110.55	113.11	115.79	118.55	123.93	127.30
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	

MARITIME TRADE BETWEEN SOUTH KOREA AND JAPAN

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
02		1.07	1.01	0.96	0.90	0.88	0.88	3.76	3.64	3.49	3.31	3.17	3.03
03		188.41	185.24	182.06	178.96	177.80	174.08	225.45	222.48	219.65	216.95	216.28	208.15
04		4.51	4.41	4.31	4.20	4.17	4.00	9.88	9.91	9.94	9.96	10.13	10.47
05		6.14	6.05	5.96	5.87	5.59	5.49	6.75	6.66	6.58	6.51	6.41	6.29
06	VEGETABLE PRODUCTS	1.25	1.15	1.06	0.98	0.96	0.96	3.11	3.36	3.62	3.87	3.89	4.01
07		17.44	16.95	16.47	15.99	15.25	14.62	58.13	57.55	56.90	56.20	54.72	54.58
08		5.80	5.63	5.47	5.30	5.13	4.95	44.92	44.57	44.16	43.69	42.60	41.82
09		10.90	10.28	9.68	9.10	8.75	8.43	24.13	25.28	26.45	27.58	28.16	28.88
10		0.47	0.47	0.46	0.46	0.45	0.44	0.04	0.04	0.04	0.04	0.05	0.05
11		28.39	27.66	26.92	26.19	26.06	25.12	53.34	52.68	52.01	51.33	49.87	49.37
12		9.92	9.46	9.01	8.57	8.47	8.44	18.75	19.64	20.55	21.43	22.19	22.91
13		5.62	5.48	5.33	5.18	5.16	4.92	9.19	9.06	8.92	8.79	8.74	8.41
14		0.77	0.77	0.78	0.78	0.81	0.82	0.07	0.07	0.07	0.07	0.07	0.07
15	FATS & OILS	27.13	26.70	26.27	25.80	25.45	24.74	4.79	4.55	4.31	4.05	4.04	3.86
16	PREPARED FOODSTUFFS	12.20	11.86	11.51	11.17	10.78	10.58	21.06	20.75	20.41	20.07	19.32	18.60
17		0.37	0.37	0.37	0.37	0.37	0.36	16.65	16.26	15.92	15.59	14.84	14.35
18		7.62	7.40	7.18	6.96	6.69	6.37	12.99	12.86	12.73	12.59	11.96	11.65
19		15.97	15.53	15.09	14.65	14.42	13.88	26.76	26.38	26.00	25.60	25.15	24.60
20		43.95	42.74	41.53	40.32	38.40	38.14	73.67	72.62	71.56	70.47	70.43	69.81
21		11.41	11.10	10.78	10.47	10.34	10.00	19.25	18.98	18.71	18.43	18.32	18.21
22		20.07	20.04	20.01	19.98	19.12	18.47	94.19	93.91	93.62	93.39	91.86	90.28
23		5.68	5.54	5.40	5.26	5.09	5.07	4.63	4.57	4.50	4.42	4.33	4.31
24		6.08	6.05	6.01	5.97	5.76	5.48	28.39	28.41	28.43	28.46	29.09	29.63
25	MINERAL PRODUCTS	146.18	144.90	143.70	142.61	141.84	138.32	32.96	32.70	32.48	32.28	31.38	29.89
26		27.87	28.29	28.76	29.27	29.87	31.19	9.25	9.15	9.05	8.96	8.94	8.64
27		574.79	593.27	613.66	636.29	654.23	660.64	3250.37	3291.45	3340.44	3396.01	3417.41	3564.02
28	CHEMICAL PRODUCTS	2357.38	2335.99	2313.03	2287.02	2263.24	2172.93	643.52	624.60	605.28	585.62	562.02	558.48
29		3366.24	3333.24	3297.74	3257.57	3096.97	3079.32	581.27	549.12	515.51	480.63	471.16	469.65
30		277.74	274.96	271.98	268.62	262.77	250.39	48.45	45.75	42.93	40.00	38.19	38.06
31		234.77	232.50	230.05	227.29	221.26	217.86	40.63	38.39	36.06	33.63	32.97	31.84
32		346.96	343.56	339.91	335.77	325.29	311.95	59.78	56.47	53.01	49.42	48.19	47.89
33		256.62	254.11	251.41	248.34	237.04	233.46	44.22	41.77	39.21	36.55	36.40	35.55
34		203.97	201.89	199.66	197.14	196.85	194.64	35.76	33.79	31.73	29.60	28.96	27.69
35		81.24	80.41	79.52	78.52	78.21	76.07	17.12	16.32	15.48	14.62	14.57	14.57
36		41.91	41.28	40.63	39.92	39.72	37.79	8.78	8.33	7.86	7.37	7.14	7.07
37		107.63	106.57	105.44	104.15	101.78	101.75	18.54	17.52	16.44	15.33	15.18	14.67
38		499.87	494.22	488.22	481.57	478.92	461.87	88.46	83.97	79.29	74.45	72.25	70.40
39	PLASTICS	1039.99	1029.81	1018.84	1006.43	994.36	964.63	179.20	169.27	158.89	148.12	142.98	138.90
40		668.00	661.46	654.43	646.47	620.87	611.68	115.08	108.70	102.04	95.12	93.89	93.02
41	LEATHER GOODS	4.91	4.62	4.35	4.09	4.06	4.05	14.36	13.30	12.29	11.34	10.78	10.30
42		2.32	2.18	2.04	1.90	1.81	1.75	2.96	2.78	2.61	2.45	2.45	2.44
43		0.09	0.09	0.09	0.09	0.09	0.08	0.01	0.01	0.01	0.01	0.01	0.01
44	WOOD PRODUCTS	21.68	21.43	21.17	20.89	20.58	20.57	7.58	7.30	7.01	6.71	6.60	6.48
45		0.14	0.14	0.13	0.13	0.13	0.12	0.14	0.14	0.13	0.13	0.13	0.12
46		0.14	0.14	0.13	0.13	0.13	0.13	0.21	0.20	0.20	0.19	0.19	0.19
47	PAPER	9.72	9.62	9.52	9.41	9.27	9.27	4.29	4.27	4.25	4.22	4.18	4.13
48		158.92	157.25	155.61	153.87	152.27	148.96	70.05	69.77	69.42	68.99	67.57	67.35
49		6.53	6.46	6.39	6.32	6.22	6.15	2.88	2.87	2.85	2.83	2.83	2.69

MARITIME TRADE BETWEEN SOUTH KOREA AND JAPAN (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	0.78	0.72	0.67	0.62	0.59	0.59	0.65	0.59	0.54	0.49	0.48	0.48
51		3.60	3.35	3.11	2.88	2.77	2.73	3.00	2.75	2.51	2.29	2.28	2.28
52		42.32	39.39	36.57	33.86	32.32	31.81	35.26	32.30	29.52	26.89	25.85	24.63
53		4.95	4.61	4.28	3.96	3.84	3.67	4.13	3.78	3.46	3.15	3.04	2.95
54		26.04	24.23	22.50	20.83	19.83	19.77	21.70	19.88	18.16	16.55	16.11	15.54
55		38.31	35.65	33.10	30.65	29.54	28.69	31.92	29.24	26.72	24.34	24.17	23.53
56		10.28	9.56	8.88	8.22	8.08	7.73	8.56	7.84	7.17	6.53	6.22	6.16
57		7.15	6.65	6.18	5.72	5.62	5.61	5.96	5.46	4.99	4.54	4.41	4.19
58		8.81	8.20	7.62	7.05	6.98	6.89	7.34	6.73	6.15	5.60	5.45	5.37
59		27.77	27.06	26.35	25.62	25.53	24.97	9.01	8.45	7.89	7.34	7.22	7.00
60		12.06	11.22	10.42	9.65	9.34	9.08	10.05	9.21	8.41	7.66	7.64	7.35
61		12.88	12.01	11.19	10.39	9.94	9.67	38.33	36.11	33.97	31.91	31.54	30.18
62		7.46	6.97	6.50	6.05	5.82	5.59	31.80	30.05	28.36	26.73	25.85	25.18
63	23.51	22.26	21.05	19.86	19.62	18.83	15.39	14.31	13.29	12.33	12.29	12.19	
64	FOOTWEAR	1.09	1.00	0.92	0.84	0.81	0.79	4.44	4.11	3.80	3.50	3.38	3.23
65		13.87	13.68	13.49	13.29	12.94	12.30	5.87	5.54	5.22	4.90	4.69	4.69
66		7.96	7.51	7.05	6.58	6.33	6.33	4.15	3.98	3.80	3.62	3.60	3.50
67		7.96	7.51	7.04	6.58	6.29	6.00	4.15	3.98	3.80	3.62	3.60	3.51
68	STONE & GLASS	409.91	398.93	387.81	376.56	358.86	342.97	56.76	56.15	55.58	55.06	52.33	51.12
69		141.09	137.31	133.49	129.61	124.48	118.38	19.54	19.33	19.13	18.95	18.20	17.40
70		390.93	380.41	369.77	359.00	343.10	332.91	54.82	54.16	53.56	53.00	52.84	50.39
71	PRECIOUS STONES	29.72	29.28	28.80	28.28	27.03	26.84	11.12	10.91	10.71	10.50	10.45	10.12
72	BASE METALS	4781.79	4690.16	4597.64	4505.56	4444.73	4384.73	1685.31	1691.38	1700.18	1711.88	1765.46	1783.64
73		1500.32	1466.74	1433.07	1399.51	1356.96	1341.49	717.55	716.05	715.60	716.17	731.35	755.63
74		853.50	845.38	836.54	826.86	809.99	782.86	266.10	264.34	262.72	260.95	253.80	249.95
75		142.57	141.22	139.69	137.94	134.05	127.73	54.40	53.78	53.20	52.58	49.98	48.77
76		274.32	270.71	266.83	262.59	260.96	254.80	137.94	136.46	135.10	133.70	131.02	125.26
77		---	---	---	---	---	---	---	---	---	---	---	---
78		93.57	92.70	91.71	90.56	87.07	82.82	35.27	34.87	34.49	34.08	33.41	32.93
79		83.10	82.33	81.45	80.43	76.74	76.64	31.32	30.97	30.63	30.27	28.81	27.44
80		36.55	36.20	35.80	35.35	34.37	32.80	14.17	14.01	13.86	13.70	13.39	12.96
81		453.40	449.61	445.25	440.12	420.18	414.46	155.65	153.85	152.15	150.26	149.46	145.01
82		93.69	89.56	85.53	81.57	79.58	78.61	143.23	141.86	140.68	139.64	139.56	133.33
83		72.85	69.64	66.50	63.42	60.67	57.85	111.36	110.30	109.38	108.57	104.84	103.65
84	MACHINE	3792.81	3690.80	3588.11	3481.59	3475.67	3445.78	1379.10	1358.05	1338.51	1319.99	1275.77	1243.50
85		635.61	615.64	595.84	575.36	551.08	546.89	229.65	225.82	222.27	218.87	212.81	204.02
86	VEHICLES	266.28	258.78	250.54	241.62	233.98	233.82	28.90	29.07	29.21	29.30	29.99	30.72
87		1540.47	1518.83	1496.04	1472.40	1419.39	1411.73	383.48	383.68	383.97	384.37	388.83	396.92
88		90.88	88.18	85.20	81.97	81.59	79.32	8.74	8.79	8.82	8.84	8.91	9.09
89		195.20	189.41	183.03	176.11	170.02	163.90	18.52	18.65	18.75	18.80	19.65	20.37
90	CLOCKS & MUSICAL INST.	543.69	529.48	515.12	500.22	495.81	483.32	192.73	189.51	186.49	183.61	178.28	172.69
91		307.22	299.19	291.09	282.68	273.94	266.35	108.96	107.14	105.43	103.80	102.08	100.49
92		27.48	25.92	24.32	22.70	22.61	22.16	14.32	13.72	13.12	12.50	12.15	12.11
93	ARMS	139.22	135.55	131.85	128.01	122.89	120.48	51.35	50.51	49.73	48.98	48.55	46.52
94	MISC. ART.	135.70	131.05	126.33	121.49	119.78	117.74	54.44	52.99	51.55	50.14	49.02	46.65
95		58.85	55.51	52.09	48.62	47.48	45.38	30.68	29.40	28.09	26.78	26.49	26.30
96		68.42	64.53	60.55	56.52	54.65	54.50	35.83	34.33	32.80	31.26	30.82	29.84
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

MARITIME TRADE BETWEEN SOUTH KOREA AND U.S.

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.06	0.06	0.06	0.06	0.06	0.05	0.00	0.00	0.00	0.00	0.00	0.00
02		255.86	245.06	234.82	225.44	221.49	215.07	0.23	0.24	0.26	0.28	0.29	0.29
03		119.13	115.64	112.32	109.24	103.93	103.50	73.87	75.75	77.59	79.13	79.70	83.57
04		76.39	75.18	74.10	73.20	72.55	70.29	11.88	12.42	12.96	13.47	13.87	14.15
05		1.97	1.93	1.88	1.84	1.76	1.74	1.48	1.52	1.55	1.59	1.62	1.65
06	VEGETABLE PRODUCTS	18.60	17.75	16.94	16.18	16.03	15.90	1.82	2.09	2.38	2.70	2.72	2.85
07		108.46	102.73	97.56	92.78	88.37	86.71	37.54	39.05	40.54	41.94	42.47	42.96
08		95.95	90.07	84.80	79.94	77.42	75.72	28.13	29.52	30.92	32.28	33.27	34.89
09		73.96	68.93	64.09	59.36	59.20	58.06	14.93	16.41	18.04	19.77	19.92	20.53
10		1165.11	1134.45	1103.56	1073.16	1026.91	1019.93	1.48	1.58	1.70	1.81	1.81	1.81
11		66.54	64.67	62.88	61.23	59.73	58.41	34.52	35.38	36.20	36.87	38.42	39.65
12		198.62	189.57	180.54	171.40	164.27	156.27	9.71	10.81	12.03	13.34	13.54	14.19
13		23.99	23.72	23.51	23.36	22.64	22.21	6.24	6.40	6.55	6.67	6.71	6.88
14		39.81	40.19	40.68	41.29	42.09	42.41	0.03	0.03	0.03	0.03	0.03	0.03
15	FATS & OILS	110.88	107.97	105.25	102.58	100.61	98.21	6.49	6.37	6.21	6.01	5.77	5.48
16	PREPARED FOODSTUFFS	67.40	64.12	60.98	58.02	57.29	56.15	13.64	13.99	14.32	14.59	14.80	15.02
17		9.13	9.03	8.95	8.90	8.70	8.42	1.13	1.18	1.24	1.29	1.31	1.37
18		19.60	18.91	18.25	17.63	16.81	16.49	8.78	9.04	9.29	9.52	9.73	10.06
19		37.37	36.25	35.18	34.18	32.74	32.20	18.19	18.65	19.09	19.44	20.04	20.32
20		102.87	99.77	96.83	94.10	90.18	90.15	50.08	51.34	52.55	53.52	54.31	56.29
21		29.67	28.82	28.02	27.29	26.44	25.66	13.32	13.67	14.00	14.27	14.84	14.93
22		48.09	47.96	47.84	47.78	45.49	45.21	45.81	46.81	47.79	48.62	50.86	52.12
23		36.71	35.86	35.07	34.28	33.94	32.96	3.06	3.13	3.21	3.27	3.43	3.51
24		18.22	17.85	17.49	17.15	16.91	16.62	13.85	14.23	14.63	14.99	15.19	15.90
25	MINERAL PRODUCTS	457.71	469.79	483.07	497.95	522.00	534.43	17.71	18.00	18.27	18.46	18.76	19.54
26		183.47	188.59	194.20	200.45	209.39	214.02	2.51	2.46	2.39	2.31	2.23	2.18
27		361.12	372.21	385.09	400.00	409.48	419.55	4101.35	4262.76	4438.12	4617.04	4692.30	4841.51
28	CHEMICAL PRODUCTS	1297.70	1306.09	1319.99	1340.44	1393.79	1395.74	833.48	830.09	824.46	814.76	812.88	806.38
29		1860.41	1871.33	1890.12	1918.29	1997.71	2093.20	767.13	744.35	716.75	682.80	651.67	630.23
30		153.27	154.14	155.66	157.95	161.41	166.42	66.04	64.13	61.81	58.94	58.78	58.23
31		136.26	137.22	138.75	140.96	143.93	149.14	53.30	51.71	49.79	47.43	46.14	44.05
32		191.60	192.74	194.68	197.59	200.25	203.34	78.99	76.64	73.79	70.29	69.14	67.89
33		141.72	142.55	143.99	146.14	146.79	152.17	58.42	56.69	54.58	51.99	49.42	49.36
34		112.78	113.38	114.45	116.09	119.88	123.09	47.78	46.37	44.66	42.56	41.62	40.38
35		51.00	51.09	51.36	51.88	53.67	55.66	20.60	20.14	19.56	18.82	18.24	17.33
36		23.49	23.46	23.52	23.70	23.82	24.23	12.96	12.61	12.18	11.65	11.09	10.80
37		59.43	59.79	60.39	61.29	63.49	66.39	24.50	23.77	22.89	21.80	21.64	21.51
38		266.32	267.41	269.61	273.13	283.43	294.56	120.48	117.90	114.65	110.46	107.17	105.49
39	PLASTICS	574.32	577.71	583.53	592.25	613.16	642.53	236.77	229.73	221.19	210.69	205.17	200.27
40		392.23	394.67	398.73	404.74	418.38	431.14	152.02	147.49	142.01	135.28	130.18	128.12
41	LEATHER GOODS	19.59	19.01	18.46	17.95	17.46	16.77	11.25	10.55	9.87	9.17	8.76	8.69
42		1.80	1.68	1.57	1.48	1.42	1.40	4.24	4.14	4.03	3.89	3.89	3.78
43		0.95	0.94	0.93	0.92	0.91	0.87	0.01	0.01	0.01	0.01	0.01	0.01
44	WOOD PRODUCTS	66.24	66.66	67.28	68.14	69.89	71.62	6.64	6.53	6.38	6.18	5.98	5.90
45		3.53	3.56	3.60	3.65	3.77	3.89	0.08	0.08	0.08	0.08	0.08	0.07
46		0.29	0.28	0.27	0.26	0.25	0.25	0.12	0.12	0.12	0.12	0.11	0.11
47	PAPER	24.54	24.24	24.01	23.84	23.19	22.05	8.54	8.74	8.92	9.06	9.22	9.34
48		401.08	396.29	392.41	389.63	371.24	356.09	139.54	142.80	145.79	148.03	153.81	160.90
49		16.48	16.28	16.12	16.01	15.46	14.90	5.73	5.87	5.99	6.08	6.14	6.35

MARITIME TRADE BETWEEN SOUTH KOREA AND U.S. (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	0.34	0.31	0.29	0.26	0.25	0.25	2.60	2.57	2.52	2.46	2.41	2.31
51		1.58	1.45	1.33	1.22	1.17	1.12	12.00	11.86	11.66	11.38	11.27	10.94
52		31.42	29.73	28.17	26.73	26.48	26.38	141.14	139.45	137.17	133.82	130.01	125.37
53		57.76	57.04	56.28	55.45	53.10	51.39	16.49	16.29	16.03	15.64	15.05	14.77
54		11.43	10.47	9.59	8.80	8.44	8.04	86.85	85.81	84.41	82.35	78.44	76.56
55		16.81	15.40	14.11	12.95	12.84	12.36	127.76	126.23	124.17	121.14	115.74	115.68
56		4.51	4.13	3.78	3.47	3.40	3.23	34.27	33.86	33.31	32.50	32.18	31.22
57		3.14	2.87	2.63	2.42	2.36	2.36	23.84	23.56	23.17	22.61	21.68	21.57
58		3.87	3.54	3.25	2.98	2.94	2.83	29.40	29.05	28.57	27.88	27.78	27.06
59		15.87	15.63	15.47	15.38	15.30	15.13	22.60	22.23	21.74	21.09	20.46	19.49
60		5.29	4.85	4.44	4.08	4.02	3.96	40.22	39.74	39.09	38.14	36.33	34.51
61		10.24	9.39	8.62	7.93	7.72	7.62	82.20	82.06	81.64	80.60	80.56	78.46
62		7.52	6.90	6.34	5.83	5.75	5.67	61.25	61.30	61.15	60.54	57.83	55.76
63	11.41	10.72	10.10	9.55	9.32	9.01	55.38	54.99	54.39	53.38	52.91	51.31	
64	FOOTWEAR	1.66	1.52	1.39	1.28	1.23	1.22	3.44	3.22	3.01	2.79	2.69	2.66
65		8.05	8.02	8.03	8.08	8.36	8.40	9.94	9.86	9.74	9.54	9.20	9.07
66		5.01	4.74	4.49	4.25	4.21	4.01	7.89	7.72	7.50	7.23	7.03	6.97
67		5.01	4.74	4.49	4.25	4.07	4.06	7.89	7.72	7.50	7.23	6.91	6.76
68	STONE & GLASS	75.75	74.01	72.46	71.19	69.86	68.92	65.44	66.93	68.37	69.55	72.26	73.69
69		26.07	25.47	24.94	24.50	23.29	22.98	22.52	23.04	23.53	23.94	24.12	24.22
70		72.49	70.80	69.30	68.05	65.92	64.96	65.53	66.91	68.23	69.28	70.87	73.95
71	PRECIOUS STONES	12.23	12.18	12.17	12.21	12.11	12.42	7.61	7.58	7.53	7.44	7.31	7.30
72	BASE METALS	166.32	167.28	168.94	171.53	178.77	183.21	924.38	942.19	960.39	976.70	1005.42	1008.44
73		259.22	251.36	244.53	239.00	235.91	231.97	583.75	596.57	609.12	619.58	638.67	647.73
74		240.78	239.49	238.90	239.27	245.80	251.29	2402.66	2494.86	2587.32	2672.33	2731.66	2744.77
75		39.28	39.10	39.09	39.26	41.38	43.43	25.72	26.32	26.92	27.48	27.95	28.93
76		94.54	93.11	92.07	91.51	90.84	88.98	91.84	93.86	95.86	97.56	99.57	101.32
77		---	---	---	---	---	---	---	---	---	---	---	---
78		25.53	25.43	25.43	25.56	26.52	27.22	16.33	16.71	17.10	17.45	17.75	17.87
79		22.68	22.59	22.59	22.70	23.36	23.75	14.50	14.84	15.18	15.50	15.78	16.47
80		10.20	10.15	10.13	10.17	9.95	10.45	6.88	7.04	7.20	7.35	7.40	7.42
81		115.05	115.04	115.51	116.54	120.58	126.43	59.75	61.17	62.67	64.12	66.34	68.53
82		87.04	83.42	80.17	77.38	77.01	76.86	153.67	156.92	160.00	162.38	166.40	169.98
83		67.68	64.86	62.34	60.16	59.24	56.67	119.48	122.01	124.40	126.25	129.10	132.86
84	MACHINE	2189.97	2127.54	2071.94	2024.98	2003.72	1960.03	3395.40	3496.85	3596.23	3680.76	3813.27	3873.52
85		327.49	317.74	309.10	301.69	287.93	275.38	562.35	570.43	577.98	582.73	611.22	629.62
86	VEHICLES	654.92	635.78	617.00	599.72	577.36	555.24	317.11	331.62	346.62	361.09	366.22	369.70
87		1040.20	1017.27	995.44	976.38	934.49	905.24	7807.32	8111.75	8417.21	8698.46	9074.23	9125.05
88		239.71	232.65	225.72	219.35	214.52	209.95	69.92	73.42	77.09	80.72	82.96	83.88
89		515.65	500.47	485.57	471.86	468.32	449.68	149.29	156.84	164.77	172.60	174.27	174.86
90	CLOCKS & MUSICAL INST.	306.11	297.46	289.81	283.43	272.66	259.95	383.88	396.08	407.95	418.00	431.00	433.33
91		172.98	168.09	163.77	160.17	152.26	146.79	216.90	223.80	230.51	236.21	246.01	246.01
92		17.29	16.37	15.49	14.66	14.47	14.08	27.25	26.64	25.90	24.96	24.78	23.56
93	ARMS	79.00	76.75	74.76	73.10	72.84	71.90	99.86	103.01	106.08	108.67	113.19	118.10
94	MISC. ART.	77.00	74.34	71.91	69.78	68.57	67.06	102.78	103.79	104.55	104.71	105.68	110.20
95		37.03	35.07	33.17	31.39	30.78	29.94	58.37	57.06	55.48	53.46	53.32	51.90
96		43.09	40.80	38.59	36.52	35.54	34.70	67.95	66.42	64.58	62.22	59.41	59.07
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

MARITIME TRADE BETWEEN SOUTH KOREA AND ASEAN

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
02		14.47	15.02	15.33	15.61	15.79	15.89	10.20	10.22	10.18	10.06	9.86	9.41
03		184.63	185.23	185.02	184.97	183.25	174.62	67.36	68.30	69.09	69.89	72.08	72.20
04		11.33	11.40	11.42	11.45	11.48	12.03	6.16	6.31	6.44	6.58	6.81	7.12
05		3.55	3.57	3.57	3.58	3.72	3.77	1.18	1.19	1.21	1.22	1.27	1.29
06	VEGETABLE PRODUCTS	53.47	56.00	58.39	61.09	61.94	63.46	2.10	2.34	2.58	2.84	2.94	2.95
07		159.64	157.16	154.11	151.49	151.49	149.72	24.19	24.54	24.84	25.13	25.54	25.78
08		148.68	145.58	142.02	138.97	135.05	129.53	11.30	11.48	11.62	11.76	11.80	12.23
09		52.82	52.17	51.01	49.86	47.59	46.53	16.48	17.75	19.07	20.43	21.29	22.18
10		6.15	5.55	4.92	4.40	4.37	4.35	0.03	0.04	0.04	0.04	0.04	0.04
11		81.24	81.39	81.15	80.95	78.97	78.28	32.73	33.20	33.59	33.99	34.55	36.10
12		55.08	55.10	54.64	54.19	52.01	49.70	10.39	11.33	12.32	13.33	13.73	14.11
13		97.62	102.36	106.93	112.04	115.49	120.97	6.46	6.55	6.63	6.70	6.88	7.05
14		285.03	301.35	317.31	335.10	345.38	348.46	0.15	0.15	0.15	0.16	0.16	0.17
15	FATS & OILS	298.88	309.43	317.98	326.62	339.06	349.27	12.57	12.41	12.17	11.89	11.59	11.04
16	PREPARED FOODSTUFFS	39.50	39.71	39.68	39.66	39.21	37.49	16.42	16.61	16.74	16.85	17.50	18.32
17		99.54	104.27	108.66	113.44	113.96	115.21	18.57	18.51	18.46	18.41	17.75	17.25
18		23.33	23.34	23.22	23.12	22.67	22.52	9.10	9.26	9.41	9.56	9.73	9.76
19		47.30	47.38	47.22	47.08	46.64	44.57	18.78	19.04	19.26	19.48	19.85	20.28
20		130.21	130.42	129.98	129.60	127.53	127.10	51.69	52.42	53.02	53.63	54.04	54.60
21		33.74	33.79	33.68	33.59	32.35	31.70	13.47	13.66	13.82	13.98	14.56	15.09
22		29.41	29.71	29.95	30.20	30.46	31.02	16.78	17.11	17.40	17.71	18.55	18.80
23		142.39	148.02	152.92	158.09	161.49	165.30	4.09	4.16	4.21	4.26	4.46	4.64
24		10.76	10.80	10.79	10.78	10.37	10.20	5.43	5.61	5.79	5.97	6.11	6.30
25	MINERAL PRODUCTS	562.90	580.23	598.44	618.64	624.27	644.93	18.40	18.87	19.26	19.70	20.50	21.37
26		224.90	231.98	239.47	247.77	259.12	262.04	6.09	6.17	6.21	6.25	6.56	6.80
27		16831.04	18193.00	19564.72	21051.10	21863.68	22408.08	6429.35	6819.37	7215.00	7667.48	7808.57	8060.78
28	CHEMICAL PRODUCTS	742.68	779.12	814.84	853.98	872.42	892.14	1236.45	1247.09	1251.28	1256.61	1315.16	1318.58
29		850.37	893.28	934.57	979.76	993.87	1007.79	1087.87	1060.17	1022.50	980.23	936.71	921.91
30		71.53	75.00	78.32	81.97	83.08	83.40	93.83	91.42	88.15	84.51	82.95	80.96
31		67.72	70.98	74.14	77.61	80.72	82.08	75.71	73.79	71.17	68.24	66.42	63.11
32		87.42	91.84	96.10	100.76	103.72	108.61	112.06	109.20	105.31	100.96	97.98	93.96
33		64.66	67.93	71.08	74.53	77.48	77.96	82.88	80.77	77.89	74.67	72.99	70.99
34		52.25	54.82	57.28	59.97	62.66	63.69	66.22	64.56	62.29	59.75	58.60	58.58
35		25.84	26.86	27.82	28.86	28.96	30.21	27.99	27.37	26.52	25.55	25.07	23.93
36		12.75	13.20	13.60	14.04	14.71	15.17	14.41	14.11	13.69	13.21	12.71	12.28
37		27.12	28.49	29.81	31.26	32.75	34.05	34.76	33.87	32.67	31.32	30.55	29.66
38		122.82	128.77	134.44	140.65	146.97	148.33	156.60	153.05	148.12	142.58	135.71	131.83
39	PLASTICS	262.03	275.29	288.05	302.02	302.78	305.05	335.88	327.31	315.67	302.61	302.18	292.09
40		339.52	357.94	375.86	395.69	411.72	421.93	215.68	210.19	202.71	194.32	194.07	193.99
41	LEATHER GOODS	84.82	82.09	78.72	75.39	72.08	69.05	53.12	51.68	49.98	48.21	47.96	47.03
42		9.41	9.14	8.79	8.45	8.36	8.06	6.04	5.91	5.75	5.58	5.33	5.33
43		0.04	0.04	0.04	0.04	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00
44	WOOD PRODUCTS	561.62	584.63	606.46	630.92	636.35	650.60	7.79	7.62	7.39	7.13	6.95	6.61
45		30.30	31.76	33.17	34.74	34.82	35.58	0.07	0.06	0.06	0.06	0.06	0.06
46		9.01	9.09	9.13	9.18	9.29	9.71	0.09	0.09	0.09	0.08	0.08	0.08
47	PAPER	34.94	35.97	36.84	37.76	38.49	38.71	9.76	10.02	10.25	10.49	10.97	11.33
48		571.10	587.94	602.23	617.26	635.10	651.23	159.47	163.81	167.57	171.45	171.74	178.84
49		23.46	24.15	24.74	25.36	25.45	25.46	6.55	6.73	6.88	7.04	7.37	7.38

MARITIME TRADE BETWEEN SOUTH KOREA AND ASEAN (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	1.54	1.48	1.42	1.36	1.30	1.27	3.81	3.69	3.55	3.41	3.28	3.26
51		7.10	6.85	6.56	6.27	6.25	6.16	17.60	17.07	16.43	15.74	15.08	14.88
52		83.58	80.63	77.16	73.74	70.66	68.59	207.09	200.87	193.26	185.22	176.48	169.67
53		9.99	9.65	9.25	8.86	8.74	8.61	24.46	23.76	22.90	21.98	21.78	21.73
54		51.39	49.58	47.45	45.34	44.25	43.01	127.39	123.56	118.87	113.92	109.27	104.87
55		75.61	72.94	69.80	66.70	66.52	63.69	187.40	181.77	174.87	167.59	162.66	161.38
56		20.28	19.57	18.72	17.89	17.75	17.07	50.27	48.76	46.91	44.96	43.31	42.78
57		14.11	13.61	13.03	12.45	12.33	12.15	34.97	33.92	32.63	31.28	30.49	29.98
58		17.40	16.78	16.06	15.35	15.14	14.55	43.12	41.83	40.24	38.56	38.07	36.75
59		17.35	17.32	17.19	17.09	16.52	16.34	29.22	28.46	27.49	26.45	26.36	25.21
60		23.80	22.96	21.97	21.00	20.57	19.94	59.00	57.23	55.06	52.76	50.15	49.94
61		42.53	41.19	39.61	38.07	37.04	35.51	45.43	44.36	43.03	41.62	40.02	38.34
62		30.58	29.65	28.55	27.49	26.94	26.61	20.19	19.86	19.43	18.97	18.37	18.12
63	30.67	29.69	28.51	27.35	26.55	26.10	75.77	73.68	71.08	68.34	65.74	65.27	
64	FOOTWEAR	26.21	25.36	24.31	23.27	22.64	22.19	16.51	16.06	15.53	14.98	14.64	14.11
65		6.76	6.83	6.86	6.91	6.91	7.20	6.51	6.36	6.16	5.95	5.84	5.65
66		5.90	5.85	5.75	5.63	5.45	5.21	4.12	4.14	4.13	4.11	4.09	4.00
67		5.89	5.85	5.75	5.63	5.40	5.22	4.12	4.14	4.13	4.11	4.06	4.01
68	STONE & GLASS	75.97	76.87	77.30	77.75	81.40	85.21	34.89	35.64	36.32	37.07	38.57	40.09
69		26.15	26.46	26.61	26.76	27.88	28.02	12.01	12.27	12.50	12.76	13.01	13.19
70		74.22	75.00	75.33	75.67	78.04	80.14	38.01	38.58	39.05	39.58	41.50	42.12
71	PRECIOUS STONES	19.80	20.45	20.99	21.56	22.57	23.56	27.55	28.15	28.56	28.97	30.07	30.26
72	BASE METALS	242.40	250.08	257.20	265.30	275.01	277.84	2315.46	2397.65	2470.25	2550.34	2570.48	2614.18
73		112.97	115.52	117.58	119.90	123.85	125.61	889.90	917.30	941.50	968.20	991.63	1023.07
74		270.94	282.23	291.72	301.69	302.44	315.96	869.97	892.12	909.53	927.47	964.38	976.34
75		77.10	80.36	83.10	85.97	89.58	90.82	157.22	161.00	163.81	166.63	173.15	177.28
76		138.04	143.66	148.34	153.24	155.16	155.70	315.72	323.19	328.91	334.75	351.32	354.83
77		---	---	---	---	---	---	---	---	---	---	---	---
78		50.74	52.89	54.69	56.58	59.22	61.95	103.01	105.49	107.33	109.18	109.21	111.33
79		45.06	46.97	48.57	50.25	52.42	54.53	91.49	93.69	95.32	96.96	99.48	102.75
80		19.70	20.53	21.23	21.96	21.97	22.20	40.40	41.37	42.09	42.82	43.34	45.25
81		250.56	261.28	270.29	279.75	290.27	293.66	493.10	504.99	513.77	522.54	540.88	551.37
82		17.38	17.40	17.29	17.18	17.09	16.78	146.00	149.17	152.01	155.18	160.21	164.68
83		13.52	13.53	13.44	13.36	13.05	12.85	113.52	115.98	118.19	120.66	124.54	129.31
84	MACHINE	916.20	937.88	954.05	970.68	1012.32	1019.00	2204.48	2258.27	2303.15	2350.32	2395.68	2513.31
85		313.05	318.93	323.02	327.12	337.07	344.85	514.23	526.54	536.89	547.51	553.42	565.65
86	VEHICLES	22.86	23.63	24.16	24.66	25.27	25.29	1010.51	1040.88	1066.43	1092.29	1127.03	1176.73
87		81.48	83.67	85.37	87.12	91.28	92.66	2162.60	2224.18	2276.02	2329.92	2349.72	2404.00
88		8.49	8.76	8.94	9.10	9.17	9.54	366.68	377.67	386.91	396.25	401.32	406.38
89		17.59	18.19	18.60	18.98	19.22	19.95	787.31	811.02	830.95	851.12	853.33	870.83
90	CLOCKS & MUSICAL INST.	96.85	99.41	101.34	103.33	104.92	109.73	223.80	228.45	232.13	235.99	243.73	251.34
91		55.29	56.72	57.79	58.89	60.53	60.68	126.89	129.51	131.57	133.74	136.41	139.92
92		20.35	20.21	19.85	19.44	19.16	18.88	14.22	14.29	14.26	14.20	14.13	13.91
93	ARMS	24.73	25.38	25.87	26.37	26.72	26.85	59.26	60.50	61.48	62.52	63.18	65.84
94	MISC. ART.	46.96	47.22	47.07	46.87	46.39	45.65	61.99	62.73	63.13	63.51	65.91	67.57
95		43.59	43.28	42.52	41.64	39.90	39.56	30.45	30.60	30.55	30.42	30.03	29.69
96		51.77	51.38	50.44	49.38	48.50	47.73	36.09	36.25	36.16	35.98	35.83	34.80
97		ARTS	---	---	---	---	---	---	---	---	---	---	---

MARITIME TRADE BETWEEN SOUTH KOREA AND EU-27

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.04	0.04	0.04	0.04	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00
02		253.91	242.55	230.33	217.41	211.91	210.49	0.84	0.88	0.93	0.97	1.00	1.01
03		84.28	82.09	79.85	77.58	73.94	72.57	34.53	34.97	35.46	36.03	36.04	36.71
04		129.78	128.95	127.89	126.67	121.78	118.60	2.27	2.30	2.34	2.38	2.40	2.50
05		1.18	1.15	1.12	1.09	1.04	1.04	0.55	0.56	0.56	0.57	0.59	0.62
06	VEGETABLE PRODUCTS	4.41	4.20	4.01	3.83	3.67	3.65	2.41	2.75	3.14	3.57	3.60	3.64
07		30.22	29.41	28.58	27.75	26.95	26.71	11.41	11.56	11.73	11.93	12.50	12.95
08		10.39	10.09	9.79	9.49	9.13	8.91	3.93	3.98	4.05	4.12	4.29	4.43
09		22.90	21.45	20.07	18.73	18.31	18.19	15.10	16.87	18.87	21.10	21.54	21.60
10		0.02	0.02	0.02	0.02	0.02	0.02	0.27	0.29	0.31	0.32	0.33	0.34
11		77.50	76.31	75.07	73.80	71.38	68.49	17.73	17.95	18.20	18.50	18.62	18.93
12		17.57	16.48	15.44	14.42	14.32	13.70	10.49	11.86	13.39	15.11	15.83	16.10
13		12.17	11.99	11.80	11.60	11.09	10.81	3.65	3.70	3.75	3.81	3.94	4.08
14		11.40	11.57	11.73	11.90	12.35	12.61	0.42	0.43	0.44	0.45	0.47	0.48
15	FATS & OILS	112.04	109.00	105.81	102.31	98.32	94.33	7.20	7.05	6.90	6.74	6.69	6.43
16	PREPARED FOODSTUFFS	87.72	83.97	79.97	75.76	72.16	69.91	7.94	8.05	8.17	8.32	8.34	8.60
17		12.16	12.10	12.01	11.91	11.85	11.82	0.01	0.01	0.02	0.02	0.02	0.02
18		13.20	12.82	12.44	12.05	11.58	11.54	5.21	5.34	5.48	5.64	5.90	6.05
19		27.32	26.60	25.87	25.13	24.85	24.48	10.31	10.44	10.59	10.77	11.03	11.46
20		75.20	73.23	71.22	69.18	69.09	68.73	28.37	28.74	29.15	29.64	30.78	32.14
21		25.09	24.55	23.99	23.41	22.30	22.08	7.34	7.44	7.54	7.67	7.76	7.79
22		338.52	338.50	338.16	337.81	329.34	318.73	6.68	6.71	6.74	6.79	6.97	7.18
23		35.04	34.14	33.20	32.17	31.01	30.19	2.00	2.04	2.07	2.12	2.22	2.28
24		99.90	99.82	99.64	99.47	98.35	95.46	2.70	2.83	2.99	3.16	3.23	3.29
25	MINERAL PRODUCTS	58.80	59.04	59.29	59.59	60.32	62.73	20.74	20.95	21.21	21.54	22.07	22.53
26		15.72	16.08	16.46	16.88	17.13	17.75	4.99	4.94	4.89	4.85	4.61	4.50
27		633.51	653.51	675.29	699.06	710.88	727.30	486.01	496.72	509.45	524.72	534.69	557.63
28	CHEMICAL PRODUCTS	1100.87	1111.20	1121.33	1130.88	1185.28	1209.81	558.92	538.80	517.54	495.64	495.04	493.90
29		1537.09	1550.02	1562.47	1573.88	1587.73	1623.13	763.31	732.63	700.07	666.27	650.55	631.49
30		127.37	128.35	129.30	130.17	134.96	138.38	66.13	63.57	60.85	58.02	57.03	55.59
31		107.25	108.16	109.04	109.86	110.09	111.61	53.16	51.03	48.76	46.41	45.18	44.22
32		158.32	159.66	160.95	162.13	165.27	168.36	78.64	75.48	72.12	68.63	66.44	65.47
33		117.10	118.09	119.04	119.91	121.33	123.48	58.16	55.82	53.34	50.76	49.44	47.36
34		94.14	94.83	95.49	96.08	100.55	102.63	47.00	45.13	43.15	41.09	39.14	38.56
35		44.39	44.58	44.75	44.89	45.72	45.76	19.23	18.53	17.78	17.00	16.84	16.08
36		21.83	21.76	21.66	21.54	20.53	19.76	11.45	11.05	10.62	10.18	9.91	9.90
37		49.11	49.53	49.93	50.29	52.28	53.31	24.39	23.41	22.37	21.29	21.20	20.14
38		231.63	232.87	233.98	234.90	242.86	246.75	121.58	117.78	113.79	109.73	105.19	101.33
39	PLASTICS	474.56	478.57	482.43	485.97	497.24	511.66	235.72	226.23	216.17	205.72	200.00	193.62
40		310.58	313.28	315.88	318.29	328.18	344.23	151.58	145.49	139.04	132.34	127.94	126.01
41	LEATHER GOODS	135.33	125.44	115.80	106.50	102.43	100.76	17.57	16.98	16.40	15.81	15.34	15.25
42		14.48	13.41	12.36	11.34	11.09	10.98	3.45	3.37	3.28	3.20	3.15	3.02
43		0.72	0.71	0.71	0.70	0.67	0.66	0.01	0.01	0.01	0.01	0.01	0.01
44	WOOD PRODUCTS	44.15	43.90	43.65	43.38	41.33	39.76	9.70	9.53	9.36	9.19	9.14	8.82
45		1.57	1.57	1.57	1.57	1.54	1.54	0.19	0.19	0.19	0.20	0.20	0.21
46		1.10	1.07	1.04	1.01	0.97	0.96	0.24	0.24	0.24	0.24	0.24	0.24
47	PAPER	11.03	10.97	10.89	10.80	10.40	10.00	3.97	4.02	4.07	4.14	4.32	4.33
48		180.38	179.36	178.08	176.48	167.72	160.71	64.84	65.64	66.58	67.72	68.99	70.48
49		7.41	7.37	7.32	7.25	7.16	7.10	2.66	2.70	2.74	2.78	2.80	2.82

MARITIME TRADE BETWEEN SOUTH KOREA AND EU-27 (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	0.90	0.83	0.77	0.70	0.69	0.66	2.92	2.88	2.84	2.80	2.78	2.77
51		4.16	3.85	3.54	3.25	3.09	3.01	13.49	13.32	13.15	12.96	12.83	12.62
52		49.58	45.89	42.31	38.86	38.06	37.89	158.70	156.74	154.66	152.47	151.36	148.37
53		8.91	8.48	8.07	7.67	7.59	7.24	18.65	18.43	18.20	17.96	17.14	16.70
54		30.05	27.78	25.58	23.46	23.39	23.08	97.64	96.43	95.15	93.80	92.03	91.22
55		44.21	40.87	37.63	34.50	34.45	34.00	143.64	141.85	139.97	137.99	135.52	129.08
56		11.86	10.96	10.09	9.26	9.15	8.94	38.53	38.05	37.55	37.01	36.00	34.83
57		8.25	7.63	7.02	6.44	6.34	6.08	26.81	26.47	26.12	25.75	24.83	24.53
58		10.17	9.40	8.66	7.94	7.85	7.50	33.05	32.64	32.21	31.75	31.66	31.47
59		18.19	17.70	17.22	16.72	16.25	16.24	22.89	22.47	22.02	21.55	20.62	19.92
60		13.92	12.87	11.85	10.86	10.60	10.31	45.22	44.66	44.07	43.44	41.63	41.24
61		83.02	76.79	70.77	64.99	63.19	60.41	50.41	49.92	49.41	48.88	46.91	45.70
62		71.78	66.41	61.20	56.21	53.45	51.62	29.92	29.68	29.43	29.17	29.07	28.50
63	24.98	23.52	22.08	20.67	19.99	19.87	62.70	62.16	61.61	61.05	60.09	57.25	
64	FOOTWEAR	38.75	35.70	32.72	29.85	28.61	27.19	5.44	5.26	5.08	4.90	4.66	4.45
65		14.12	13.56	13.01	12.49	12.27	12.16	6.36	6.21	6.06	5.90	5.68	5.64
66		8.44	8.05	7.64	7.20	6.93	6.93	5.28	5.17	5.05	4.93	4.75	4.68
67		8.44	8.05	7.64	7.20	7.18	7.16	5.28	5.16	5.05	4.93	4.89	4.78
68	STONE & GLASS	118.57	115.94	113.09	110.10	105.23	100.49	51.80	52.72	53.84	55.19	56.33	56.98
69		40.81	39.91	38.93	37.90	36.42	35.86	17.83	18.15	18.53	19.00	19.42	19.53
70		113.93	111.34	108.55	105.62	100.91	98.56	52.97	53.80	54.82	56.05	57.95	58.32
71	PRECIOUS STONES	12.49	12.32	12.12	11.91	11.67	11.58	5.11	5.05	4.98	4.92	4.91	4.77
72	BASE METALS	1038.71	1038.93	1039.45	1040.87	1055.96	1084.37	1455.05	1467.77	1483.73	1503.83	1514.36	1528.89
73		528.37	520.97	513.16	505.18	500.78	499.18	734.12	743.04	754.01	767.55	802.48	803.92
74		810.11	807.43	803.33	798.25	791.06	764.88	2021.85	2049.61	2083.02	2124.23	2157.15	2159.96
75		47.37	47.34	47.24	47.06	45.11	43.18	18.97	19.14	19.35	19.61	20.48	20.83
76		109.37	108.39	107.27	105.97	102.31	102.12	79.93	80.90	82.09	83.53	85.48	88.89
77		---	---	---	---	---	---	---	---	---	---	---	---
78		30.85	30.84	30.79	30.69	29.54	28.26	11.88	11.99	12.12	12.27	12.38	12.43
79		27.40	27.39	27.35	27.25	26.75	25.48	10.55	10.65	10.76	10.90	11.32	11.65
80		12.27	12.25	12.22	12.17	12.10	11.90	5.16	5.20	5.26	5.34	5.35	5.46
81		141.14	141.53	141.72	141.63	144.08	142.79	37.70	37.92	38.18	38.50	39.88	41.22
82		90.00	87.01	83.91	80.75	78.38	75.23	152.74	154.92	157.58	160.83	168.68	172.95
83	69.98	67.65	65.24	62.78	62.18	61.16	118.76	120.46	122.52	125.05	127.95	130.46	
84	MACHINE	3348.18	3278.73	3200.41	3113.48	3068.64	3022.30	4411.58	4474.06	4552.38	4649.82	4663.31	4752.38
85		431.96	422.17	411.34	399.37	392.26	373.83	983.34	984.00	987.52	994.14	1018.80	1063.32
86	VEHICLES	215.11	211.24	206.29	200.47	196.34	187.90	1359.09	1397.01	1439.84	1488.61	1538.03	1601.24
87		2362.40	2348.26	2329.18	2306.94	2257.58	2228.91	7664.49	7789.23	7936.72	8114.70	8234.80	8343.50
88		66.35	64.96	63.20	61.13	60.01	57.95	462.33	475.77	490.92	508.10	528.73	529.57
89		142.38	139.41	135.65	131.23	126.59	125.81	993.53	1022.47	1055.07	1092.06	1129.40	1174.81
90	CLOCKS & MUSICAL INST.	493.70	483.14	471.23	458.03	438.70	417.64	458.54	467.27	477.86	490.73	511.20	530.93
91		280.02	273.97	267.17	259.63	259.58	251.64	259.29	264.23	270.22	277.50	287.74	299.83
92		29.14	27.81	26.37	24.87	23.78	22.72	18.22	17.83	17.43	17.01	16.37	15.85
93	ARMS	126.48	123.76	120.70	117.30	115.73	111.01	118.79	121.05	123.78	127.10	127.81	129.22
94	MISC. ART.	121.59	118.06	114.18	110.01	104.95	103.52	101.49	102.22	103.23	104.57	105.26	105.55
95		62.41	59.56	56.48	53.26	50.62	49.50	39.03	38.19	37.32	36.44	35.19	34.10
96		74.18	70.73	67.03	63.16	62.62	60.99	45.58	44.59	43.58	42.55	42.46	42.44
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

MARITIME TRADE BETWEEN ASEAN AND AUSTRALIA

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	1.63	1.63	1.63	1.72	1.62	1.63	0.00	0.00	0.00	0.00	0.00	0.00
02		271.45	268.51	266.22	253.07	241.00	235.96	0.95	1.05	1.13	1.15	1.16	1.17
03		66.58	66.54	66.44	65.70	65.11	62.83	241.01	245.78	250.01	253.38	260.35	263.68
04		545.50	552.87	560.35	562.14	566.97	593.74	19.57	20.14	20.66	21.45	21.97	22.55
05		34.95	34.96	34.90	33.05	32.21	31.72	4.49	4.68	4.86	4.89	4.96	5.15
06	VEGETABLE PRODUCTS	1.01	0.98	0.95	0.93	0.90	0.86	13.71	14.43	15.09	15.74	16.49	16.74
07		61.47	59.77	58.16	55.40	53.62	52.52	121.69	124.48	126.87	129.09	131.99	135.62
08		61.53	59.35	57.33	54.72	54.56	52.34	82.44	84.57	86.36	90.43	93.54	96.01
09		9.24	9.10	8.97	8.94	8.88	8.73	72.05	75.17	77.95	77.96	80.15	80.97
10		200.40	197.41	192.88	188.12	185.50	182.48	63.89	65.80	67.54	68.41	70.32	70.82
11		46.52	46.69	46.76	48.15	48.72	49.17	119.73	122.10	124.18	128.38	132.59	133.03
12		5.67	5.57	5.48	5.48	5.35	5.32	40.84	42.77	44.50	46.17	47.43	47.94
13		8.10	8.09	8.06	7.79	7.54	7.54	37.22	38.09	38.89	40.42	41.38	41.86
14		1.70	1.69	1.68	1.64	1.61	1.58	20.71	21.62	22.50	22.79	23.86	24.71
15	FATS & OILS	59.16	58.74	58.47	57.13	55.25	54.52	203.60	212.15	220.12	227.85	232.58	237.42
16	PREPARED FOODSTUFFS	34.89	33.77	32.65	32.59	31.91	30.95	60.67	61.90	62.98	64.40	65.70	65.72
17		96.16	96.65	97.21	101.34	102.79	106.96	5.04	5.23	5.41	5.43	5.62	5.63
18		8.78	8.76	8.73	8.60	8.54	8.16	37.49	38.30	39.01	40.13	40.28	40.48
19		18.38	18.35	18.29	18.07	17.85	17.67	75.88	77.39	78.72	80.13	82.95	86.60
20		50.70	50.61	50.44	48.42	47.16	46.46	209.32	213.48	217.13	224.01	233.78	244.81
21		39.64	39.98	40.30	41.93	43.85	46.01	55.10	56.20	57.17	59.03	61.47	62.16
22		202.50	204.96	206.85	207.33	211.08	216.42	22.48	22.81	23.12	23.97	24.92	25.36
23		10.63	10.51	10.40	10.24	10.06	10.06	80.24	83.37	86.28	86.41	87.68	90.19
24		58.94	59.64	60.19	63.03	65.30	67.58	8.98	9.25	9.50	9.90	10.31	10.62
25	MINERAL PRODUCTS	176.47	183.73	190.07	197.20	199.82	202.00	76.85	76.98	77.11	78.59	80.06	81.53
26		70.07	72.97	75.51	78.53	78.85	81.07	25.49	25.52	25.58	26.83	28.11	29.49
27		4198.30	4394.17	4610.87	4689.71	4696.28	4792.55	19663.76	21545.33	23629.65	24364.53	25470.68	25857.83
28	CHEMICAL PRODUCTS	307.73	319.79	332.01	344.10	346.75	354.55	842.15	868.42	895.56	929.24	931.00	952.51
29		177.66	183.57	189.55	193.57	196.37	199.91	314.67	323.75	331.73	338.43	354.95	364.67
30		9.66	9.98	10.30	10.30	10.63	10.99	17.12	17.60	18.03	18.66	19.07	19.61
31		25.86	26.74	27.62	27.83	29.21	30.61	41.67	42.85	43.88	45.46	47.67	47.94
32		36.28	37.49	38.71	39.36	41.17	43.02	64.01	65.86	67.49	68.24	70.92	74.23
33		27.09	27.99	28.91	29.60	30.21	30.48	47.80	49.18	50.40	52.29	53.93	55.87
34		20.90	21.58	22.26	23.35	23.83	24.71	39.60	40.57	41.39	43.19	44.87	46.42
35		28.68	29.18	29.68	30.28	30.95	32.44	20.64	21.17	21.63	22.39	22.85	23.06
36		2.94	3.01	3.07	3.11	3.18	3.22	9.37	9.37	9.31	9.37	9.52	9.78
37		20.26	20.94	21.62	22.35	22.35	22.95	35.75	36.79	37.70	39.46	40.23	40.26
38		66.70	68.83	70.99	73.04	76.51	77.13	127.44	130.95	134.00	137.19	139.04	145.71
39	PLASTICS	105.06	108.56	112.11	115.34	118.67	120.47	185.38	190.74	195.45	197.44	199.08	200.04
40		67.79	70.02	72.27	75.19	77.95	78.88	128.14	132.00	135.44	136.58	140.56	140.93
41	LEATHER GOODS	21.07	20.47	19.81	19.23	18.56	17.78	37.26	35.36	33.33	33.25	31.83	31.71
42		3.30	3.18	3.05	3.00	2.92	2.90	13.66	13.16	12.57	12.13	12.03	11.76
43		2.22	2.22	2.21	2.19	2.09	2.04	0.07	0.07	0.07	0.07	0.08	0.08
44	WOOD PRODUCTS	18.50	18.36	18.19	17.80	17.57	16.71	170.09	172.16	173.89	180.02	184.56	188.99
45		0.76	0.75	0.74	0.73	0.72	0.70	7.77	7.89	8.01	8.01	8.20	8.30
46		1.47	1.45	1.43	1.42	1.41	1.36	14.36	14.46	14.53	14.57	14.60	15.00
47	PAPER	5.91	6.01	6.10	6.25	6.35	6.52	36.48	37.29	37.96	38.30	39.74	41.41
48		99.54	101.29	102.78	104.79	107.20	111.59	614.59	628.23	639.51	655.12	659.44	668.94
49		3.24	3.30	3.35	3.44	3.49	3.55	20.01	20.46	20.83	21.16	21.58	21.79

MARITIME TRADE BETWEEN ASEAN AND AUSTRALIA (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	0.10	0.10	0.10	0.09	0.09	0.09	0.28	0.29	0.30	0.30	0.30	0.31
51		3.28	3.20	3.12	3.06	2.97	2.95	8.82	9.20	9.55	9.83	9.99	10.14
52		37.78	38.29	38.68	40.18	40.62	41.51	27.97	27.03	25.94	25.18	23.94	23.84
53		85.98	88.46	90.67	91.97	93.14	93.66	2.31	2.24	2.15	2.13	2.05	1.98
54		5.62	5.45	5.25	5.00	4.88	4.87	15.86	15.33	14.71	14.04	13.92	13.36
55		9.01	8.73	8.42	8.25	7.92	7.77	25.43	24.58	23.59	23.06	22.81	22.65
56		2.60	2.52	2.43	2.31	2.22	2.20	7.33	7.09	6.80	6.47	6.17	5.94
57		1.62	1.57	1.51	1.44	1.37	1.32	4.56	4.41	4.23	4.04	3.96	3.80
58		1.83	1.77	1.71	1.67	1.63	1.58	5.17	4.99	4.79	4.71	4.70	4.66
59		4.48	4.51	4.53	4.61	4.80	4.92	16.61	16.48	16.24	15.75	15.49	15.34
60		2.98	2.89	2.79	2.77	2.70	2.64	8.42	8.14	7.81	7.49	7.41	7.40
61		3.05	2.95	2.84	2.84	2.71	2.60	29.37	28.23	26.99	26.21	25.04	24.23
62		1.77	1.71	1.65	1.57	1.54	1.53	26.34	25.31	24.17	23.35	22.52	21.76
63	4.54	4.42	4.28	4.16	4.09	4.01	13.80	13.50	13.13	13.08	12.44	12.10	
64	FOOTWEAR	5.04	4.82	4.59	4.48	4.37	4.24	13.53	12.84	12.09	11.67	11.28	11.05
65		1.56	1.60	1.64	1.70	1.77	1.78	5.00	4.97	4.92	4.84	4.59	4.57
66		2.49	2.47	2.43	2.39	2.33	2.23	20.31	19.88	19.28	19.18	18.73	18.21
67		2.57	2.55	2.51	2.45	2.44	2.34	20.97	20.52	19.90	19.07	18.20	18.13
68	STONE & GLASS	6.43	6.47	6.50	6.50	6.76	6.81	67.35	67.84	68.06	70.47	73.54	75.64
69		2.66	2.68	2.69	2.81	2.93	2.97	27.86	28.06	28.15	29.36	30.70	30.84
70		5.99	6.02	6.04	6.16	6.43	6.66	61.08	61.49	61.67	64.66	66.83	67.70
71	PRECIOUS STONES	9.46	9.40	9.28	8.98	8.94	8.78	7.74	7.89	8.00	8.22	8.56	8.68
72	BASE METALS	204.19	209.97	215.15	217.68	220.10	222.30	202.39	206.70	210.62	219.82	230.04	237.04
73		104.46	105.68	106.61	108.72	113.90	115.90	214.76	217.41	219.03	220.74	226.64	228.99
74		749.96	744.53	734.36	725.32	700.66	670.04	1176.26	1209.52	1240.32	1283.48	1346.63	1403.19
75		166.66	165.34	162.95	160.78	155.55	150.34	110.07	113.44	116.42	119.14	124.72	125.47
76		377.60	374.64	369.30	352.94	343.97	336.03	266.39	273.99	280.60	281.67	286.71	288.83
77		---	---	---	---	---	---	---	---	---	---	---	---
78		131.73	130.69	128.80	127.70	126.91	125.21	86.80	89.46	91.82	95.50	96.15	96.24
79		150.50	149.30	147.14	142.79	142.62	139.78	99.16	102.20	104.90	105.59	106.00	109.98
80		104.58	103.75	102.25	99.42	97.36	95.28	69.29	71.40	73.27	74.65	76.98	80.82
81		335.00	332.33	327.50	315.29	301.07	287.28	217.03	223.80	229.82	237.71	244.05	244.79
82		27.54	27.47	27.33	26.54	25.79	25.73	76.84	77.30	77.32	78.25	78.97	81.69
83		21.93	21.87	21.77	21.54	21.07	20.46	61.19	61.56	61.58	64.51	67.55	70.03
84	MACHINE	190.02	189.62	188.38	180.13	175.36	169.17	1203.83	1221.23	1233.84	1293.19	1348.93	1413.00
85		48.45	48.40	48.16	47.58	46.44	45.78	548.51	546.79	542.60	536.15	518.40	504.51
86	VEHICLES	23.20	23.25	23.18	22.20	21.23	21.20	79.26	81.31	83.02	83.40	83.77	86.04
87		119.41	120.75	121.59	126.10	127.46	128.85	2628.75	2697.69	2763.23	2878.74	2924.51	2960.19
88		3.15	3.16	3.14	3.08	3.00	2.86	6.53	6.70	6.82	6.86	7.11	7.34
89		24.48	24.52	24.42	25.87	26.15	26.98	50.68	51.97	52.94	54.27	56.08	56.92
90	CLOCKS & MUSICAL INST.	19.76	19.64	19.43	19.43	19.17	18.65	84.40	86.39	87.96	89.82	91.89	92.98
91		7.12	7.07	6.99	6.85	6.71	6.62	30.21	30.92	31.48	32.17	33.08	34.22
92		7.99	7.91	7.79	7.70	7.52	7.21	65.11	63.72	61.81	59.12	58.54	56.43
93	ARMS	8.75	8.70	8.61	8.27	7.94	7.74	36.58	37.43	38.10	39.81	41.41	41.75
94	MISC. ART.	17.36	17.25	17.06	16.36	15.83	15.34	108.26	107.28	105.53	103.64	101.44	98.62
95		14.71	14.56	14.34	14.20	14.04	13.66	119.78	117.23	113.72	112.75	112.35	106.95
96		15.35	15.19	14.96	14.77	14.58	13.89	123.92	121.26	117.62	112.45	108.33	103.46
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	

MARITIME TRADE BETWEEN ASEAN AND CHINA

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.03
02		233.34	266.66	303.84	310.80	324.16	324.97	2.46	2.58	2.67	2.77	2.78	2.78
03		495.72	524.77	554.14	577.25	580.25	598.30	283.23	290.28	296.65	298.37	311.08	322.71
04		212.26	242.54	277.09	286.23	296.05	306.44	16.99	17.41	17.76	18.19	18.33	18.35
05		7.79	8.25	8.71	9.14	9.22	9.24	5.99	6.13	6.27	6.54	6.65	6.92
06	VEGETABLE PRODUCTS	68.07	73.37	79.21	82.55	84.31	84.47	314.94	337.50	360.00	360.54	373.70	390.71
07		743.86	761.99	780.71	782.74	815.07	845.88	654.48	667.78	679.45	702.08	707.48	719.58
08		808.25	822.48	837.39	844.25	872.87	901.76	778.72	794.18	807.72	809.82	817.03	848.24
09		353.99	380.69	409.80	424.14	436.02	447.35	102.59	109.59	116.26	121.70	124.08	125.02
10		1198.17	1335.30	1475.75	1503.49	1573.40	1642.63	252.35	253.76	254.21	259.06	260.83	268.42
11		260.87	275.92	291.10	291.39	300.89	313.59	114.51	117.46	120.09	123.92	128.27	128.99
12		256.92	276.81	298.62	301.73	310.93	317.80	249.51	260.93	271.70	273.03	280.46	285.73
13		66.60	70.52	74.48	75.57	78.69	81.68	592.65	633.43	674.14	687.69	704.89	737.31
14		4.55	4.92	5.32	5.59	5.76	5.76	1622.54	1732.57	1842.12	1932.39	1968.33	2020.29
15	FATS & OILS	190.54	210.18	231.68	240.88	243.39	250.93	3777.55	3847.19	3897.00	3991.70	4154.96	4295.81
16	PREPARED FOODSTUFFS	196.98	214.64	233.54	237.12	246.93	258.14	57.77	59.26	60.57	61.10	62.10	62.57
17		55.30	61.05	67.48	70.82	71.82	74.14	76.83	79.55	81.88	83.67	85.51	88.92
18		85.83	91.10	96.51	99.96	102.70	106.20	36.70	37.80	38.79	40.49	40.51	40.92
19		158.59	167.94	177.39	178.53	182.36	187.36	71.72	73.55	75.17	78.17	79.65	80.79
20		437.45	463.24	489.31	500.22	513.98	530.78	197.82	202.87	207.36	208.12	212.24	212.82
21		123.33	131.44	139.82	143.71	146.13	150.29	51.97	53.29	54.47	54.81	57.11	58.79
22		166.72	172.87	178.69	180.55	181.02	185.02	36.52	37.75	38.95	39.42	41.31	43.36
23		65.54	71.48	77.98	79.17	79.58	79.84	1461.44	1499.08	1530.13	1575.27	1611.66	1629.55
24		68.82	72.24	75.74	78.75	82.00	84.34	15.51	16.32	17.11	17.62	17.87	17.91
25	MINERAL PRODUCTS	264.71	281.43	297.80	299.83	301.78	305.22	4568.59	4938.78	5341.12	5363.02	5553.94	5740.00
26		57.64	61.15	64.53	65.78	66.12	67.47	1817.00	1964.48	2124.77	2223.36	2284.50	2359.89
27		7209.15	7851.09	8545.98	8566.50	8820.92	8938.24	17522.56	19679.95	22122.51	22954.32	23633.77	24066.26
28	CHEMICAL PRODUCTS	3608.35	3960.23	4331.24	4517.49	4733.42	4846.08	4852.11	5225.35	5608.64	5797.65	5998.25	6075.63
29		2401.11	2636.52	2884.41	2980.75	3101.77	3196.37	3311.34	3560.58	3813.15	4002.67	4005.07	4033.50
30		145.75	159.47	173.80	180.60	189.48	195.13	180.50	194.05	207.76	214.20	219.04	227.67
31		313.96	344.68	377.01	395.71	400.66	402.54	503.53	541.87	581.17	599.82	611.64	630.78
32		490.78	538.94	589.64	591.59	600.70	603.10	677.66	728.68	780.39	787.96	823.26	847.79
33		366.48	402.44	440.30	440.96	451.81	463.38	506.03	544.13	582.74	591.66	614.20	620.46
34		295.82	325.00	355.69	364.62	379.86	398.67	384.99	413.87	443.12	445.12	460.12	462.28
35		117.53	128.76	140.64	142.18	142.77	143.73	137.43	147.39	157.45	158.35	159.72	162.28
36		59.81	65.91	72.29	73.13	76.17	77.52	46.49	49.82	53.18	55.53	55.53	57.92
37		274.13	301.03	329.35	339.07	347.44	349.04	378.51	407.01	435.90	443.92	463.58	477.21
38		1010.73	1106.96	1207.59	1218.58	1276.34	1330.72	1237.03	1329.11	1422.27	1477.31	1516.75	1543.90
39	PLASTICS	1421.32	1560.78	1707.62	1788.39	1857.07	1919.65	1962.51	2110.28	2260.03	2263.20	2321.36	2322.52
40		907.38	996.35	1090.03	1119.35	1148.12	1188.07	2237.86	2402.22	2567.88	2582.01	2683.48	2805.31
41	LEATHER GOODS	690.70	743.02	794.20	806.99	829.83	842.86	112.50	115.39	117.59	122.80	124.23	127.94
42		220.08	237.00	253.75	265.73	270.56	272.46	24.75	25.41	25.92	26.14	26.74	26.97
43		1.48	1.54	1.59	1.64	1.71	1.77	1.34	1.39	1.45	1.46	1.50	1.54
44	WOOD PRODUCTS	337.96	355.36	372.53	388.29	390.07	402.17	2270.71	2425.89	2580.86	2674.55	2798.92	2849.30
45		12.84	13.46	14.06	14.26	14.59	15.16	189.11	202.30	215.48	220.93	227.27	234.14
46		30.68	32.15	33.58	34.27	35.14	35.73	10.19	10.29	10.34	10.59	10.70	11.01
47	PAPER	63.65	69.37	75.31	77.03	78.04	78.36	143.13	150.52	157.53	164.12	164.89	168.63
48		1072.43	1168.84	1268.75	1292.10	1351.41	1358.84	2411.47	2536.04	2654.14	2669.27	2676.48	2680.49
49		34.92	38.06	41.32	41.53	41.82	43.64	78.53	82.59	86.43	90.32	91.99	95.40

MARITIME TRADE BETWEEN ASEAN AND CHINA (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	15.03	15.96	16.83	17.03	17.51	18.03	1.40	1.46	1.52	1.57	1.63	1.72
51		431.75	458.60	483.65	485.97	505.27	506.73	40.32	42.03	43.56	45.26	46.03	46.33
52		2109.93	2241.16	2363.69	2376.21	2486.71	2539.43	196.89	205.27	212.75	221.17	223.36	227.54
53		181.84	193.41	204.28	208.35	218.43	219.18	17.05	17.83	18.54	19.05	19.27	19.63
54		1195.36	1269.65	1339.01	1388.82	1443.82	1476.16	111.53	116.26	120.49	124.78	125.79	130.72
55		1916.24	2035.34	2146.52	2156.83	2166.96	2254.94	178.79	186.38	193.15	197.75	197.97	199.06
56		552.67	587.02	619.09	639.70	648.34	679.59	51.57	53.75	55.71	58.32	61.05	61.17
57		343.77	365.14	385.08	393.28	410.98	424.87	32.07	33.44	34.65	35.92	37.45	37.48
58		389.32	413.52	436.11	454.51	463.92	482.57	36.32	37.87	39.24	40.82	41.34	42.15
59		312.17	334.63	356.45	358.34	363.07	380.14	73.41	77.82	82.12	84.26	88.37	89.21
60		634.70	674.15	710.97	739.56	764.03	791.46	59.22	61.73	63.98	65.78	67.77	67.90
61		2170.83	2307.42	2440.02	2475.64	2551.40	2596.56	49.34	51.28	53.01	53.41	54.10	55.27
62		1941.62	2064.01	2183.49	2248.34	2248.57	2320.52	23.69	24.54	25.30	26.05	26.59	26.69
63	852.72	906.35	956.53	994.02	1027.12	1046.43	87.01	90.75	94.09	97.05	98.46	102.44	
64	FOOTWEAR	250.67	269.73	288.38	289.74	297.76	305.24	39.51	40.50	41.24	42.62	44.59	45.52
65		206.83	220.53	234.04	239.21	240.14	252.03	28.22	30.26	32.31	33.15	34.61	35.03
66		110.08	121.76	133.91	135.50	140.36	144.66	14.73	15.22	15.62	15.75	16.53	17.18
67		113.62	125.68	138.21	144.83	145.95	150.31	15.21	15.71	16.13	16.30	16.78	17.37
68	STONE & GLASS	615.97	659.06	702.57	714.31	746.02	751.17	91.42	95.38	99.01	102.79	106.93	110.07
69		254.79	272.61	290.61	300.41	302.48	303.32	37.82	39.45	40.95	41.62	43.12	44.80
70		600.20	641.81	683.61	714.38	742.67	742.96	86.47	90.21	93.63	97.99	102.70	105.70
71	PRECIOUS STONES	24.37	27.10	29.95	31.14	32.21	33.78	15.03	16.11	17.21	17.65	17.69	17.81
72	BASE METALS	10887.38	11685.99	12450.71	12661.13	13024.51	13150.84	291.19	310.40	330.22	342.33	357.98	363.71
73		4504.59	4845.38	5176.73	5285.96	5330.89	5523.87	388.87	407.98	425.92	426.48	444.56	446.60
74		1880.03	2071.14	2268.05	2309.78	2317.86	2319.49	574.03	612.66	649.74	680.21	708.85	729.62
75		290.85	323.74	358.02	359.74	369.70	374.47	122.23	130.75	138.94	140.53	145.79	148.09
76		900.48	993.36	1089.21	1121.99	1129.85	1178.32	304.21	324.59	344.09	351.31	360.02	362.47
77		---	---	---	---	---	---	---	---	---	---	---	---
78		226.96	252.74	279.61	289.98	290.88	302.86	96.28	103.00	109.46	110.48	113.88	117.52
79		259.29	288.74	319.44	322.50	324.63	332.07	110.00	117.68	125.06	128.42	133.84	139.29
80		185.61	206.49	228.23	238.63	243.50	243.72	77.05	82.41	87.56	91.14	95.21	98.52
81		524.56	586.13	650.50	670.66	682.73	699.19	238.90	255.76	271.98	283.65	285.64	293.55
82		881.13	949.86	1018.27	1039.14	1077.28	1083.31	114.31	119.42	124.04	126.49	131.21	132.74
83	701.73	756.47	810.95	811.93	841.24	844.94	91.03	95.11	98.79	100.07	103.62	106.76	
84	MACHINE	11533.77	12487.37	13424.79	13804.71	14467.34	15014.20	6463.12	6832.82	7187.64	7365.90	7676.74	7982.27
85		5807.56	6282.78	6752.97	6996.07	7119.20	7260.88	5380.12	5713.92	6038.52	6057.84	6178.39	6400.82
86	VEHICLES	1852.66	2040.48	2228.90	2298.00	2374.29	2398.03	24.88	25.92	26.80	27.53	28.20	29.21
87		5057.64	5506.01	5954.04	6080.86	6327.74	6642.23	263.67	273.92	283.28	289.46	297.21	301.49
88		261.32	287.83	314.42	318.47	331.85	343.60	3.52	3.67	3.79	3.84	4.03	4.08
89		2018.14	2223.61	2429.75	2437.04	2479.94	2600.71	25.64	26.73	27.66	27.92	28.71	28.90
90	CLOCKS & MUSICAL INST.	910.22	985.27	1058.56	1060.36	1063.44	1104.91	300.83	314.83	327.67	335.01	346.84	352.52
91		327.91	354.91	381.26	396.97	416.34	419.01	108.18	113.20	117.82	120.02	121.25	121.40
92		352.84	390.29	429.22	436.98	442.84	463.08	47.22	48.79	50.08	51.06	53.40	55.95
93	ARMS	396.73	429.35	461.21	480.31	503.17	518.47	128.43	134.41	139.89	143.56	149.48	150.98
94	MISC. ART.	774.14	847.20	921.40	949.59	980.36	1029.38	171.07	178.69	185.61	185.87	192.70	200.67
95		649.15	718.05	789.67	826.79	865.73	867.03	86.87	89.76	92.14	96.25	98.58	101.50
96		678.94	750.69	825.23	830.34	837.98	848.04	91.11	94.12	96.60	98.52	103.45	103.85
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

MARITIME TRADE BETWEEN ASEAN AND JAPAN

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	0.02
02		6.78	6.53	6.29	6.25	6.22	6.11	376.35	374.70	365.84	364.63	353.80	351.25
03		79.90	79.34	78.59	74.97	73.89	70.61	892.05	886.64	877.73	877.38	835.79	833.20
04		9.27	9.24	9.19	8.81	8.62	8.37	56.55	56.37	55.94	55.50	54.10	51.91
05		1.40	1.40	1.39	1.37	1.31	1.29	16.70	16.61	16.46	16.38	16.25	16.12
06	VEGETABLE PRODUCTS	1.02	0.99	0.95	0.91	0.89	0.86	132.50	134.94	136.70	142.06	145.25	151.30
07		25.82	25.58	25.28	24.97	24.93	23.71	569.70	567.62	562.61	544.77	519.77	501.99
08		10.01	9.88	9.74	9.37	8.92	8.82	489.43	488.37	484.59	470.87	468.14	456.39
09		11.75	11.52	11.26	10.74	10.33	10.17	227.77	229.34	229.15	220.63	218.73	218.71
10		1.78	1.67	1.59	1.51	1.44	1.38	95.65	97.07	97.60	99.46	99.64	101.04
11		38.57	38.30	37.92	36.70	35.98	34.44	395.06	392.48	388.21	371.09	358.29	344.74
12		4.40	4.29	4.18	4.07	3.99	3.83	144.87	146.74	147.45	154.03	159.79	161.03
13		9.95	9.87	9.77	9.42	9.19	8.86	292.92	295.97	297.88	312.27	327.54	338.42
14		0.51	0.51	0.50	0.48	0.46	0.45	520.06	530.21	538.40	561.17	572.56	599.07
15	FATS & OILS	21.87	21.52	21.08	20.81	20.15	19.39	459.04	460.05	456.83	451.90	449.78	428.55
16	PREPARED FOODSTUFFS	19.81	19.58	19.32	18.46	18.00	17.38	323.37	321.51	316.44	316.44	310.93	306.83
17		0.81	0.80	0.80	0.80	0.78	0.78	222.78	225.03	226.46	231.10	237.87	244.32
18		11.28	11.18	11.06	10.69	10.54	10.03	123.83	123.13	121.87	117.17	112.30	111.41
19		23.62	23.43	23.18	23.01	21.86	21.09	251.47	249.82	247.08	244.22	234.67	227.74
20		65.15	64.63	63.94	62.31	60.76	60.32	693.65	689.09	681.54	674.53	663.13	640.51
21		17.30	17.17	16.99	16.79	16.27	16.13	182.15	180.96	178.99	174.98	166.44	164.31
22		21.70	21.89	22.01	23.11	24.15	24.61	55.32	55.13	54.80	53.02	51.54	50.97
23		5.73	5.66	5.59	5.53	5.51	5.37	252.79	254.30	254.11	239.50	228.34	218.11
24		6.28	6.32	6.35	6.49	6.52	6.59	23.36	23.49	23.48	23.71	24.93	25.12
25	MINERAL PRODUCTS	89.46	90.00	90.18	92.52	93.26	95.82	1951.95	1944.26	1937.71	1929.37	1908.73	1827.23
26		17.99	18.43	18.77	18.86	19.21	19.87	762.45	759.51	757.10	731.51	699.18	697.92
27		2364.17	2508.36	2655.70	2721.03	2776.54	2883.16	29303.68	30594.57	31848.77	32129.04	32668.81	33730.55
28	CHEMICAL PRODUCTS	2008.70	1999.78	1980.39	1962.57	1930.97	1912.24	1479.20	1505.30	1525.77	1542.25	1557.05	1607.19
29		1385.31	1370.22	1347.07	1340.47	1305.08	1264.24	921.37	936.91	947.90	982.41	997.83	1029.96
30		75.90	75.04	73.74	73.47	70.32	67.07	50.30	51.08	51.63	52.55	54.95	57.05
31		180.76	178.82	175.82	173.73	166.19	160.18	149.64	151.55	152.89	154.80	161.58	163.31
32		283.53	280.45	275.71	268.43	266.66	266.47	187.26	190.45	192.72	202.20	207.58	215.61
33		211.72	209.42	205.88	205.22	199.78	190.11	139.83	142.22	143.91	150.43	154.20	160.50
34		163.39	161.53	158.72	153.06	151.86	146.28	112.97	114.54	115.53	119.59	120.30	123.27
35		56.94	56.33	55.40	54.67	53.31	52.53	63.31	63.75	63.89	64.01	65.16	67.58
36		23.00	22.63	22.13	21.94	21.22	20.76	22.97	22.82	22.52	21.84	21.75	21.53
37		158.37	156.65	154.00	152.78	148.40	143.34	104.60	106.38	107.65	112.90	114.15	119.49
38		570.10	563.27	553.19	537.03	532.04	515.39	369.79	375.17	378.67	397.30	408.07	408.92
39	PLASTICS	821.12	812.18	798.46	790.39	783.99	750.20	542.32	551.56	558.12	583.35	588.02	591.25
40		523.75	518.05	509.29	497.02	490.51	472.02	676.02	688.47	698.00	701.55	713.06	728.39
41	LEATHER GOODS	3.97	3.77	3.56	3.54	3.52	3.41	176.73	166.70	155.91	154.24	153.17	150.10
42		6.72	6.48	6.19	5.95	5.82	5.59	51.65	49.07	46.23	44.16	43.97	42.93
43		0.10	0.10	0.10	0.10	0.09	0.09	1.43	1.40	1.37	1.30	1.27	1.25
44	WOOD PRODUCTS	24.16	23.81	23.35	22.44	21.99	20.97	1234.90	1241.55	1244.03	1291.18	1316.49	1337.69
45		0.42	0.41	0.41	0.39	0.37	0.37	82.68	83.59	84.22	86.29	86.47	89.59
46		0.92	0.90	0.88	0.84	0.83	0.82	50.52	49.76	48.85	48.57	47.96	45.83
47	PAPER	20.34	20.40	20.37	21.30	20.43	20.83	13.88	13.97	13.98	14.45	14.63	14.89
48		342.72	343.69	343.25	346.92	351.57	357.23	233.89	235.32	235.46	242.95	244.70	255.98
49		11.16	11.19	11.18	10.66	10.15	9.89	7.62	7.66	7.67	7.94	8.22	8.62

MARITIME TRADE BETWEEN ASEAN AND JAPAN (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	0.94	0.90	0.85	0.84	0.81	0.81	0.78	0.72	0.67	0.67	0.65	0.63
51		26.97	25.77	24.44	24.02	23.86	22.98	22.31	20.83	19.29	19.06	18.59	18.44
52		131.66	125.81	119.32	117.26	113.32	109.62	109.10	101.86	94.35	89.67	88.44	87.90
53		10.86	10.38	9.84	9.70	9.38	9.28	9.58	8.98	8.35	8.26	7.99	7.88
54		74.68	71.37	67.68	64.55	62.34	60.56	61.78	57.67	53.41	51.13	49.56	47.08
55		119.72	114.41	108.50	108.12	102.96	102.22	99.04	92.45	85.62	81.62	81.32	79.81
56		34.53	33.00	31.29	31.19	30.64	29.47	28.56	26.66	24.69	23.96	22.94	22.03
57		21.48	20.52	19.47	18.92	18.06	17.35	17.77	16.58	15.36	14.84	14.37	13.92
58		24.32	23.24	22.04	21.87	21.27	20.69	20.12	18.78	17.40	17.19	17.12	16.37
59		40.05	38.95	37.63	37.23	36.99	35.39	40.91	39.74	38.35	37.21	36.69	36.28
60		39.65	37.89	35.94	34.71	33.78	32.47	32.80	30.62	28.36	27.31	27.23	25.87
61		21.66	20.69	19.63	19.03	18.66	17.83	246.23	234.04	220.91	213.15	209.44	207.12
62		4.17	3.98	3.78	3.72	3.55	3.38	238.11	226.58	214.11	213.64	209.88	199.43
63	68.17	65.48	62.45	59.71	59.33	56.39	50.40	47.50	44.45	44.10	42.50	41.91	
64	FOOTWEAR	1.33	1.26	1.18	1.16	1.14	1.09	62.88	59.25	55.34	52.86	52.10	50.86
65		11.25	11.12	10.92	10.51	10.06	9.73	30.23	29.23	28.11	27.22	26.81	26.55
66		19.66	19.00	18.22	17.94	17.19	16.86	42.59	41.24	39.55	38.33	38.10	37.19
67		20.30	19.61	18.80	18.66	18.46	17.78	43.96	42.56	40.82	39.79	39.71	39.12
68	STONE & GLASS	243.87	240.92	237.08	227.15	221.40	214.01	179.23	178.40	176.56	172.52	166.53	165.03
69		100.88	99.65	98.07	94.79	92.37	90.56	74.14	73.79	73.03	70.35	70.18	68.10
70		221.83	219.05	215.46	205.48	202.85	194.35	163.30	162.39	160.58	154.56	148.11	146.32
71	PRECIOUS STONES	14.00	13.97	13.84	13.41	12.99	12.55	18.07	18.14	18.11	17.21	16.64	16.28
72	BASE METALS	5712.70	5690.72	5627.35	5620.03	5585.19	5566.20	165.65	168.09	170.06	170.47	178.85	180.03
73		2059.25	2037.66	2003.35	1992.13	1898.31	1823.51	432.24	429.13	423.36	408.37	398.98	388.73
74		2712.57	2715.37	2702.15	2828.34	2783.09	2759.71	1164.03	1182.55	1193.98	1230.75	1255.61	1278.09
75		230.69	231.00	229.66	234.53	231.55	245.23	214.57	218.21	220.40	227.08	228.33	238.97
76		593.36	592.11	586.92	570.95	548.80	525.64	526.30	533.90	537.96	552.97	563.86	588.50
77		---	---	---	---	---	---	---	---	---	---	---	---
78		181.48	181.75	180.72	184.88	188.89	190.91	169.12	172.00	173.74	174.79	181.50	185.20
79		207.33	207.64	206.46	203.16	199.83	194.81	193.21	196.51	198.49	203.34	204.82	212.15
80		145.66	145.83	144.97	151.21	158.20	159.10	135.16	137.44	138.80	144.31	146.01	152.87
81		446.12	447.23	445.07	419.66	416.55	399.18	421.32	428.80	433.43	447.43	453.06	473.81
82		281.99	275.30	267.63	262.97	255.29	246.66	173.95	172.32	169.57	169.26	166.76	163.49
83		224.58	219.25	213.14	209.67	199.71	190.58	138.53	137.23	135.04	132.91	132.60	130.30
84	MACHINE	4977.40	4866.33	4728.70	4627.98	4402.60	4227.37	2572.02	2550.00	2512.02	2490.17	2416.46	2341.31
85		1471.63	1436.07	1392.81	1392.53	1346.02	1298.64	1111.22	1101.80	1085.97	1074.78	1060.17	1021.68
86	VEHICLES	429.41	420.88	409.74	397.74	378.05	365.27	39.55	40.19	40.50	42.29	43.12	44.47
87		6810.76	6800.40	6754.58	6752.56	6455.44	6250.81	975.82	984.52	989.32	1008.12	1056.20	1065.82
88		49.56	48.33	46.79	45.38	43.30	42.24	4.14	4.21	4.23	4.41	4.47	4.55
89		385.17	375.65	363.70	350.50	341.77	327.31	31.30	31.88	32.13	32.48	33.13	34.09
90	CLOCKS & MUSICAL INST.	488.54	476.74	462.30	439.60	420.39	408.07	231.46	229.21	225.43	224.10	214.92	213.63
91		175.11	170.88	165.71	159.41	157.13	154.74	83.23	82.40	81.02	77.52	73.86	72.77
92		63.03	60.90	58.39	56.35	54.59	54.25	136.50	132.17	126.77	123.98	117.93	112.84
93	ARMS	210.23	205.16	198.95	193.84	187.91	181.58	99.87	98.92	97.30	96.44	92.71	92.52
94	MISC. ART.	245.44	238.89	230.98	228.63	225.43	222.99	246.69	240.77	233.04	230.38	225.34	223.72
95		115.96	112.04	107.43	105.92	101.79	96.94	251.14	243.18	233.24	225.80	222.21	221.12
96		119.48	115.44	110.68	110.23	105.59	104.08	261.25	252.90	242.50	238.98	235.13	232.66
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

MARITIME TRADE BETWEEN ASEAN AND SOUTH KOREA

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
02		9.69	9.72	9.69	9.40	9.01	8.56	13.60	14.09	14.36	14.50	14.83	15.08
03		67.39	68.37	69.20	70.93	71.28	72.89	183.18	183.60	183.23	192.94	201.45	202.44
04		5.84	5.98	6.11	6.21	6.36	6.48	10.65	10.71	10.71	10.95	10.95	11.41
05		1.27	1.29	1.31	1.35	1.35	1.38	3.81	3.83	3.83	4.00	4.10	4.30
06	VEGETABLE PRODUCTS	2.40	2.67	2.96	3.06	3.15	3.29	60.63	63.49	66.20	67.11	68.49	71.26
07		23.58	23.96	24.28	24.98	25.61	25.95	153.19	150.58	147.48	143.89	139.42	138.43
08		11.83	12.05	12.24	12.55	13.12	13.61	152.04	148.62	144.78	140.70	134.61	132.78
09		16.66	17.96	19.32	19.39	20.15	20.49	52.84	52.14	50.94	50.41	48.46	47.40
10		0.04	0.04	0.04	0.04	0.04	0.04	6.07	5.47	4.84	4.67	4.54	4.53
11		30.75	31.22	31.61	32.64	33.81	35.17	75.72	75.79	75.50	76.66	78.52	81.59
12		7.52	8.21	8.94	9.07	9.14	9.22	39.38	39.35	38.97	37.56	36.51	34.94
13		7.87	7.98	8.08	8.21	8.24	8.43	118.42	124.15	129.68	130.38	131.73	136.23
14		0.14	0.15	0.15	0.16	0.16	0.16	275.04	290.77	306.15	320.14	334.58	337.45
15	FATS & OILS	12.52	12.36	12.12	11.67	11.25	10.83	295.86	305.92	314.02	328.09	329.17	334.47
16	PREPARED FOODSTUFFS	17.59	17.80	17.96	18.69	18.78	18.92	41.96	42.14	42.07	42.02	40.86	40.29
17		19.40	19.34	19.30	18.99	18.26	18.07	103.31	108.09	112.51	115.94	116.05	119.43
18		9.27	9.45	9.60	9.71	10.04	10.04	23.58	23.56	23.43	22.82	22.32	22.03
19		18.86	19.14	19.37	19.57	19.69	20.29	47.12	47.15	46.95	48.06	47.34	44.67
20		52.02	52.79	53.44	54.88	57.30	57.48	129.97	130.05	129.51	124.04	121.60	118.93
21		13.74	13.95	14.12	14.17	14.68	15.20	34.14	34.16	34.02	34.26	32.34	31.01
22		16.83	17.17	17.46	18.28	18.65	19.32	29.41	29.70	29.92	30.80	31.36	31.82
23		4.07	4.14	4.19	4.32	4.37	4.55	140.60	146.03	150.74	154.04	160.34	163.31
24		5.41	5.60	5.78	6.03	6.30	6.53	10.68	10.71	10.69	10.91	10.49	9.93
25	MINERAL PRODUCTS	18.38	18.86	19.28	20.24	20.73	21.73	557.77	574.13	591.81	609.03	612.62	637.13
26		5.90	5.98	6.02	6.29	6.50	6.68	216.26	222.75	229.80	231.53	240.53	244.07
27		6556.23	6947.51	7343.47	7701.10	8014.53	8216.50	17241.72	18645.69	20062.88	20082.94	20402.26	20583.84
28	CHEMICAL PRODUCTS	1248.25	1257.85	1260.83	1300.55	1317.71	1368.71	752.11	788.98	825.18	840.94	859.61	895.20
29		575.16	559.99	539.54	514.07	508.78	494.43	450.58	473.20	495.00	512.72	523.74	538.98
30		32.63	31.76	30.60	29.45	29.00	28.18	24.92	26.12	27.28	27.72	28.74	29.44
31		74.95	72.98	70.33	68.90	65.59	64.49	67.13	70.34	73.46	76.45	79.83	79.98
32		117.67	114.56	110.37	106.72	104.28	103.24	92.00	96.63	101.10	102.94	107.30	108.19
33		87.87	85.55	82.42	79.55	78.63	76.64	68.70	72.16	75.49	79.06	79.21	79.58
34		67.34	65.59	63.22	60.44	57.69	54.93	53.25	55.86	58.35	58.57	59.67	60.83
35		24.62	24.06	23.29	22.20	21.26	20.45	22.75	23.64	24.47	25.52	25.97	26.30
36		8.83	8.64	8.37	8.21	7.92	7.76	7.82	8.10	8.35	8.37	8.73	9.01
37		65.72	63.99	61.65	58.66	58.52	56.31	51.39	53.97	56.47	57.57	58.87	60.83
38		222.24	217.02	209.84	201.43	194.90	192.15	174.63	183.04	191.08	193.32	199.75	203.69
39	PLASTICS	340.77	331.77	319.64	315.64	307.28	300.18	266.43	279.85	292.78	297.73	311.48	314.10
40		217.31	211.57	203.84	202.31	198.12	193.78	343.13	361.70	379.78	385.13	390.68	397.44
41	LEATHER GOODS	43.96	42.79	41.39	40.20	38.59	38.20	69.98	67.70	64.89	61.64	61.32	61.17
42		10.40	10.18	9.91	9.55	9.21	8.88	16.15	15.68	15.08	14.95	14.76	14.29
43		0.02	0.02	0.02	0.02	0.02	0.02	0.15	0.15	0.16	0.16	0.17	0.17
44	WOOD PRODUCTS	7.97	7.80	7.56	7.43	7.19	6.89	572.78	595.76	617.58	619.01	627.36	652.58
45		0.09	0.09	0.09	0.08	0.08	0.08	40.34	42.26	44.11	46.13	48.17	49.96
46		0.19	0.19	0.19	0.18	0.18	0.17	19.12	19.23	19.26	19.95	20.54	21.14
47	PAPER	9.44	9.71	9.94	10.22	10.23	10.29	33.69	34.66	35.48	36.30	36.90	37.91
48		159.11	163.57	167.46	169.47	177.28	180.01	567.60	583.94	597.78	611.94	637.28	647.67
49		5.18	5.33	5.45	5.69	5.74	5.89	18.48	19.02	19.47	20.39	21.12	21.12

MARITIME TRADE BETWEEN ASEAN AND SOUTH KOREA (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	1.44	1.40	1.35	1.32	1.30	1.24	0.58	0.56	0.53	0.53	0.51	0.51
51		41.41	40.19	38.69	37.94	37.93	37.27	16.65	16.05	15.35	14.63	14.47	14.45
52		202.20	196.24	188.91	179.90	179.06	175.78	81.29	78.38	74.97	73.15	69.74	69.24
53		16.87	16.40	15.82	15.36	15.34	15.16	6.86	6.62	6.34	6.28	6.21	5.93
54		114.66	111.27	107.11	102.68	98.66	97.18	46.08	44.43	42.50	42.47	41.19	40.64
55		183.81	178.38	171.71	169.44	161.85	154.51	73.87	71.23	68.13	67.09	66.07	64.28
56		53.01	51.45	49.52	49.40	48.51	48.35	21.31	20.54	19.65	18.74	18.41	18.25
57		32.97	32.00	30.80	30.78	30.60	30.34	13.25	12.78	12.22	12.17	11.73	11.42
58		37.34	36.24	34.89	33.91	32.81	31.80	15.01	14.47	13.84	13.55	13.04	12.51
59		32.10	31.28	30.22	29.01	28.75	28.70	19.02	18.98	18.83	18.80	18.49	17.70
60		60.88	59.08	56.87	54.67	52.52	50.05	24.47	23.59	22.57	22.31	21.43	20.70
61		51.94	50.74	49.24	49.03	47.37	46.25	48.44	46.90	45.08	44.64	42.87	42.61
62		25.60	25.19	24.66	23.89	23.46	23.04	38.62	37.44	36.04	35.84	34.54	33.58
63	82.72	80.48	77.69	74.27	72.12	71.99	33.36	32.27	30.98	30.30	28.81	28.69	
64	FOOTWEAR	16.04	15.61	15.11	14.90	14.86	14.86	25.39	24.56	23.53	22.41	22.03	21.96
65		6.98	6.82	6.61	6.45	6.33	6.22	7.26	7.32	7.36	7.47	7.69	7.83
66		5.42	5.45	5.45	5.30	5.18	5.17	7.75	7.70	7.56	7.31	7.25	6.90
67		5.60	5.63	5.62	5.40	5.16	4.97	8.00	7.95	7.80	7.65	7.49	7.14
68	STONE & GLASS	34.84	35.60	36.29	37.58	39.21	41.15	75.60	76.46	76.85	78.30	80.01	80.20
69		14.41	14.73	15.01	15.41	15.42	16.12	31.27	31.63	31.79	33.18	33.31	34.42
70		35.81	36.36	36.82	38.32	38.63	39.89	69.68	70.38	70.65	72.53	73.62	75.80
71	PRECIOUS STONES	6.13	6.26	6.35	6.43	6.74	7.04	4.40	4.54	4.66	4.89	5.10	5.22
72	BASE METALS	2296.24	2377.85	2449.97	2546.50	2574.01	2634.24	240.26	247.83	254.87	264.25	276.83	281.42
73		833.95	859.73	882.51	908.37	941.89	982.48	105.74	108.11	110.02	111.47	113.48	115.05
74		776.12	795.93	811.53	834.58	864.12	875.53	241.62	251.66	260.11	265.08	275.04	281.70
75		106.78	109.35	111.25	111.38	112.62	115.50	52.36	54.57	56.43	57.63	58.61	60.64
76		276.41	282.96	287.98	300.42	312.41	325.46	120.83	125.73	129.82	131.94	134.05	138.83
77		---	---	---	---	---	---	---	---	---	---	---	---
78		83.98	86.00	87.50	89.32	93.27	94.12	41.36	43.11	44.58	45.77	46.46	46.48
79		95.95	98.25	99.97	104.89	105.31	105.63	47.25	49.25	50.93	53.32	55.80	57.72
80		67.45	69.07	70.27	70.42	72.60	74.02	32.88	34.27	35.43	37.16	37.25	38.06
81		206.07	211.03	214.70	217.45	219.86	225.82	104.70	109.18	112.94	117.27	120.11	123.31
82		136.56	139.56	142.26	144.82	149.82	150.61	16.22	16.23	16.13	16.88	17.60	17.71
83	108.76	111.14	113.30	114.44	118.32	124.18	12.92	12.93	12.84	12.67	12.51	12.22	
84	MACHINE	1467.27	1503.29	1533.43	1592.16	1663.33	1744.66	608.79	623.00	633.56	662.96	670.78	687.15
85		517.53	530.05	540.61	547.53	549.56	570.61	314.39	320.17	324.17	325.95	341.40	344.47
86	VEHICLES	777.04	800.41	820.07	835.90	845.68	869.45	17.52	18.10	18.50	19.13	20.08	20.84
87		2153.64	2215.21	2267.12	2273.24	2366.45	2398.87	80.91	83.04	84.68	84.86	86.00	87.87
88		108.57	111.83	114.57	115.62	119.92	122.67	2.51	2.58	2.63	2.75	2.85	2.85
89		844.55	869.99	891.40	904.94	919.33	961.25	18.81	19.44	19.86	20.72	21.07	21.18
90	CLOCKS & MUSICAL INST.	114.08	116.48	118.37	121.14	124.04	127.03	49.28	50.56	51.53	51.55	52.82	52.96
91		41.04	41.89	42.57	44.29	45.41	47.64	17.85	18.30	18.64	19.31	19.54	19.79
92		17.38	17.48	17.45	16.53	16.21	15.74	24.85	24.67	24.23	23.67	23.00	22.43
93	ARMS	50.26	51.32	52.16	53.65	53.93	56.30	20.93	21.48	21.88	22.74	23.66	24.74
94	MISC. ART.	65.54	66.33	66.78	68.45	70.10	72.75	49.58	49.84	49.67	48.16	46.19	45.13
95		31.98	32.15	32.11	32.21	31.03	32.74	45.72	45.40	44.58	43.40	41.77	41.33
96		33.60	33.76	33.70	34.50	33.18	32.54	48.14	47.77	46.89	46.04	44.86	44.26
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	

MARITIME TRADE BETWEEN ASEAN AND U.S.

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.07	0.07	0.07	0.07	0.07	0.07	0.09	0.09	0.09	0.09	0.10	0.10
02		126.93	119.62	112.76	111.32	106.79	102.02	1.79	1.91	2.02	2.08	2.14	2.21
03		187.51	185.67	183.64	178.54	177.82	173.08	1389.50	1434.88	1473.98	1497.56	1531.70	1592.36
04		440.71	439.48	438.16	438.08	416.70	416.49	86.84	89.76	92.27	96.84	100.44	103.33
05		3.17	3.15	3.12	2.98	2.92	2.77	23.99	24.78	25.48	26.58	27.59	28.11
06	VEGETABLE PRODUCTS	8.37	8.15	7.94	7.70	7.38	7.13	234.93	248.17	260.56	268.53	272.88	275.78
07		145.97	142.00	138.12	134.03	131.25	128.46	618.73	641.00	660.27	669.72	678.96	704.76
08		132.36	127.81	123.43	120.48	119.63	116.25	389.65	405.13	418.73	431.21	441.64	449.50
09		42.37	41.41	40.43	39.18	38.63	37.33	668.16	706.39	741.02	770.22	800.57	830.03
10		808.75	785.29	752.56	748.65	722.45	691.82	293.40	298.04	300.92	309.47	312.31	325.99
11		92.91	91.99	90.97	89.76	85.74	83.62	653.16	674.32	692.31	725.75	758.41	791.55
12		478.83	477.31	475.44	461.46	446.10	440.97	370.68	392.66	412.69	432.75	450.53	470.85
13		29.52	29.18	28.82	28.01	27.75	26.76	391.12	407.47	422.63	430.37	441.30	462.48
14		20.12	19.83	19.54	19.10	18.56	17.75	617.80	648.25	677.65	708.76	742.21	760.47
15	FATS & OILS	212.69	209.00	205.60	195.91	187.61	183.59	1037.73	1091.16	1140.28	1181.78	1206.13	1220.96
16	PREPARED FOODSTUFFS	74.34	71.70	69.12	67.14	65.92	65.82	331.07	341.85	351.02	356.39	369.11	371.88
17		46.90	46.77	46.64	45.21	43.47	41.37	121.65	129.68	137.30	140.68	141.82	145.73
18		27.94	27.62	27.28	26.48	25.81	25.80	215.32	222.93	229.47	240.85	244.44	245.61
19		57.46	56.85	56.18	54.28	52.05	50.03	415.48	428.98	440.45	442.97	462.72	471.93
20		158.49	156.81	154.97	147.84	141.50	140.86	1146.04	1183.29	1214.94	1265.24	1294.09	1341.71
21		62.71	62.22	61.68	59.75	58.29	55.78	300.53	310.31	318.61	331.10	344.48	357.74
22		42.35	42.66	42.85	44.09	44.43	45.50	96.38	98.76	100.86	104.14	107.89	109.18
23		74.26	73.06	71.94	70.03	67.01	63.89	481.39	504.96	526.72	543.74	569.02	571.29
24		13.27	13.31	13.32	13.81	13.81	13.92	61.83	64.85	67.60	69.40	69.63	71.84
25	MINERAL PRODUCTS	118.63	123.00	126.92	132.15	138.76	144.13	55.38	57.10	58.50	61.32	62.18	63.05
26		43.94	45.74	47.37	48.68	49.11	51.19	10.56	10.98	11.36	11.39	11.91	12.15
27		2107.39	2240.30	2378.22	2379.41	2388.21	2394.42	4912.55	5448.99	5999.68	6201.87	6371.18	6642.59
28	CHEMICAL PRODUCTS	1551.76	1567.60	1582.24	1635.09	1636.23	1638.03	2229.70	2332.21	2423.84	2490.02	2530.10	2537.69
29		1068.96	1073.50	1076.84	1129.61	1137.29	1180.96	1662.13	1738.29	1805.95	1829.60	1861.81	1919.89
30		58.05	58.28	58.44	59.58	59.68	61.65	95.85	100.00	103.64	108.36	109.21	109.92
31		140.56	141.22	141.72	146.34	146.64	149.38	215.07	224.94	233.71	239.37	250.35	250.50
32		218.57	219.50	220.19	225.08	227.01	228.58	338.03	353.55	367.34	372.30	378.70	393.70
33		163.21	163.91	164.42	164.67	166.30	172.10	252.42	264.01	274.30	281.30	282.14	290.72
34		126.40	126.84	127.12	130.11	133.74	137.34	219.93	228.34	235.43	239.97	251.85	263.64
35		63.89	63.96	63.97	66.82	69.37	69.42	109.78	114.22	118.10	119.33	120.55	126.05
36		18.42	18.34	18.23	17.88	17.17	16.73	66.07	66.51	66.31	68.03	67.86	64.48
37		122.08	122.60	122.99	125.37	125.48	131.02	188.81	197.48	205.18	209.88	214.12	222.38
38		421.94	422.81	423.18	425.25	435.67	445.17	642.37	671.44	697.10	728.06	756.01	761.53
39	PLASTICS	632.98	635.68	637.67	652.85	679.29	703.81	978.94	1023.89	1063.82	1072.97	1110.85	1127.29
40		413.44	415.02	416.14	424.30	435.33	449.52	1007.05	1054.53	1098.20	1134.12	1158.27	1210.97
41	LEATHER GOODS	35.43	34.11	32.75	31.12	30.84	30.49	594.87	568.85	538.89	528.06	517.60	513.82
42		9.41	9.01	8.59	8.20	7.95	7.80	274.43	269.97	263.14	254.78	243.80	240.67
43		4.25	4.23	4.21	4.19	4.19	4.08	5.29	5.42	5.53	5.60	5.70	5.83
44	WOOD PRODUCTS	51.79	51.09	50.36	49.67	47.99	46.74	1217.49	1265.06	1309.21	1359.09	1398.10	1447.87
45		2.64	2.59	2.55	2.45	2.44	2.40	86.90	90.68	94.26	94.28	94.48	96.86
46		1.92	1.87	1.83	1.78	1.78	1.75	36.80	37.40	37.80	38.59	40.06	40.49
47	PAPER	33.80	33.82	33.79	35.59	37.00	38.35	33.53	34.88	36.04	36.86	37.00	38.65
48		569.46	569.87	569.26	597.61	577.35	559.17	564.98	587.70	607.12	617.93	618.36	623.81
49		18.55	18.56	18.54	18.00	17.13	16.82	18.40	19.14	19.77	20.10	20.41	20.74

MARITIME TRADE BETWEEN ASEAN AND U.S. (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	0.30	0.28	0.26	0.26	0.25	0.24	6.11	6.17	6.16	6.17	5.91	5.56
51		8.52	8.01	7.50	7.21	7.06	6.71	175.65	177.22	177.09	178.17	182.46	188.65
52		127.36	127.08	126.28	124.86	123.45	121.63	857.38	865.08	864.42	823.02	820.13	819.72
53		265.47	272.01	276.98	284.54	286.74	291.98	70.73	71.36	71.31	69.30	68.93	67.98
54		23.59	22.19	20.77	19.94	19.10	18.61	486.35	490.71	490.34	461.11	441.24	426.55
55		37.82	35.57	33.29	31.65	30.90	30.61	779.64	786.64	786.04	828.96	796.63	815.03
56		10.91	10.26	9.60	9.45	9.24	8.86	224.86	226.88	226.71	219.04	216.90	216.38
57		6.79	6.38	5.97	5.82	5.60	5.44	139.87	141.12	141.01	136.29	133.22	128.72
58		7.68	7.23	6.76	6.44	6.31	6.09	158.40	159.82	159.70	167.54	173.97	174.41
59		25.98	25.54	25.06	24.74	24.44	24.31	186.20	187.20	186.33	196.34	187.15	195.10
60		12.53	11.78	11.03	10.53	10.30	9.98	258.23	260.55	260.35	259.39	255.79	249.21
61		10.73	10.08	9.44	9.36	8.95	8.80	3676.70	3705.85	3702.26	3564.90	3497.88	3441.57
62		5.31	4.99	4.67	4.66	4.43	4.37	3661.13	3690.03	3686.43	3753.89	3919.06	4039.77
63	26.72	25.48	24.21	23.57	23.44	22.47	344.02	347.42	347.47	347.89	357.01	362.32	
64	FOOTWEAR	7.85	7.38	6.92	6.80	6.71	6.44	211.08	201.41	190.32	187.31	180.96	172.01
65		8.88	8.88	8.88	8.71	8.42	8.37	367.52	370.92	371.09	374.73	392.34	392.34
66		17.77	17.24	16.66	15.95	15.49	15.08	170.43	168.39	164.33	156.79	150.65	145.52
67		18.35	17.80	17.20	16.71	16.04	15.71	175.91	173.81	169.62	169.53	161.68	156.88
68	STONE & GLASS	71.35	70.76	70.12	69.01	67.49	66.98	183.68	189.11	193.32	194.34	203.21	208.27
69		29.51	29.27	29.00	28.44	28.28	27.15	75.98	78.22	79.96	83.53	86.99	87.96
70		64.97	64.38	63.76	62.41	60.23	58.80	184.12	189.17	192.93	192.93	190.02	188.25
71	PRECIOUS STONES	3.29	3.26	3.23	3.16	3.03	3.01	16.73	16.64	16.37	15.80	15.59	14.84
72	BASE METALS	256.18	261.34	265.99	272.45	279.46	285.52	560.41	578.08	593.51	604.01	607.64	619.24
73		380.82	374.63	368.10	367.51	366.15	359.56	614.51	631.63	643.94	659.20	667.90	677.92
74		281.32	282.25	282.51	295.70	299.36	304.78	234.22	245.85	256.49	268.23	271.10	283.52
75		28.66	28.83	28.97	30.29	31.54	32.35	31.07	32.50	33.77	33.99	34.80	36.38
76		96.49	96.17	95.76	92.12	92.04	89.82	130.31	134.88	138.52	139.73	144.68	150.63
77		---	---	---	---	---	---	---	---	---	---	---	---
78		22.27	22.41	22.53	22.76	23.16	23.24	23.83	24.95	25.94	26.12	27.11	27.12
79		25.44	25.61	25.74	26.56	27.19	27.89	27.22	28.50	29.63	30.14	30.25	30.61
80		18.39	18.49	18.56	19.11	19.80	20.65	20.26	21.18	21.99	22.47	23.47	23.51
81		49.76	50.29	50.73	52.13	52.74	55.05	47.55	50.11	52.46	52.75	52.81	55.28
82		113.57	111.15	108.72	106.07	101.45	100.78	211.83	216.60	219.45	228.30	232.77	235.82
83	90.45	88.52	86.59	85.79	83.85	82.41	168.70	172.50	174.77	183.20	185.38	194.15	
84	MACHINE	3324.48	3243.53	3156.03	3109.00	3085.69	2942.82	4796.28	4912.96	4990.52	5087.83	5178.90	5280.93
85		1177.86	1152.07	1123.68	1104.69	1080.17	1059.21	3430.53	3473.46	3488.89	3533.55	3709.87	3763.67
86	VEHICLES	1168.26	1140.40	1109.11	1086.71	1042.04	1022.56	134.79	143.41	151.22	153.05	158.96	159.61
87		2101.24	2065.07	2022.75	1976.23	1912.79	1898.06	689.62	722.76	752.39	765.79	789.53	821.50
88		165.19	161.22	156.77	156.16	153.39	147.46	19.40	20.60	21.68	22.23	22.78	23.74
89		1287.36	1256.45	1221.76	1179.00	1147.75	1114.13	143.51	152.79	161.19	163.69	164.34	172.12
90	CLOCKS & MUSICAL INST.	304.96	296.92	288.33	286.72	283.28	275.37	289.44	300.85	309.80	324.70	331.85	340.31
91		109.32	106.44	103.36	103.02	101.05	97.94	104.16	108.18	111.33	116.38	120.37	120.42
92		56.97	55.27	53.42	52.17	51.02	48.97	546.29	539.75	526.75	515.26	512.74	511.05
93	ARMS	130.12	126.70	123.05	122.81	117.21	112.48	123.39	128.30	132.17	138.06	138.70	139.98
94	MISC. ART.	171.32	166.73	161.79	154.51	147.21	141.50	765.15	761.60	749.39	731.56	722.63	690.19
95		104.82	101.68	98.28	97.46	96.13	95.17	1005.07	993.04	969.11	923.47	900.93	882.56
96		108.27	105.02	101.50	100.24	96.29	95.59	1043.84	1031.05	1005.95	968.53	952.93	922.72
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

MARITIME TRADE BETWEEN ASEAN AND EU-27

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
01	LIVE ANIMALS	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06
02		118.36	112.84	107.10	106.93	106.00	100.72	538.08	578.53	616.38	643.07	659.34	678.66
03		270.19	268.41	265.84	255.65	251.69	250.94	816.78	831.95	845.42	861.74	895.52	896.42
04		703.04	707.29	709.06	731.75	750.49	761.22	49.28	50.21	51.03	52.39	53.86	56.53
05		4.09	4.06	4.03	3.96	3.77	3.64	14.38	14.64	14.87	15.60	16.10	16.38
06	VEGETABLE PRODUCTS	7.79	7.49	7.20	7.02	6.81	6.55	346.38	363.13	378.26	378.60	380.69	383.58
07		106.79	105.64	104.24	101.17	97.82	93.98	546.87	556.40	563.53	584.26	603.43	609.46
08		51.21	50.30	49.34	48.45	46.71	46.71	470.23	478.07	483.33	484.44	493.79	506.92
09		57.13	55.63	54.08	51.65	49.97	48.00	1078.82	1140.25	1196.03	1218.39	1273.34	1285.69
10		1.04	1.01	0.97	0.95	0.90	0.89	384.94	409.87	430.59	449.75	457.98	476.02
11		235.80	235.87	235.17	230.77	222.81	214.27	380.22	387.33	393.60	413.24	417.17	434.65
12		24.04	23.25	22.46	21.73	21.40	20.68	715.11	756.35	794.11	822.70	843.92	858.44
13		38.85	38.59	38.22	36.91	35.84	34.07	333.10	341.40	348.74	366.03	372.69	383.95
14		7.12	7.08	7.03	6.88	6.74	6.55	718.80	741.11	761.19	773.60	790.85	799.79
15	FATS & OILS	62.32	61.13	59.80	58.60	57.21	55.98	3428.98	3622.68	3806.40	3912.21	4035.84	4235.21
16	PREPARED FOODSTUFFS	96.82	94.67	92.27	89.34	87.03	86.52	367.56	384.41	399.97	408.45	416.79	430.04
17		76.66	77.11	77.30	79.65	80.01	80.10	7.55	7.84	8.10	8.43	8.60	9.01
18		42.41	42.09	41.64	40.45	39.05	38.28	150.31	154.66	158.55	159.82	163.69	166.68
19		87.80	87.21	86.36	82.72	79.98	77.35	240.98	245.53	249.55	261.35	273.06	276.83
20		242.19	240.57	238.22	226.52	225.96	217.94	664.70	677.27	688.35	719.05	738.89	753.08
21		97.39	97.18	96.66	95.03	94.53	89.92	174.25	177.55	180.45	184.42	190.66	194.77
22		1120.11	1131.09	1138.03	1147.36	1189.81	1193.62	71.55	72.00	72.40	74.34	74.82	75.43
23		26.68	26.29	25.85	25.28	24.86	24.68	1238.56	1304.70	1367.27	1393.52	1444.94	1485.69
24		326.99	330.10	332.03	343.62	352.14	360.53	92.01	96.55	100.68	101.74	105.39	107.24
25	MINERAL PRODUCTS	386.85	402.12	415.49	421.80	437.83	444.22	993.77	1002.16	1012.08	1027.26	1051.09	1100.18
26		143.60	149.81	155.32	156.20	163.61	171.05	377.89	380.96	384.70	401.04	404.13	411.85
27		1781.89	1884.04	1987.16	2012.59	2019.03	2088.08	2625.54	2721.15	2815.23	2880.26	3009.30	3023.44
28	CHEMICAL PRODUCTS	2118.79	2139.96	2149.98	2171.05	2263.32	2351.13	3540.77	3665.41	3781.85	3954.30	4021.52	4093.51
29		1519.07	1529.42	1531.21	1599.04	1637.10	1661.17	2656.39	2749.87	2836.87	2901.84	3026.33	3147.08
30		82.83	83.35	83.40	86.55	89.77	93.48	148.05	153.14	157.84	164.22	170.13	175.20
31		202.99	204.59	205.05	212.22	215.02	225.71	359.77	372.03	383.48	397.59	404.59	416.93
32		310.57	312.69	313.06	319.48	333.89	341.16	542.60	561.71	579.51	580.72	583.16	587.30
33		231.91	233.49	233.77	240.90	252.03	260.75	405.17	419.45	432.73	444.29	448.51	452.32
34		180.66	181.74	181.79	189.99	190.08	194.00	330.47	340.99	350.58	354.51	363.69	378.06
35		94.31	94.82	94.87	97.48	98.11	98.23	129.89	134.04	137.88	142.40	145.77	146.82
36		27.80	27.75	27.52	26.70	25.50	25.16	71.37	72.17	72.59	74.78	76.62	80.29
37		173.47	174.66	174.86	179.46	184.54	189.54	303.07	313.75	323.69	326.18	328.73	340.20
38		609.08	611.89	611.17	613.55	592.88	619.79	1012.18	1047.29	1079.88	1088.52	1141.75	1188.33
39	PLASTICS	899.41	905.56	906.63	950.06	968.58	989.99	1571.37	1626.73	1678.27	1709.31	1722.13	1723.34
40		577.55	581.45	582.11	586.24	593.34	601.05	1410.19	1456.71	1499.50	1563.53	1571.50	1642.38
41	LEATHER GOODS	116.15	110.28	103.91	100.50	96.85	94.84	1816.57	1787.02	1743.89	1715.98	1682.52	1612.36
42		30.39	29.02	27.49	26.85	26.63	25.48	406.56	400.70	391.83	390.46	383.43	377.22
43		3.20	3.20	3.19	3.11	3.04	3.01	3.26	3.29	3.32	3.42	3.56	3.67
44	WOOD PRODUCTS	75.43	74.58	73.43	71.28	68.94	67.62	1503.02	1530.99	1554.70	1571.49	1630.11	1651.63
45		2.84	2.80	2.75	2.70	2.68	2.64	100.62	102.83	104.75	108.78	112.78	116.48
46		5.02	4.93	4.82	4.81	4.64	4.49	58.56	58.83	58.96	59.71	62.56	63.89
47	PAPER	46.24	46.58	46.66	48.25	50.31	50.54	37.46	38.44	39.32	41.21	41.21	39.22
48		779.01	784.78	786.15	807.14	827.81	837.58	631.07	647.56	662.53	695.53	696.85	719.84
49		25.37	25.56	25.60	26.65	27.67	27.77	20.55	21.09	21.58	21.90	22.73	23.79

MARITIME TRADE BETWEEN ASEAN AND EU-27 (Cont'd)

HS-2	SECTION	IMPORT						EXPORT					
		2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
50	TEXTILES AND TEXTILE ARTICLES	0.74	0.71	0.66	0.64	0.61	0.60	4.41	4.44	4.45	4.63	4.85	5.00
51		21.38	20.30	19.09	18.47	17.91	17.40	126.68	127.60	127.75	133.12	138.08	139.21
52		105.02	99.77	93.93	92.23	88.19	86.63	618.38	622.88	623.61	640.44	655.94	685.33
53		11.62	11.29	10.90	10.71	10.47	10.05	51.08	51.45	51.51	53.64	56.28	57.37
54		59.01	56.01	52.68	51.27	50.22	48.10	350.76	353.31	353.72	355.35	356.84	371.65
55		94.60	89.79	84.45	83.60	82.24	80.38	562.29	566.38	567.04	592.11	597.85	621.88
56		27.28	25.90	24.36	23.49	22.80	22.32	162.17	163.35	163.54	164.61	166.25	173.19
57		16.97	16.11	15.15	14.78	14.62	13.99	100.87	101.61	101.73	103.64	105.38	108.31
58		19.22	18.24	17.16	16.48	15.75	15.15	114.24	115.07	115.21	117.87	119.09	123.01
59		44.38	43.65	42.63	40.77	39.36	37.69	159.79	160.82	160.90	165.62	166.08	173.75
60		31.33	29.74	27.97	27.32	26.60	26.15	186.24	187.60	187.82	190.69	193.47	193.88
61		68.45	64.82	60.92	59.77	57.89	55.65	1206.46	1205.93	1198.19	1179.62	1168.30	1127.41
62		56.06	53.05	49.85	48.33	48.10	46.89	1155.03	1153.88	1145.82	1130.70	1086.83	1034.66
63	56.85	54.48	51.74	50.76	49.37	48.39	250.21	252.21	252.71	261.56	266.24	278.96	
64	FOOTWEAR	38.61	36.47	34.16	32.94	32.78	32.42	660.05	649.21	633.41	613.59	587.94	584.29
65		17.31	17.10	16.81	16.68	16.13	16.05	132.63	133.25	133.15	140.11	142.24	142.36
66		31.45	30.75	29.81	29.11	27.93	27.70	141.67	140.12	137.48	132.04	127.88	125.96
67		32.46	31.74	30.77	30.23	30.07	30.00	146.22	144.63	141.90	138.48	136.34	135.12
68	STONE & GLASS	164.29	163.02	160.91	153.25	153.05	150.59	279.37	285.42	290.64	291.48	297.78	312.40
69		67.96	67.43	66.56	63.96	61.09	58.95	115.56	118.06	120.22	120.63	126.54	128.03
70		149.79	148.52	146.50	145.74	138.49	136.74	264.63	270.16	274.86	286.76	295.51	299.44
71	PRECIOUS STONES	7.16	7.18	7.14	7.07	6.71	6.47	16.65	16.63	16.50	16.30	15.53	14.91
72	BASE METALS	1752.43	1780.31	1796.98	1821.42	1853.30	1924.84	813.35	830.00	844.80	848.01	890.16	906.63
73		1108.04	1104.76	1094.57	1073.56	1031.04	994.75	640.41	652.44	661.98	688.92	693.40	708.86
74		868.43	875.43	876.50	884.56	899.51	925.59	591.09	607.19	621.96	645.97	676.33	706.36
75		76.22	77.00	77.24	79.19	81.72	82.14	48.07	49.65	50.96	52.73	55.00	55.50
76		252.37	253.05	252.08	251.73	241.76	239.39	163.38	167.73	171.23	174.43	179.12	185.98
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78		59.27	59.91	60.12	60.52	61.39	64.20	37.33	38.57	39.60	41.01	41.54	42.75
79		67.72	68.44	68.68	69.05	71.39	73.82	42.65	44.06	45.24	46.73	48.20	49.89
80		48.85	49.33	49.46	50.24	51.63	53.00	30.86	31.86	32.69	34.00	34.64	35.75
81		133.38	135.23	136.10	139.98	141.16	148.05	83.08	86.05	88.56	90.04	93.48	97.23
82		287.46	283.81	278.60	271.38	266.71	266.26	195.83	198.79	200.79	208.16	208.47	212.83
83		228.94	226.03	221.88	220.81	218.47	212.16	155.96	158.32	159.91	166.91	174.92	177.14
84	MACHINE	4550.21	4469.42	4352.80	4312.32	4295.50	4157.61	4036.28	4099.96	4147.22	4222.28	4407.22	4557.06
85		1144.18	1125.84	1098.65	1079.86	1046.06	998.26	2507.49	2517.89	2516.80	2527.12	2440.69	2456.31
86	VEHICLES	1258.21	1239.43	1209.29	1165.88	1153.17	1148.10	532.27	554.71	574.44	584.72	587.18	603.62
87		3678.69	3665.11	3623.43	3508.57	3383.32	3332.90	2175.33	2238.07	2296.01	2342.62	2435.15	2528.42
88		175.37	172.67	168.37	165.93	164.24	157.19	73.75	76.89	79.63	80.26	80.49	81.99
89		1366.15	1345.13	1311.70	1273.80	1252.27	1228.98	569.35	593.75	615.15	634.10	644.88	659.07
90	CLOCKS & MUSICAL INST.	473.13	463.96	451.05	429.99	413.82	398.01	270.04	277.18	283.34	285.18	288.29	290.68
91		169.82	166.52	161.87	155.75	153.37	151.44	101.85	104.32	106.40	108.24	112.51	117.38
92		100.81	98.58	95.54	94.67	91.18	89.61	454.09	449.14	440.67	431.15	430.29	412.39
93	ARMS	203.69	199.77	194.26	191.78	182.76	174.34	115.30	118.38	121.03	123.06	125.20	125.55
94	MISC. ART.	284.41	278.78	270.95	263.30	257.28	253.83	652.25	649.26	641.67	616.13	606.21	596.15
95		185.48	181.36	175.78	175.70	174.51	166.52	835.43	826.33	810.75	796.64	779.60	754.73
96		192.62	188.29	182.44	177.59	172.78	165.24	887.79	877.97	861.27	830.00	828.51	788.16
97	ARTS	---	---	---	---	---	---	---	---	---	---	---	---

APPENDIX VI – Related Publications**A. Journal Publications**

1. Ong, G.P. and Sou, W.S. (2015). *An Exploratory Study on U.S. Commodity Value-Weight Trends*. Transportation Research Records: Journal of the Transportation Research Board, 2477, 93-105.
2. Sou, W. S. and Ong, G. P. (2015). *Effect of Trade Data Aggregation on International Mode Choice*. Journal of Eastern Asian Society for Transportation Studies, 11, 2459-2471.
3. Sou, W. S. and Ong, G. P. (2016). *Forecasting Global Maritime Container Demand Using Integrated Trade-Commodity Flow Modeling Framework*. Transportation Research Records: Journal of the Transportation Research Board, 2549, 64-77.

B. Conference Proceedings

1. Sou, W. S., Ong, G. P. and Chin, A. T. H. (2013). *An Exploratory Study to Forecast Container Demand Using Economic Trade Models: A Case Study of the ASEAN Region*. In: Proceedings of the 2013 International Association of Maritime Economists (IAME) Conference, 3-5 July 2013, Marseille, France.
2. Ong, G. P. and Sou, W. S. (2014). *An Exploratory Study to Forecast Global Maritime Commodity Trade and Container Demand*. In: Proceedings of the 93rd Transportation Research Board Annual Meeting, 12-16 January 2014, Washington D.C., USA.
3. Sou, W.S. and Ong, G. P. (2014). *A Statistical Study on International Commodity Value-Weight Trends*. In: Proceedings of the 5th International Conference on Transportation and Logistics (T-LOG), 28-30 July 2014, Bangkok, Thailand.

4. Ong, G. P. and Sou, W. S. (2016). An Integrative Economic-Transport Model Framework for Global Maritime Commodity Flow. Proceedings of the 19th Global Trade Analysis Project (GTAP) Conference, 15-17 June 2016, Washington D.C., USA.