# EFFECTS OF THE CUSTOMS UNION ON THE PATTERNS OF TURKEY'S TRADE WITH THE WORLD: A PANEL ANALYSIS

THE INSTITUTE OF ECONOMICS AND SOCIAL SCIENCES
OF
BILKENT UNIVERSITY

BY

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IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE
OF
MASTER OF ECONOMICS

IN

THE DEPARTMENT OF ECONOMICS
BILKENT UNIVERSITY
ANKARA

November 2003

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**ABSTRACT**

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November, 2003

In this thesis, the effects of the Customs Union with the EU are analyzed for the case of Turkey, using unbalanced panel data sets consisting of more than 150 countries between 1980-2001. Liberalization of Turkish foreign trade has gained an irrevocable momentum with the realization of substantial adjustments to the Common Custom Tariff System with the European Union (EU). On 6 March 1995, the European Union and Turkey signed agreement on Customs Union (CU). Turkey's tariffs and levies on imports of manufactured products from the European Union were eliminated by this agreement. Our empirical analysis involves estimating the effects on exports and imports of Turkey of the Customs Union Agreement (CUA), of changes in price, and income, and of economic crises, controlling for additional institutional variables. Our results indicate that the CUA has not only positively impacted on Turkey's trade, but has also led to changes in the behavior of both exports and imports with regards to their responsiveness to underlying variables. We observe that the income elasticity of both exports and imports are generally lower for the CU period, the effect of the real exchange rate (RER) on Turkey's exports is stronger for the EU countries after CU. However, real exchange rate changes cease to have a significant impact on imports after the CUA.

Keywords: Customs Union, Turkish Foreign Trade

ÖZET

GÜMRÜK BİRLİĞİ'NİN TÜRKİYE'NİN DÜNYA İLE TİCARETİ ÜZERİNE ETKİLERİ: BİR PANEL ANALİZİ

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Tez Danışmanı:Yrd. Doç. Dr. Bilin Neyaptı

Kasım, 2003

Bu tezde, Avrupa Birliği ile oluşturulmuş olan Gümrük Birliği'nin Türkiye ekonomisi üzerine etkileri 150'den fazla ülkeye ait verilerle 1980-2001 periyodunda panel data kullanılarak incelenmiştir. Türkiye'nin ticari liberalizasyonu Avrupa Birliği ile imzalanan Ortak Gümrük Tarifesi ile değiştirilemez bir ivme kazanmıştır. Gümrük Birliği Anlaşması 6 Mart 1995 tarihinde taraflar arasında imzalanmıştır. Böylelikle, Türkiye Avrupa Birliği ülkelerinden yaptığı imal edilmiş ürünler ithalatında gümrük vergilerini kaldırmış bulunmaktadır. Bu çalışmada Gümrük Birliği Anlaşması'nın Türkiye ihracatına ve ithalatına olan etkileri fiyat, gelir, ekonomik kriz ve kurumsal değişkenler irdelenerek analiz edilmiştir. Sonuçlara göre Gümrük Birliği Anlaşması sadece Türkiye'nin ticaretini etkilemekle kalmamış; Türkiye ihracat ve ithalatının incelenen değişkenlere göre davranışsal değişimlerini de ortaya koymuştur. Hem ihracatın hem de ithalatın gelir elastikiyetlerinde Gümrük Birliği periyodu sonrasında bir azalma gözlenirken; Gümrük Birliği sonrasında Türkiye'nin Avrupa Birliği'ne ihracatında reel döviz kurunun etkisinin arttığı bulunmuştur. Bununla birlikte, reel döviz kurunun ithalat üzerinde, Gümrük Birliği sonrasında, anlamlı bir etki yaratmadığı gösterilmiştir.

Anahtar Kelimeler: Gümrük Birliği, Türkiye Dış Ticareti

# ACKNOWLEDGMENTS

I would like to thank Asst. Prof. Bilin Neyaptı and Assoc. Prof. Fatma Taşkın for their supervision and guidance through the development of this thesis. Their patience and encouraging supervision brought my research up to this point.

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# CHAPTER 1

# INTRODUCTION

Today, the concepts of globalization of the world economy and international economic integration have taken the place of the nationalism movement of the prewar era. As Haberler (1964) stated, we "live in the age of integration". Especially, economic interaction and integration among Western European countries have grown rapidly since the Second World War.

Balassa (1961, p. 1) defines economic integration "as a process and as a state of affairs". This definition should be understood as the combination of separate economies into larger groupings. Generally, the first step of economic integration is free movements of goods and services. Then, free movement of production factors, capital and labor, comes as the next objective. Harmonization of the government policies of the member countries and policy co-ordination is seen as the last but the most difficult stage.

One of the highly successful examples of integration is the European Union. The idea of a united Europe has been a dominant thinking after the Second World War. The process of European integration was launched on 9 May 1950 with Schuman Declaration. The European Economic Community (EEC) was founded through the Treaty of Rome in 1957 by six European countries (Belgium, France, Italy, Luxembourg, Netherlands, and West Germany) and can be seen as the successor of the European Community of Steel and Coal (ECSC), which was founded in 1951.

This initial economic integration was later on extended to both political and economic arenas due to the new situation of the world. The United Kingdom, Ireland and Denmark joined in 1973, and the ECC became a ten-member community with Greece at the start of

1981. Spain and Portugal joined the community in 1986. Lastly, Austria, Finland, and Sweden became the members in 1995. Today, EU has 15 member states and is preparing for the accession of 13 eastern and southern European countries, including Turkey. Bulgaria, Romania and Turkey are candidate-to-be countries. Ten countries (Poland, Hungary, the Czech and Slovak republics, Slovenia, Estonia, Latvia, Lithuania, Cyprus and Malta) are due to join the European Union in May 2004 following a landmark enlargement summit in Copenhagen, ending decades of division in the continent and taking total membership to 25.

The degree of combination leads to different types of preferential trading arrangements from the weakest form of economic integration to the most complex stages. The lowest degree of economic integration is the *preferential trading club*. Member countries of the club reduce their respective duties on imports of goods from each other and each member country of the preferential trading club retains the external tariffs against the rest of the world. Commonwealth Preference System is the most known example of preferential trading clubs. A *free trade area* is a preferential arrangement in which tariff rates are reduced to zero among members and each country has its own external tariffs against the outside world. European Free Trade Area (EFTA), founded in 1960, is an example of a free trade agreement. Another example is NAFTA, which is a trade agreement between Canada, Mexico and the United States, entered into force January 1, 1994.

A *customs union* is generally defined as an arrangement in which there is zero duty among members on imports of goods and services, and a common external tariff. Belgium, the Netherlands, and Luxembourg created a customs union in 1948 and formed the Benelux Economic Union in 1960. The Benelux Union was an experience of a customs union for the European Community and became an incentive for other European countries.

The step beyond the customs union is the formation of a *common market*. A common market can be formulated as the integration of a customs union and the free movement of all

factors of production among member countries of the common market. An *economic union* is the most complete degree of economic integration. In addition to a common market formation, member countries unify their monetary, fiscal, and socioeconomic policies. In other words, an economic union requires policy integration among members.

Lipsey (1960) defines the theory of customs union as a "branch of tariff theory which deals with the effects of geographically discriminatory changes in trade barriers". Chacholiades (1978, p. 543) has a similar definition of the theory of customs union: "new branch of the tariffs and deals primarily with the effects of geographical discrimination". He also adds that the effects of preferential trading are the principal concern of theory of customs union. In the related literature, there are many studies about the customs union theory. The pioneer in the theory of CU is Jacob Viner (1950). In his book *The Customs Union Issue*, Viner demonstrated that the formation of a CU generates two static effects: trade creation and trade diversion. The contribution of Viner on the CU issue has had dominant impacts on economists thinking on economic integration. Viner stated that CU may reduce the world's economic efficiency. The further discussions are presented in Chapter 2 of the study.

This study has two major purposes. The first is to explain the nature of the Customs Union Agreement (CUA) between Turkey and the EU and to take a closer look at the Turkish trade in this context. The second is to analyze the international trade of Turkey by using econometric methods and estimating the changes of Turkish foreign trade before and after the Customs Union with the EU.

Our unbalanced panel data set consists of more than 150 countries covering the years between 1980 and 2001, yielding more than 2000 observations. We analyze Turkey's trade with all countries in the CU period and take into account the bilateral real exchange rates and income levels of all of the trade partners in our data set.

The study is organized as follows. Chapter 2 describes the customs union with the EU, and gives the historical perspective of Turkey relations with the Community. Chapter 3 provides the general outlook on the Turkish economy before and after the customs union from the perspective of foreign trade and selected macroeconomic variables. Chapter 4 presents the procedure to evaluate the customs union effects on Turkey's trade empirically, and discusses the export-import modeling of the literature. Chapter 5 presents the results of regression analysis on Turkish exports and Turkish imports where the impact of the CU is examined empirically. Finally, Chapter 6 concludes.

# CHAPTER 2

# CUSTOMS UNION WITH EU

This chapter begins with analysis of Turkey's multidimensional international economic policy that reconciles West with East and North with South. Then, the relationship between Turkey and the EU is described and the Custom Union Agreement is examined. The chapter ends with the theory of customs union and its historical background.

## 2.1 International Organizations and Turkey

Turkish governments followed a policy of westernization since 1923, foundation of the Republic of Turkey. Both domestic and foreign policy was directed through reaching this ultimate goal. Turkey applied to join to NATO (North Atlantic Treaty Organization), the Council of Europe and the OEEC (the Organization for European Economic Co-operation) to show her desire to be a part of the Western Alliance.

One of the organizations that Turkey has been in contact with is the European Free Trade Association (EFTA). The EFTA was founded on the premise of free trade among its member countries by a convention signed in Stockholm on 4 January 1960. The liberalization of trade in goods among the member countries was the main objective of the Association. Austria, Denmark, Norway, Portugal, Sweden, Switzerland, and the United Kingdom were the seven founding members of the EFTA. Today, the EFTA members are Iceland, Liechtenstein, Switzerland, and Norway.

To strengthen the already preferential relationship between the EFTA States and the European Union, the European Economic Area (EEA) was resulted in the early 1990s. The EEA established a single market for all forms of trade, including trade in services and the free

movement of labor between and among the EFTA States, excluding Switzerland, and the European Union (http://www.efta.int/).

The EFTA States have been expanding trade relations with the countries in Central and Eastern Europe and the Mediterranean region since 1990. Parallel to the EEA with the EU, the EFTA signed free trade agreement with Turkey in 1991. Customs barriers of the seven EFTA members vis-à-vis Turkey were dismantled, transition period for Turkey was granted. This agreement contains clauses on state-aid, competition policy, anti-dumping, intellectual property. On 25 June 1992, Albania, Armenia, Azerbaijan, Bulgaria, Georgia, Greece, Moldova, Romania, Russia, Turkey, and Ukraine constituted The Black Sea Economic Cooperation (BSEC), which aims to ensure free market, economic prosperity, and regional stability in the Black Sea.

Economic Cooperation Organization (ECO) is an intergovernmental regional organization established in 1985 by Iran, Pakistan and Turkey for the purpose of providing economic, technical and cultural cooperation among members. The expansion of mutual trade and promotion of conditions for sustained economic growth in the region are the objectives of the organization. The Islamic State of Afghanistan, the Republic of Azerbaijan, the Republics of Kazakhstan, Kyrgyzstan, and Tajikistan, Turkmenistan, and the Republic of Uzbekistan joined to the organization in 1992.

On June 15, 1997, Developing–8 (D–8) was formed by Bangladesh, Egypt, Indonesia, Iran, Malaysia, Nigeria, Pakistan, and Turkey with the Istanbul Declaration. This formation declared that creating new opportunities in trade relations, and enriching the social and economic relations of the member countries would be the goals of the cooperation.

The full membership to the European Union has been primary objective of the Turkish foreign policy. Turkey has shown a close interest in Europe's integration process from the very beginning. Turkey and the EU work towards opening of accession talks in early 2005 in line with the conclusions of the 2002 EU Copenhagen Summit.

## 2.2 Turkey – EU Relations and the Implementation of the Customs Union

The starting point of the formal relationship between the EEC and Turkey was the Association Agreement (Ankara-Agreement) in 1963. This agreement, which was put into force on 1 December 1964, aimed at securing Turkey's full membership in the EEC through the establishment in three phases of a customs union which would serve as an instrument to bring about integration between the EEC and Turkey.

The first phase, which was started in 1964, was the preparatory stage and it involved the provision of ECU 175 million for assisting Turkey's development. The second stage was to be a transitional period with the aim of gradually introducing a customs union proper. This period would involve the adoption of common external tariffs and arrangements that would bring about general economic policy alignment. The second financial protocol was to assign loans of up to ECU 300 million to ease the hardships of increased economic competition. The third and the final stage would entail intensification of the coordination of economic policies. Turkey would reach the final stage within a period of twenty-two years at maximum (Undersecretariat of Foreign Trade, 1996, Avrupa Birliği ve Türkiye). However, the agreement did not fix a time limit for the final phase which would precede further integration.

In 1973, additional protocol came into effect. The protocol defined a period of 22 years for the bringing about of a customs union. It provided that the EEC would abolish tariff and quantitative barriers to its imports from Turkey (with some exceptions including fabrics) upon the entry into force of the protocol, whereas Turkey would do the same in accordance

with a timetable containing two calendars set for 12 and 22 years, and called for the harmonization of Turkish legislation with that of the EU in economic matters. Furthermore, the additional protocol envisaged the free circulation of labor force between the parties in the next 12 to 22 years.

Turkey applied for full membership in 1987, on the basis of the EEC Treaty's article 237, which gave any European country the right to do so. Turkey's request for accession, filed not under the relevant provisions of the Ankara Agreement but those of the Treaty of Rome, underwent the normal procedures. The Council forwarded Turkey's application to the Commission for the preparation of an “Opinion”. This has reconfirmed Turkey's eligibility, given that the Council turned down a similar application by Morocco on the grounds that Morocco is not a European country.

The Commission's Opinion was completed on 18 December 1989 and was endorsed by the Council on 5 February 1990. It basically underlined Turkey's eligibility for membership, yet deferred the in-depth analysis of Turkey's application until the emergence of a more favorable environment. It also mentioned that Turkey's accession was prevented equally by the EC's own situation on the eve of the Single Market's completion that prevented the consideration of further enlargement (Ministry of Foreign Affairs, 1998, Relations Between Turkey and the European Union). It went on to underpin the need for a comprehensive cooperation program aiming at facilitating the integration of the two sides and added that the Customs Union should be completed in 1995, as envisaged.

On 6 March 1995, the European Union and Turkey signed agreement on Customs Union. Turkey’s tariffs and levies on imports of manufactured products from the European Union were eliminated by this agreement. Trade in agricultural products, with the exception of agro-industrial products, which is processed food, was, however, excluded. Turkey would also apply EU’s common external tariff on imports from the third countries. The main

chapters of the "Decision of the EU-Turkey Association Council" are free movement of goods, commercial policy, agricultural products, customs provisions, approximation of laws, institutional provisions, and general and final provisions.

*Free movement of goods and commercial policy* are applied to products except agricultural products as defined in the Article 11 of the Association Agreement. Elimination of customs duties and charges having equivalent effect, elimination of quantitative restrictions and measures having equivalent effect, commercial policy, Common Customs Tariff and preferential tariff policies and processed agricultural products are the sections in the first chapter of the Decision.

The CU does not cover agricultural goods and the free circulation of agricultural products will only be implemented upon Turkey's alignment of it's polices to the EU's Common Agricultural Policy. The Association Council states in the chapter of *agricultural products* that an additional period is required to put in place the conditions necessary to achieve free movement of these products.

The third chapter, *customs provisions*, lists the fields in which Turkey shall adopt provisions such as origin of goods, customs value of goods, introduction of goods into the territory of the customs union, customs declaration, and release for free circulation, suspenseful arrangements and customs procedures with economic impact, movement of goods, customs debt, and right of appeal.

Protection of intellectual, industrial and commercial property, competition rules of the CU, trade defense instruments, government procurement, direct and indirect taxation, are

scrutinized under the title of *approximation of laws*. In textile and clothing sector, Turkey has aligned its state aid system with that of the EU by 1996.[1]

The fifth chapter of the Decision is *the institutional provisions*. This chapter explains the EU-Turkey Customs Union Joint Committee, consultation and decision procedures, settlement of disputes, safeguard measures. The *general and final provisions* conclude the Decision with the date of entry into force.

Applying measures that are compatible with the import, export, and textiles legislation of the EU, the Common Customs Tariff (CCT), and the preferential trade regime applicable to third countries within a period of five years from the entry into force of the Decision are the basic obligations for the harmonization with the EU's external trade policy.

## 2.3 Review of Customs Union Theory

In this section, a brief review of the literature on the theory of customs union is presented in chronological order. The pioneer in the theory of CU is Jacob Viner (1950). In his book *The Customs Union Issue*, Viner demonstrates that the formation of a CU generates two static effects: trade creation and trade diversion. In the former case imports from the customs-union partner are substituted for domestic production; while in the latter they are substituted for imports from third countries, which remain subject to a tariff duty (Chacholiades, p.543).

Viner points out that trade creation raises the home country's welfare, and trade diversion lowers it. He deals only with the production effects, which arise from the shift in the national locus of production. Consumption effects arise from the cheapening of goods in member countries.

[1] Bayar *et al*. (2000) report the EU has accepted the Turkey's declaration of September 1995 asserting that "there are no specific state aids in Turkey and due to their general or regional character."

Makower and Morton (1953) address the question of whether a CU among the countries in a protectionist world improves or worsens the allocation of resources in the world as a whole. They argue that a CU brings greater gain if the union is formed among complementary economies. In other words, trade is the more advantageous, the greater the comparative cost differences between trading countries. Any given union may bring both gains and losses with respect to different commodities. The net gain or loss of any given union can be determined only when the consumers' marginal substitution rates for the different consumer goods are given.

According to Gehrels and Johnston (1955), in judging any given customs union, it is necessary to examine whether the trade-creating or the trade-diverting effect is stronger. There is no a priori presumption that the one or the other will predominate. In case the trade-creation effect predominates, the members of the customs union would be better off via the improved terms of trade. On the other hand, the predomination of the trade-diverting effect would cause damage for the union. The trade diversion, in the sense of a shift of imports to a higher-cost source of supply, implies a terms of trade loss.

The formation of a CU necessarily violates the Pareto-optimum conditions because of the existence of tariffs. Then, the theory of the second best is directly applicable to the theory of CU. The theory of the second best deals with suboptimal situations. Following Lipsey and Lancaster (1956), the general theorem of the second best states that if one of the Paretian optimum conditions cannot be fulfilled, a second best optimum situation is achieved only by departing from all other optimum conditions. Generally, the study of CU is a study in the theory of second best [see also Viner (1950) and Meade (1955b)].

A customs union changes relative prices and this leads to substitution between commodities. Meade (1955), Gehrels (1956), and Lipsey (1957) all analyze this effect independently and conclude that the substitution effect would tend to increase the imports

from a country's union partner and to diminish both the imports from the rest of the world and the consumption of domestic commodities.

Lipsey (1957), moreover, shows that when consumption effects are allowed for the simple conclusions that trade creation is *good* and trade diversion is *bad* are no longer valid. A country may form a trade-diverting customs union and yet gain an increase in welfare in the sense that every consumer moves to a higher indifference curve. Lipsey (1960) summarizes the sources of welfare effects of CU as the specialization of production according to comparative advantage, economies of scale, changes in the terms of trade, forced changes in efficiency due to increased foreign competition, and a change in the rate of economic growth.

Sproas (1964) proposes a criterion which more decisively indicates whether a CU leads to net trade creation or net trade diversion. The condition for trade creation depends on the relation between two ratios. The first ratio is the difference between the two members' pre-union tariff rates and the post-union common tariff against non-members, and the second ratio deals with the price derivatives (slopes) of the two members' supply functions.

Ruling out gains from changes in the terms of trade, economies of scale, and other considerations, Cooper and Massell (1965) analyze the pure theory of CU. The rationale or motivation for customs union is argued in the Cooper-Massell analysis. Arndt (1969) demonstrates the superiority of CU as a particular type of tariff policy. However, a country may elect nonmembership if increased market share and growth potential outside the union is possible. Bhagwati (1971) shows that the fixed level of imports is a sufficient condition for a trade-diverting CU to be welfare reducing by applying a general-equilibrium model of Lipsey's analysis (with the assumption of fixed consumption pattern) allowing production variability.

Corden (1972) incorporates economies of scale in the theory of CU and presents two new concepts that are: the cost-reduction effect and the trade-suppression effect, as

supplementary of the trade-creation and trade-diversion effects. The cost-reduction effect, in Corden's terms, is more important than the trade-suppression effect. Krauss (1972) interprets the developments in the theory of CU from the perspectives of theoretical and institutional extensions. The approaches to the theory of CU depending on various assumptions as to the nature of the political process are examined and discussed in Krauss's study.

Petith (1977) presents the relationship between the terms of trade and European integration and calculated terms of trade gains from the formation of CU in Europe[2]. Following the model of Mundell (1964), a number of propositions about the effects of integration on the terms of trade are derived in the study of Petith. Improvements in the terms of trade are submitted as one of the major effects of European integration.

Collier (1979) considers the welfare effects of the Vinerian model and shows that both the Vinerian effects are subsets of a wider class of effects. Berglas (1979) uses the second best approach to show that the reduction of tariffs on commodities that are imported by all the member countries is not necessarily welfare improving. Using a general equilibrium analysis of preferential trading the effect of a custom union on income distribution among member countries is analyzed.

McMillan and McCann (1981) examine the three-commodity, three-country model of customs union due to Meade (1955), Lipsey (1970), and Vanek (1965). A country would gain from the lowering of tariffs following the formation of a customs union if and only if the domestically produced commodity and the commodity imported from the partner country are net substitutes. The authors conclude that in a many-country world there will be incentives for countries to make a sequence of bilateral agreements mutually to reduce tariffs, until each country has reduced its tariffs on trade with at least one other country.

[2] The potential terms-of-trade effects of Customs union have been analyzed by Viner (1950), Meade (1955), Arndt (1962, 1969), Johnson (1962), Vanek (1965), Melvin (1969), Kemp (1969), and Lipsey (1970).

Wonnacott and Wonnacott (1981) demonstrate that unilateral tariff reduction need not dominate a CU from an economic viewpoint. Their main argument is that "in a world in which tariffs and other obstacles to trade exist, it is meaningless to analyze the effects of freeing trade between customs union members if we assume that there are no impediments to trade with outsider country."

Tironi (1982) adds the foreign profit creation and diversion effects to the classical trade creation and diversion effects of CU and emphasize the importance of these new concepts to estimate a country's overall gain or loss from the participation of all foreign firms in the common market. Tironi means the measurement of the international income redistribution that resulted from changes in foreign firms' rents and monopolistic profits by using the terms the foreign profit creation and diversion effects.

Krueger (1995) states the differences between CU and free trade agreements, examines the complications from multiple free trade agreements and political economy of them. The author, also, concludes that a CU is always Pareto-superior to a free trade agreement on welfare grounds.[3]

Fifty years ago, Viner conjectured that the CU may reduce the potential world welfare, and the debate has begun. The historical development of the customs union theory is scrutinized in this section. Before the examination of the effects of the CU on the Turkish economy we identify some stylized facts of the Turkish economy starting from the trade liberalization in Chapter 3.

[3] Kemp and Wan (1976) state that a CU can be always Pareto-improving when an appropriate Common External Tariffs and redistribution inside the union are implemented.

# CHAPTER 3

# OVERVIEW OF THE TURKISH ECONOMY

The Turkish economy has experienced a considerable structural transformation within the past two decades. Liberalization of the economy began with the introduction of a far-reaching structural adjustment program in 1980. The purpose of this chapter is to provide the general overview of the Turkish economy before and after the customs union, especially with regards to foreign trade and selected macroeconomic variables. A survey of the economic literature on the effects of the CU concludes the chapter.

## 3.1 The Pre-Customs Union Period

Until 1980, Turkey had an inward-oriented development strategy and followed an import-substituting industrialization growth path. Besides high import barriers, the remittances of almost a half-million Turkish workers were the main characteristics of that period. The institutionalization of formal planning mechanism constituted the development efforts of Turkey after 1960s. Rapid economic growth occurred as a consequence of expansion in public demand and state enterprise investments. Restrictive trade regime dominated the foreign trade policies to achieve the import-substitution industrialization goals.

Turkey achieved 6.8 percent average GNP growth rate during the First Five Year Plan, 1963-1967, and the Second Five Year Plan, 1968-1972, (Celàsun and Rodrik, 1989). However, the balance of foreign trade did not show positive signs parallel with the stability of domestic indicators. High and growing trade deficits caused the country to borrow from foreign sources. Trade deficit has always been one of the most important economic problems in foreign trade of Turkey. The country had faced trade deficits since 1923 with the exceptions of 1930-1937 and 1939-1946 (see, SIS, Statistical Yearbook of Turkey, various years).

**Table 3.1 Foreign trade indicators for selected years (million current US dollars)**

| | 1963 | 1968 | 1972 | 1978 | 1980 |
|---|---|---|---|---|---|
| Imports | 687,6 | 763,6 | 1.562,5 | 4.599,1 | 7.909,4 |
| Exports | 368,1 | 496,1 | 884,9 | 2.288,1 | 2.910,1 |
| Trade deficit | 319,5 | 267,2 | 677,5 | 2.310,8 | 4.999,3 |
| Export-to-import ratio (%) | 53,5 | 65,0 | 56,6 | 49,8 | 36,8 |

Source: SIS, Statistical Yearbook of Turkey, various years.

The long period of economic growth that had begun in the early 1960s reached its climax in 1976; this period of growth ended with a debt rescheduling in 1977 (Rodrik, 1990). Table 3.1 and 3.2 summarize the key foreign trade indicators before the beginning of the export-oriented time period.

**Table 3.2 Selected macroeconomic indicators (Period Average)**

| | 1971-1976 | 1977-1980 |
|---|---|---|
| GNP growth rate (%) | 7,7 | 1,3 |
| Exports / GNP (%) | 3,8 | 3,3 |
| Imports / GNP (%) | 8,4 | 8,5 |

Source: Guncavdi et al. (1998), Table 1.

Likewise, after two unsuccessful stand-by agreements with IMF in 1978 and 1979, the Turkish government announced a comprehensive stabilization and structural adjustment program in January 1980. The World Bank and the International Monetary Fund approved this program. This was the end of the import-substitution industrialization period. In other words, Turkey faced a transition from inward-to outward-oriented strategies by the year 1980.

The liberalization program, which was announced in 1980, aimed to be integrated with the world economy. From the foreign trade perspective, three main policy changes were important: exchange rate policy changes, export-driven growth strategies, and liberalization of the imports. The foreign trade sector increased in importance for Turkey after 1980s with these developments.

The export of the goods has been seen as the *engine of growth* after 1980 by the governments. Export-promotion policies replaced inward-oriented strategies. The government used credit subsidies, export tax rebates, and foreign exchange allocations to encourage and promote faster growth of exports. The value of these direct subsidies averaged about 20 per cent of total exports and varied considerably across goods. Table 3.3 gives a brief description of the export incentives during 1980-1986. Rebate rates were lowered gradually after 1983, and they were abolished in 1989.

**Table 3.3 Export Incentives, Weighted Average Subsidy Rates on Manufactured Exports (%)**

| | 1980 | 1982 | 1984 | 1986 |
|---|---|---|---|---|
| ***Elements of Subsidy***[a] | | | | |
| Export tax rebates | 0,64 | 10,07 | 11,07 | 7,55 |
| Preferential export credits | 15,93 | 7,23 | 1,07 | |
| Foreign exchange allocation and duty-free imports | 5,48 | 4,21 | 2,98 | 6,22 |
| RUSF cash grants[b] (Uniform, flat rate) | | | | 2,18 |
| Total subsidy[a] | 22,05 | 21,51 | 15,12 | 15,95 |

[a] Subsidy rates are weighted averages, and weights are the export shares of manufactured goods in total manufactured Exports.

[b] RUSF: Resource Utilization and Support Fund.

Source: Baysan and Blitzer (1990), Table 1.2

Barlow and Senses (1995) has pointed out that the most powerful factor for the Turkish export boom was real exchange rate depreciation. Export subsidies were the second policy after exchange rate changes. Reform of the exchange rate regime has been accompanied by trade liberalization. Devaluation of the currency helped to boost exports. However, this increase has not been sufficient to cover the surge in imports since liberalization. The trade deficits were due to import values that grew faster than in export values.

The quota list was removed in 1981. The government announced the 1984 Import Program as part of a program to replace the quantitative restrictions with tariffs. Tariffs increased for consumer goods. Average tariffs before December 1983 was 18 per cent for

total consumer goods, and increased to 26.2 per cent by January 1984. However, tariffs for intermediate goods and capital goods were reduced (Baysan and Blitzer, 1991, Table 4.4).

## 3.2 The Post-Customs Union Period

In this section, foreign trade performance of the Turkish economy after the customs union arrangement (CUA) is investigated. Changes in exports, imports, the real exchange rate and the terms of trade during the post-integration period are studied in detail. Relations between Turkey and the EU have developed a new dynamic after the sides have signed the Customs Union Agreement, which came into effect in the beginning of 1996. Initiating the final phase of Turkey's economic integration with the EU the Agreement marks the peak of relations that started with the signing of the Ankara Agreement in 1963.

In 1996, the share of exports to the EU was 49.7 per cent of all exports of Turkey. The share of the EU in the Turkish exports decreased at the rate of 6.62 per cent in 1997. A recovery was seen in 1998 and in 1999, with annual increases at the rates of 6.80 and 7.28 per cent, respectively. However, it was not a continuous increase. In 2000, the share of exports to the EU decreased as an annual percentage point of 2.75 (see Table 3.4).

**Table 3.4 Exports By Countries (Percent Share), 1996-2000**

| | 1996 | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|---|
| **OECD Countries** | 62,1 | 59,3 | 62,9 | 67,9 | 68,6 |
| EU Countries | 49,7 | 46,6 | 50,0 | 54,0 | 52,5 |
| EFTA Countries | 1,4 | 1,6 | 1,3 | 1,4 | 1,2 |
| Other OECD Countries | 10,9 | 11,1 | 11,6 | 12,6 | 14,9 |
| **Non OECD Countries** | 37,9 | 40,7 | 34,0 | 29,2 | 28,2 |
| Europe + CIS Countries | 15,7 | 17,8 | 14,8 | 10,3 | 10,8 |
| African Countries | 5,0 | 4,7 | 6,7 | 6,2 | 4,9 |
| American Countries | 0,6 | 0,8 | 0,9 | 0,9 | 0,9 |
| Middle East Countries | 9,7 | 9,1 | 8,1 | 8,3 | 7,8 |
| Other Asian Countries | 4,9 | 4,5 | 2,4 | 2,6 | 2,4 |
| Other Countries | 2,0 | 3,8 | 1,1 | 0,8 | 1,4 |

Source: SPO, www.dpt.gov.tr
Note: Foreign trade statistics exclude export and import data obtained from duty-free zones and duty-free shops.

Clothing, food, and textiles were the main export sectors of Turkey to the EU, with 64.6 per cent during 1998. These three sectors were also the top three commodities with the highest export shares (52 per cent) in trade with non-EU countries. Togan (2000) states that clothing, textiles, and automotive products were also the main sectors that had the highest growth rate of imports from the EU during 1990-1998. Clothing, other products, and textiles were the top three commodities with the highest growth rate of imports from the non-EU countries. Lohrmann (2000), however, asserts that the clothing sector had started to loose its importance and transport equipment; road vehicles, motorcycles, TVs and some electrical household appliances have started to gain importance in the Turkish foreign trade.

It should be regarded that other transport equipment, power generating machinery, iron and steel, other products, and electrical machinery and apparatus are commodities whose export growth rates to the EU exceeded the growth rate of exports to non-EU countries over the period 1990-1998 (Togan, 2000), though these industries were not the traditional export sectors of Turkey. Especially, the trade balance in refrigerators, cookers, and color TVs were positive (Lohrmann, 2000). These developments have indicated a change of export composition. Table 1 and Table 2 in Appendix present the annual growth rates of exports (imports) of commodities to (from) the EU and to (from) the world. The commodities are classified as eleven groups based on the Harmonized Commodity description.[4]

In the sections of *Works of Art* (works of art, collectors' pieces and antiques), we observe annual growth rate of 72.30 per cent in exports (51.26 per cent in imports) to the EU during 1995-2001. *Miscellaneous* (furniture; bedding, mattresses, cushions etc; other lamps & light fitting, illuminated signs and nameplates, prefabricated buildings, Toys, games & sports equipment; parts & accessories, miscellaneous manufactured articles) section has an

[4] The harmonized system is a commodity classification prepared by the Customs Cooperation Council. This classification has been used in Turkey since 1989 was improved as 8-digit position numbers. Because Turkey entered the Customs Union in 1996, it has been used 12-digit position numbers by Harmonized System related Combined Nomenclature (see SIS, Foreign Trade Statistics, various years).

annual growth rate of 20.30 per cent in exports to the EU. However, we have not observed similar increase in imports from the EU (annual growth rate of 4.30 per cent). *Transportation Equipment* section which covers railway or tramway. locomotives, rolling stock, track fixtures and parts thereof; mechanical & electro-mechanical traffic signal equipment, vehicles, (not railway, tramway, rolling stock); parts and accessories, aircraft, spacecraft, and parts thereof, ships, boats and floating structures has an high annual growth rate during the period we have examined (annual growth rate of 4.30 per cent in exports to the EU).

In 1996, the share of imports from the EU was 53.0 per cent of all imports of Turkey. The share of the EU in Turkish imports decreased by 1.80 per cent in 1997. Small increases were observed in 1998 and 1999. In 2000, the share of imports to the EU decreased by 3.70 percent, which was the sharpest change within this period (see Table 3.5).

**Table 3.5 Imports By Countries (Percent Share), 1996-2000**

| | 1996 | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|---|
| **OECD Countries** | 71,3 | 71,7 | 72,9 | 69,6 | 65,4 |
| EU Countries | 53,0 | 51,2 | 52,4 | 52,6 | 48,9 |
| EFTA Countries | 2,5 | 2,7 | 2,5 | 2,3 | 2,1 |
| Other OECD Countries | 15,7 | 17,8 | 17,9 | 14,7 | 14,4 |
| **Non OECD Countries** | 28,7 | 28,3 | 26,2 | 29,1 | 33,7 |
| Europe + CIS Countries | 9,4 | 9,6 | 10,2 | 11,5 | 13,2 |
| African Countries | 4,6 | 4,5 | 3,8 | 4,1 | 5,0 |
| American Countries | 1,5 | 1,6 | 1,6 | 1,2 | 1,1 |
| Middle East Countries | 7,4 | 5,6 | 4,2 | 4,9 | 5,7 |
| Other Asian Countries | 5,1 | 5,2 | 5,7 | 5,9 | 6,5 |
| Other Countries | 0,7 | 1,8 | 0,7 | 1,5 | 2,2 |

Source: SPO, www.dpt.gov.tr
Note: Foreign trade statistics exclude export and import data obtained from duty-free zones and duty-free shops.

The terms of trade, which is usually defined as the ratio of the countries export prices to import prices, is a key concept in evaluating the effects of price changes on welfare. The fall in the terms of trade since the first quarter of 1999 meant that the benefits of an increase in export volumes were lost to the Turkish economy since it was not translated into a commensurate increase in export values (see Table 3.6). Another factor was the outbreak of the East Asian crisis and the contagion effect to Brazilian and Russian economies. When the terms of trade declines, a larger volume of exports is necessary to finance a given volume of imports.

**Table 3.6 Foreign trade price indices, US Dollar, ISIC Revised 3 (1994=100)**

| Year | Export price index | Import price index | Terms-of-trade index |
|---|---|---|---|
| 1996 | 108 | 110 | 98 |
| 1997 | 103 | 100 | 102 |
| 1998 | 98 | 96 | 102 |
| 1999 | 92 | 91 | 101 |
| 2000 | 88 | 95 | 92 |
| 2001 | 86 | 95 | 90 |
| 2002 | 83 | 93 | 90 |

Source: The Central Bank of Turkey, Electronic Data Delivery System

To give a brief review of Turkey-EU trade relations, selected trade indicators are presented in Table 3.7. Trade volume of Turkey-EU trade, trade balance and the ratio of exports to imports are shown from 1980 to 2001, over which period Turkey has always faced with trade deficit with the EU.

**Table 3.7 Turkey-EU Selected Trade Indicators (current US$)**

| *Year* | *X* | *M* | *X+M* | *X-M* | *X/M*100* |
|---|---|---|---|---|---|
| 1980 | 1.377.269.984 | 2.586.449.984 | 3.963.719.968 | -1.209.180.000 | 53 |
| 1981 | 1.685.720.016 | 2.813.090.032 | 4.498.810.048 | -1.127.370.016 | 60 |
| 1982 | 1.923.729.968 | 2.777.700.016 | 4.701.429.984 | -853.970.048 | 69 |
| 1983 | 2.185.289.968 | 2.984.499.936 | 5.169.789.904 | -799.209.968 | 73 |
| 1984 | 2.948.489.968 | 3.535.109.920 | 6.483.599.888 | -586.619.952 | 83 |
| 1985 | 3.398.419.952 | 4.181.659.968 | 7.580.079.920 | -783.240.016 | 81 |
| 1986 | 3.424.600.016 | 4.859.049.984 | 8.283.650.000 | -1.434.449.968 | 70 |
| 1987 | 5.132.460.080 | 6.074.232.888 | 11.206.692.968 | -941.772.808 | 84 |
| 1988 | 5.364.549.952 | 6.301.360.032 | 11.665.909.984 | -936.810.080 | 85 |
| 1989 | 5.680.538.080 | 6.485.238.040 | 12.165.776.120 | -804.699.960 | 88 |
| 1990 | 7.197.826.032 | 9.926.847.000 | 17.124.673.032 | -2.729.020.968 | 73 |
| 1991 | 7.377.131.056 | 9.896.992.864 | 17.274.123.920 | -2.519.861.808 | 75 |
| 1992 | 7.914.530.928 | 10.656.268.920 | 18.570.799.848 | -2.741.737.992 | 74 |
| 1993 | 7.602.754.992 | 13.868.999.808 | 21.471.754.800 | -6.266.244.816 | 55 |
| 1994 | 8.694.020.912 | 10.917.553.088 | 19.611.574.000 | -2.223.532.176 | 80 |
| 1995 | 11.083.935.728 | 16.862.474.992 | 27.946.410.720 | -5.778.539.264 | 66 |
| 1996 | 11.500.623.848 | 22.335.502.168 | 33.836.126.016 | -10.834.878.320 | 51 |
| 1997 | 12.250.086.280 | 24.835.349.912 | 37.085.436.192 | -12.585.263.632 | 49 |
| 1998 | 13.717.214.048 | 24.455.306.112 | 38.172.520.160 | -10.738.092.064 | 56 |
| 1999 | 14.351.728.752 | 21.416.256.200 | 35.767.984.952 | -7.064.527.448 | 67 |
| 2000 | 14.510.519.912 | 26.610.307.080 | 41.120.826.992 | -12.099.787.168 | 55 |
| 2001 | 16.118.322.680 | 18.280.409.984 | 34.398.732.664 | -2.162.087.304 | 88 |

Note: The figures are based on merchandise exports and imports. Source: World Bank.

The real exchange rate can be defined as the nominal exchange rate that takes the inflation differentials among the countries into account. Its importance stems from the fact that it can be used as an indicator of competitiveness in the foreign trade of a country. Since this study aims to explain the effects of the CU with the EU we focus on the real effective exchange rate between Turkey and EU.[5] It is one indicator of competitiveness of the foreign trade of Turkey. Because of the important role it plays in the Turkish economy, the real exchange rate has been one of the most debated issues for Turkey. It is calculated as follows:

$$REER = \sum_i \left( RER_{indeks} \right)_i \cdot w_i \qquad (3.1)$$

[5] The data for Belgium and Luxembourg are combined for the reason that data on Turkey's bilateral trade with the two countries exists in a joined form.

REER is the real effective exchange rate index, $w_i$ is the country's share in the total trade of Turkey, RER is the real exchange rate between the country ***i*** and Turkey in a given year (an increase in RER indicates real depreciation of the TL), and $\sum_i$, denotes the weighted summation over the countries.

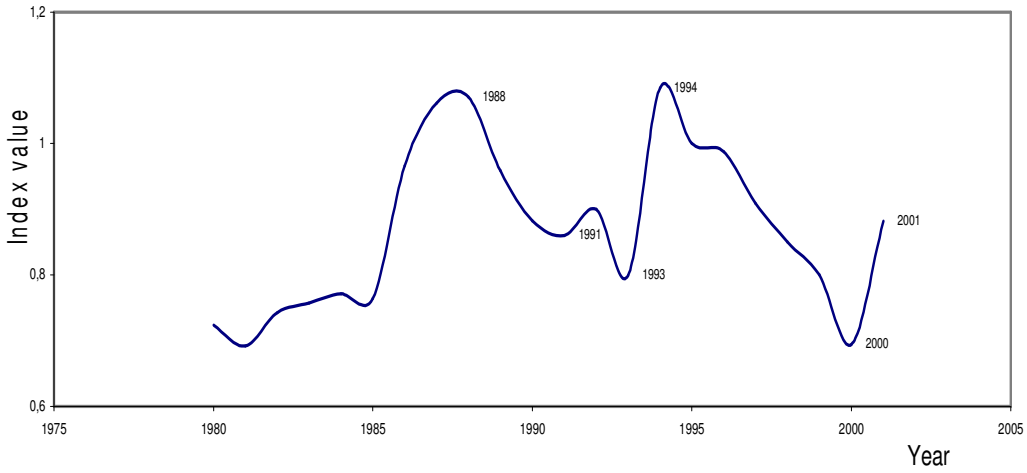


**Figure 3.1: 1980-2001 Turkey-EU Real Effective Exchange Rates (1995=1)**

The unsustainable macro conditions of the Turkish economy, which led the country to the economic crises of November 2000 and February 2001 were the main reason of the sharp decreases of both exports to and imports from the EU as a percentage share in foreign trade. After the 1994 devaluation, the real exchange rate started to appreciate again. The real exchange rate has been an important determinant of output, exports and imports, with depreciations having a positive effect on exports and output and a negative effect on imports.

Some specific years are indicated in Figure 3.1. Appreciation of the Turkish Lira from 1993 to 1994 and from 2000 to 2001 is clearly seen. A stabilization program was announced in 1994 with the aim of reducing the domestic demand and rate of inflation and to increase exports through the real depreciation of the Turkish lira. Also, the sudden devaluation of the

Turkish lira following the crisis of 2001 is captured in Figure 3.1. To sum up, the Turkish economy has exhibited considerable expansion in its international trade after 1980. The rest of the study focuses on the effects of the CU on the Turkish economy.[6]

## 3.3 Studies on the Effects of the Customs Union on the Turkish Economy

There are a few studies on the macro and sectoral effects of the CU. In this section, the studies that examine the economic implications of the customs union between Turkey and the EU are presented. Most of the studies are based on computable general equilibrium techniques. Bayar et al. (2000) discuss the related literature and report the studies of Krueger, et al. (1995), Karluk (1996), Erzan and Filiztekin (1997)7, Togan (1997), Sayan and Demir (1998) that are not based on computable general equilibrium techniques.

According to Harrison et al. (1996), the CU was expected to influence the aggregate welfare through improved access to the EU and to the third markets by the reciprocity of the preferential access agreements. Improved access to third country markets would be the biggest gains from the customs union arrangement. They estimate that Turkey may stand to gain between 1 and 1.5 per cent of GDP annually from the customs union using a comparative static computable general equilibrium model for Turkey. It also may stand to lose about 1.4 per cent of GDP from lost tariff revenues. The authors note that they do not estimate the long-run dynamic impact on the growth rate of the Turkish economy. It can be predicted that the gains from the customs union would likely to be larger than the authors' estimations.

Using applied intertemporal general equilibrium model, Mercenier and Yeldan (1997) discuss the dynamic impacts of trade liberalization scenarios for Turkey: effects of Turkish

[6] There has been widespread and rapid trade liberalization in developing countries since 1980s, during which various multilateral trade negotiations, structural adjustments and stabilizations programmes have been launched. Meanwhile, most of the developing countries tended to relax controls over imports and moved from fixed to flexible exchange rate regimes.

[7] Erzan and Filiztekin (1997) uses panel data to investigate whether the impact of the CU will be more severe on small and medium scale enterprises in comparison with large establishments as usually assumed by the authorities.

commitment to enter a CU with the EU and Turkey's joining the European Single Market. Besides Turkey, six other regions (Great Britain, Germany, France, Italy, the rest of the EU, and the rest of the world) are considered in their study. Each country has four perfectly competitive sectors (agriculture and primary products; food, beverage, and tobacco; other manufacturing industries and transport and services); and five noncompetitive industries which are pharmaceutical products; chemicals other than pharmaceutical products; motor vehicles; office machinery; and other machinery and transport materials. The authors deal with different scenarios as follows.

The first scenario of the Customs Union with the EU, limited to the tariff harmonization reform as currently under implementation, is undesirable with the welfare cost of implementing the CU amounts to a sacrifice of real consumption on the whole time horizon of almost 1 % (-0,832 %). The second scenario, full commodity market integration with the EU, shows the welfare gain would amount to almost 1 % (+ 0,897 %) over the whole time horizon. In summary, the CU should be complemented with full market integration with the European Union. Otherwise, a partial trade reform will be inadequate to improve domestic welfare alone.

Bekmez (2002) studies a computable general equilibrium model and compares the results of the various policy scenarios. Dividing the Turkish economy into twenty-two sectors (two agricultural, eighteen manufacturing, and two service sectors), the differentiation of exports and imports as the EU and the rest of the world is considered. The first scenario is the CU with the EU and the estimations of the author shows that there is a 2 per cent decrease in GDP and an 8 per cent decrease in government revenue. In the scenario of full membership with the EU, greater increases in the EU exports than the customs union scenario in all sectors except transportation equipment are observed. Also, in the beverage industry, paper and publishing, and glass products sectors domestic production would increase while domestic

demand for those goods would decrease. Under the full membership with replacement tax scenario, Turkish products might be more expensive in the world market, and almost all sectors would experience a decrease in exports.

All tariffs are removed under the free trade scenario, and the author shows that the trade-creation and the trade-diversion effects of free trade might be relatively equal for the EU and the for the rest of the world. Bekmez notes that the success of the trade policy reforms depends crucially on reductions in both tariffs and export subsidies. Similar to Mercenier and Yeldan (1997), the author concludes that the Turkish economy would be better off with full EU membership.

In summary, the studies that are examined in this section have the common conclusion that the CU will have a small welfare effect on the Turkish economy. Increased opportunity of getting new technologies, improving quality and increasing occasions for exports to the EU can also be counted as the gains from the CU. However, the full membership to the EU is the most crucial point that should orient the macroeconomic policies.

# CHAPTER 4

# DATA AND METHODOLOGY

This chapter contains the discussion of the trade models that deals with income and price effects in foreign trade. Then, the variables and data of the study are also thoroughly described in this chapter, and this is accompanied by the econometric methodology used for estimations.

## 4.1 A Review of Trade Models

Most of the empirical researches on trade relations have dealt with the estimation of income and price elasticities and application of macro-economic policy issues. *The imperfect substitutes model* and *the perfect substitutes model* have been dominated the empirical literature. Goldstein and Khan (1984) summarize these two general models and discuss income and price effects in foreign trade.

The first model, the imperfect substitutes model, assumes that imports and exports are not perfect substitutes for domestic goods. In equations (4.1) - (4.8) below, the authors present imperfect substitutes model of country *i*'s imports from and exports to the rest of the world (*) which determines the quantity of imports demanded in country *i*, ($I_i^d$), the quantity of country *i*'s exports demanded by the rest of the world, ($X_i^d$), the quantity of imports supplied to country *i* from the rest of the world, ($I_i^s$), the quantity of exports supplied from country *i* to the rest of the world, ($X_i^s$), the domestic currency prices paid by importers in the two regions, ($PI_i$ and $PI^*$), and the domestic currency prices received by exporters in two regions, ($PX_i$, $PX^*$). The consumer is assumed as to maximize utility subject to a budget constraint in the imperfect substitutes model.

$$I_i^d = f\left(Y_i, PI_i, P_i\right), \qquad f_1, f_3 > 0, \;\; f_2 < 0, \tag{4.1}$$

$$X_i^d = g\left(Y^* e, PX_i, P^* e\right), \qquad g_1, g_3 > 0, \;\; g_2 < 0, \tag{4.2}$$

$$I_i^s = h\left[PI^*\left(1+S^*\right), P^*\right], \qquad h_1 > 0, \qquad h_2 < 0, \tag{4.3}$$

$$X_i^s = j\left[PX_i\left(1+S_i\right), P_i\right], \qquad j_1 > 0, \qquad j_2 < 0, \tag{4.4}$$

$$PI_i = PX^*\left(1+T_i\right)e, \tag{4.5}$$

$$PI^* = PX_i\left(1+T^*\right)/e, \tag{4.6}$$

$$I_i^d = I_i^s e, \tag{4.7}$$

$$X_i^d = X_i^s. \tag{4.8}$$

The levels of nominal income in the two regions, $(Y_i, Y^*)$, the price of (all) domestically produced goods in the two regions, $(P_i,\ P^*)$, the proportional tariff, $(T_i,\ T^*)$, and subsidy rates, $(S_i,\ S^*)$, applied to imports and exports in the two regions, and the exchange rate, $(e)$, expressed in units of country $i$ 's currency per unit of the rest-of-the world's currency, are the exogenous variables of the model.

Income elasticities, $f_1$ and $g_1$, and cross-price elasticities of demand, $f_3$ and $g_3$, are expected to be positive.[8] However, the own-price elasticities of demand, $f_2$ and $g_2$, are assumed to be negative. In the *n*-country, the symmetry between the import demand equation (4.1) and the export demand equation (4.2) disappears.[9]

The Perfect Substitutes Model is the alternative model to the imperfect substitutes model. There are some reasons to implement this model in empirical studies. Some traded

[8] For aggregate imports or exports, the possibilities of inferior goods and of domestic complements for imports are typically excluded.

[9] This is because a country's total imports face competition only from domestic producers; whereas a country's total exports face competition not only from domestic producers in the importing region but also from third country exporters to that region.

industrial goods may be closer substitutes than the (imperfect) price statistics would suggest.[10] There may be insights about price and income elasticities for imports and exports that emerge from a perfect substitutes framework that do not when goods are assumed to be imperfect substitutes. Goldstein and Khan (1984) also emphasize a reasonable argument for the implementation of the Perfect Substitutes Model:

> *"First, despite many man-made impediments to arbitrage such as tariffs, quotas, and special preferential trading relationships, there is no denying that there are homogenous commodities (wheat, copper, sugar, etc.) that are traded on organized international commodity markets at a common price(net of transportation and interest costs and expressed in terms of a common currency). For such "standard" commodities, a framework is needed where demands and supplies do not depend on price differentials between domestic and foreign goods."*

$$D_i = l\left(P_i, Y_i\right), \qquad l_1 < 0, \quad l_2 > 0, \tag{4.9}$$

$$S_i = n\left(P_i, F_i\right), \qquad n_1 > 0, \quad n_2 < 0, \tag{4.10}$$

$$I_i = D_i - S_i, \tag{4.11}$$

$$X_i = S_i - D_i, \tag{4.12}$$

$$PI_i = P_i = PX_i = eP_w, \tag{4.13}$$

$$D_w = \sum_{i=1}^{m} D_i, \tag{4.14}$$

$$S_w = \sum_{i=1}^{m} S_i, \tag{4.15}$$

$$D_w = S_w. \tag{4.16}$$

$D_i$ is the total quantity of traded goods demanded in country $i$ ; $S_i$ is the supply of traded goods produced in country $i$ ; $I_i$ and $X_i$ are the quantities of country $i$ 's imports and

[10] It is possible that international differences in the methodology of constructing price statistics (e.g. weighting patterns, survey methods, and index number formulae) can lead to observed international price differences for a given good or bundle of goods that understate the true degree of substitutability.

exports; $PI_i, PX_i, P_i$ and $P_w$ are the import, export, domestic, and world prices of traded goods; $D_w$ and $S_w$ are the world demand and supply of traded goods; and $Y_i$ and $F_i$ are income and factor costs in country *i* in this perfect substitutes model.

Goldstein and Khan (1976) use the simplest import demand function that relates the quantity of imports demanded by a country to the ratio of import prices to domestic prices and to the level of real income in that country.[11] In terms of logarithms, the equation can be specified as follows:

$$\log M_t^d = \alpha_0 + \alpha_1 \log P_t + \alpha_2 \log Y_t + u, \tag{4.17}$$

where,

$M$ = *quantity of imports in period t,*

$P$ = *ratio of import prices ( PM ) to domestic prices ( PD ) in period t, that is,* $P_t = \frac{PM}{PD} t,$

$Y$ = *level of GNP in constant prices in period t,*

*u is an error term, and the superscript d signifies demand.*

One reason why the import demand equation is usually specified in logarithm form is that this form allows imports to react proportionally to a rise and fall in the explanatory variables; that is, on the assumption of constant elasticities, the logarithmic form avoids the problem of changes in the elasticities as import quantities change (for a discussion, see Khan and Ross (1975)).

Murray and Ginman (1976) estimate a relatively simple demand function for imports for 14 countries, with a view of distinguishing between the cyclical and trend influences on the quantity of imports. The traditional formulation of an import demand equation relates the quantity of imports demanded by country *i* to the ratio of import prices to domestic prices, and

[11] The authors assume that imports are a substitute for domestic goods. Their apprroach has similarities with Houthakker and Magee (1969) and Leamer and Stern (1970).

domestic real income. This presupposes that the demand function is homogenous of degree of zero in prices and nominal income. In log-linear terms the estimating equation generally has the following form:

$$\log M_{it}^{d} = \alpha_0 + \alpha_1 P_{it} + \alpha_2 \log Y_{it} + u_t, \tag{4.18}$$

where,

$M_i$ = *quantity of imports of country i*

$P_i$ = *unit-value of imports of the country i deflated by the domestic price level*

$Y_i$ = *real income of country i*

Stern *et al.* (1979) analyze the U.S. aggregate import and exports, based upon quarterly data for the period 1956:3 – 1976:2. The authors, first, focus on the determinants of the prices of the U.S. imports and exports. Second, they estimate import prices in the estimating equation for real imports and the export prices in the equation for real exports, together with the other important determining variables. The model for import prices ( $P^m$ ) is:

$$P^m = P^m\left(P^f, ER, P^d, NP^d, NP^f\right), \tag{4.19}$$

Where, $P^f$ is the foreign home - market price taken as a proxy for the foreign currency export price, ER is the exchange rate in units of foreign currency per U.S. dollar, $P^d$ is the price of competing U.S. domestic goods, and $NP^d$ and $NP^f$ are U.S. and foreign nonprice (capacity – type) variables that may influence import prices. The model for real import demand $\left(M\right)$ is:

$$M = M\left(Y^d, P^d, \hat{P}^m, NP^d\right), \tag{4.20}$$

Where, $Y^d$ is U.S. real GNP, $\hat{P}^m$ is the estimated price of imports based on equation (4.19), and $P^d$ and $NP^d$ are as defined above. The models of export prices and real export demand are more or less symmetric with those for imports just noted.

Bond (1987) distinguishes five developing country regions and five commodity groups. The demand and supply equations for five regions and the first four commodity groupings are based on the equations used by Goldstein and Khan (1978). Adjustment in export demand to changing market conditions occur within a period of one year, adjustment in export supply allows for the possibility of delayed adjustment beyond one year. In the demand equation, commodity k is differentiated by its regional source of supply. Commodity exports of different regions are treated as imperfect substitutes in Bond's study.

For the export demand side the world demand for exports of commodity k from developing country region R is specified in log-linear form as follows:

$$\ln XD_R^k = \alpha_0 + \alpha_1 \ln\left( PX_R^k \Big/ PW^k \right) + \alpha_2 \ln YW, \tag{4.21}$$

where,

$XD_R^k$ = *the quantity of exports of commodity k demanded from region R*

$PX_R^k$ = *the export price of commodity k from region R*

$PW^k$ = *the average price of commodity k in international markets*

$YW$ = *the real income in importing countries.*

Because equation (4.21) is specified in logarithms, $\alpha_1$ is the elasticity of world demand for region R's exports of the *k*th commodity with respect to the divergence between region R's export price of the *k*th commodity and the average world price, and $\alpha_2$ is the

elasticity of export demand for commodity k with respect to global real income. It is expected that $\alpha_1$ will be negative and $\alpha_2$ will be positive.

The supply of exports of commodity k from region R is specified as a log-linear function of current and lagged ratios of the export price of commodity *k* to domestic price levels in producing countries in region R, an index of productive capacity in region and supply shocks:

$$\ln XS_R^k = \beta_0 + \beta_1 \ln\left( PX_R^k \Big/ P_R E_R \right) + \beta_2 \ln\left( PX_{R-1}^k \Big/ P_{R-1} E_{R-1} \right) + \beta_3 \ln \overline{Y}_R + \beta_4 \ln SS_R + \beta_5 t, \tag{4.22}$$

where,

$XS_R^k$ = *the quantity of exports of commodity k supplied from region R*

$P_R$ = *the domestic price level in producing countries in region R, in local currency*

$E_R$ = *the exchange rates of currencies of producing countries, in U.S. dollars per unit of local currency*

$\overline{Y}$ = *an index of overall proactive capacity in region R*

$SS_R$ = *supply shocks in region R*

$t$ = *a trend term that reflects long-run changes that affect the supply of exports of commodity k.*

Equation (4.22) embodies the notion that exporters increase their supply of exports as the price of exports rises relative to domestic prices. The lagged price variable allows for the possibility of delayed supply adjustment beyond the period of one year. Exports of commodity *k* are also expected to increase as productive capacity in region R increases. $SS_R$ reflects other factors that influence exports from region R; $\beta_1$ and $\beta_2$ are region R's price elasticity and lagged price elasticity of export supply, respectively, and $\beta_3$ is the elasticity

with respect to productive capacity. It is expected that the sign of elasticities $\beta_1, \beta_2$ and $\beta_3$ will be positive. Normalizing the equation for the price of exports in region R yields the following equation:

$$\ln PX_R^k = b_0 + b_1 \ln XS_R^k + b_2 \ln P_R E_R + b_3 \ln\left( PX_{R-1}^k \Big/ P_{R-1} E_{R-1} \right) + b_4 \ln \overline{Y}_R + b_5 \ln SS_R + b_6 t. \tag{4.23}$$

The normalized coefficients are related to the structural parameters in the following way:

$$b_0 = -\frac{\beta_0}{\beta_1}, b_1 = \frac{1}{\beta_1}, b_2 = \frac{\beta_1}{\beta_1}, b_3 = \frac{\beta_2}{\beta_1}, b_4 = \frac{\beta_3}{\beta_1}, b_5 = \frac{\beta_4}{\beta_1}, b_6 = \frac{\beta_5}{\beta_1}.$$

Since $\beta_1, \beta_2$ and $\beta_3$ are positive, it is expected that $b_1>0$, $b_2>0$, $b_3<0$, and $b_4<0$.

Brada et al. (1997) develop a model of the trade balance, which views imports and domestically-produced goods as imperfect substitutes and provide a simple theoretical framework for researchers concerned with the effects of the exchange rate on trade flows. Using the popular two-country model of trade, the model starts with the assumption that the quantity of imported goods demanded depends on output and the relative price of imported goods;

$$I^d = I^d\left(Y^d, r^d\right) \tag{4.24}$$

$$I^w = I^w\left(Y^w, r^w\right) \tag{4.25}$$

$$X^d = X^d\left(RPX, Y^d\right) \tag{4.26}$$

$$X^w = X^w\left(RPX^w, Y^w\right) \tag{4.27}$$

$$I^d = X^w \tag{4.28}$$

$$I^w = X^d \tag{4.29}$$

$$B = \left(RPX \cdot I^{w}\right) / \left(RER \cdot RPX^{w} \cdot I^{d}\right) \tag{4.30}$$

Then the reduced-form equation is written as

$$B = B\left(RER, Y^{d}, Y^{w}\right) \tag{4.31}$$

where,

$I^{d}$ = *the quantity of foreign goods imported*

$Y^{d}$ = *the level of domestic real income measured in domestic industrial production*

$r^{d}$ = *the relative price of imported goods*

$I^{w}$ = *the quantity of domestic goods exported*

$Y^{w}$ = *the real income in the rest of the world*

$r^{w}$ = *the relative price of imports abroad*

$X^{d}$ = *the supply of domestic country exportables*

$X^{w}$ = *the supply of foreign country exportables*

$\left(RPX \bullet I^{w}\right)$ = *the value of exports*

$\left(RER \bullet RPX^{w} \bullet I^{d}\right)$ = *the value of imports*

$$r^{d} = \frac{E \cdot PX^{w}}{p^{d}} = \left[\frac{\left(E \cdot P^{w}\right)}{p^{d}}\right] \cdot \left(\frac{PX^{w}}{p^{w}}\right) = RER \cdot RPX$$

$$RER = \left(E \cdot P^{w}\right) / P^{d} \quad RPX^{w} = PX^{w} / P^{w}$$

Equation (4.31) represents a long-run relationship that assumes sufficient time for domestic and world trade, consumption and production to adjust to changes in the exchange rate.

Doganlar (2002) examines the impact of exchange rate volatility on the exports of Turkey, South Korea, Malaysia, Indonesia, and Pakistan. The author estimates a standard export demand equation augmented by an exchange rate volatility term.

$$\ln X_t = \alpha_0 + \alpha_1 \ln FY_t + \alpha_2 \ln RP_t + \alpha_3 V_t + e_t, \quad (4.32)$$

$X_t$ = *real export (nominal export / export price index)*

$FY_t$ = *foreign economic activity (industrial production in industrialized countries)*

$RP_t$ = *relative prices (home export price index / industrial countries' export price index)*

$V_t$ = *proxy for exchange rate uncertainty.*

## 4.2 Data and the Variables Used in the Estimations

For our analysis we use data for years 1980-2001 for more than 150 countries and more than 2000 country-year observations. Panel data estimation procedure is utilized for the regression equations. The panel is unbalanced due to missing observation points for separate nations in different time periods. Some small countries do not appear in the panel due to the non availability of their data. The data set is obtained from the World Bank and the key variables of the study are Turkey's imports from and exports to other countries, real bilateral exchange rates (RER) and GDP levels in Dollars. These variables are in logarithmic form.

In order to control for differences in the size of each trading partner's economy, our models include a variable that measures the level of income. The coefficient on this variable is expected to be positive reflecting the notion that an increase in domestic income will stimulate imports yielding positive income elasticity.

In order to control for fluctuations in relative prices among trading partners, and its effect on export and import demand the real exchange rate between Turkey and each country, RER, was computed using the constructed values of E, P, and $P^W$ as RER = (E* P) / $P^W$, where E is the nominal exchange rate (foreign currency units per TL), P is the domestic price

index, and $P^W$ is the price index of the foreign country. Price indices are taken as the consumer price indices (CPI). Since the base year for CPIs is 1995, the same year is selected as the base year for the real exchange rate variable.

Besides, two dummy variables are included into the models. The first one is for the customs union period (cu) that takes the value of 1 for the years between 1996 and 2001 and zero otherwise. Another dummy variable is introduced to distinguish the 14 EU countries (deu) from other countries in the sample. Belgium and Luxembourg is considered as one country for the reason that data on Turkey's bilateral trade with the two countries exists in a combined form. Their inclusion is motivated by capturing the structural shifts with respect to both the CU period and the EU countries.

Income and price variables are used interactively with the (cu) and the (deu*cu) variables to test whether the change in trade policy brought about an additional structural change in export supply and import demand in Turkey. Interactive income variables are (cu*lgdp), (cu*lgdpt), (deucu*lgdp), (deucu*lgdpt); and interactive price variables are (cu*lrer), and (deucu*lrer). We also have crises dummies to capture the effects of the 1994 and the 2001 crises and the Marmara earthquake that occurred in 1999.

As measures of governance, we use the indices of *political stability, voice and accountability, government effectiveness, regulatory quality, rule of law, and control of corruption.* The estimates for all these six governance variables have been compiled by Kaufmann *et al.* (2002) covering 175 countries in 2000/01 based on an analysis of wide-ranging data sources comprised of both polls and surveys.[12] The values of all these variables, described in more detail below, are converted into a range 0 to 5 where greater values indicate better governance. Several indicators which measure perceptions of the likelihood that the

[12] Since the values of these six dimensions of governance are estimated only for 2001we also use these values for other years.

government in power will be destabilized or overthrown by possibly unconstitutional and/or violent means, including terrorism are combined to label *political stability. Voice and accountability* includes a number of indicators measuring various aspects of the political process, civil liberties and political rights. *Government effectiveness* combines perceptions of the quality of public service provision, the quality of the bureaucracy, the competence of civil servants, the independence of the civil service from political pressures, and the credibility of the government's commitment to policies into a single grouping. *Regulatory quality* includes the measures of the incidence of market-unfriendly policies such as price controls or inadequate bank supervision, as well as perceptions of the burdens imposed by excessive regulation in areas such as foreign trade and business development. *Rule of Law* includes several indicators which measure the extent to which agents have confidence in and abide by the rules of the society. *Control of corruption* measures perceptions of corruption, conventionally defined as the exercise of public power for private gain.

## 4.3 Methodology and Models

In order to analyze the effects of trade in both a time-series and cross-section context, as well as to take advantage of available data, a panel data set is used. A longitudinal, or panel, data set is one that follows a given sample of individuals over time, and thus provides multiple observations on each individual in the sample. Panel data sets for economic research possess several major advantages over conventional cross-sectional or time-series data sets. First, they usually give the researcher a large number of data points, increasing the degrees of freedom and reducing the collinearity among explanatory variables – hence improving the efficiency of econometric estimates.

Second and more important, longitudinal data allow a researcher to analyze a number of important economic questions that cannot be addressed using cross-sectional or time-series data sets. Besides the advantage that panel data allow us to construct and test more

complicated behavioral models than purely cross-sectional or time-series data, the use of panel data also provides a means of resolving or reducing the magnitude of a key econometric problem that often arises in empirical studies, namely, the often-heard assertion that the real reason one finds (or does not find) certain effects is because of omitted (mismeasured, not observed) variables that are correlated with explanatory variables (Hsiao, 1986, p.3). The basic panel data regression model can be written as

$$y_{it} = \alpha_i + \beta' x_{it} + \varepsilon_{it} \tag{4.33}$$

There are $K$ regressors in $x_{it}$, not including the constant term. The individual effect is $\alpha_i$, which is taken to be constant over time $t$ and specific to the individual cross-sectional unit $i$. As it stands, this model is a classical regression model. If we take the $\alpha_i$'s to be the same across all units, then ordinary least squares provides consistent and efficient estimates of $\alpha$ and $\beta$. There are two basic frameworks used to generalize this model. The **fixed effects** approach takes $\alpha_i$ to be a group specific constant term in the regression model. The **random effects** approach specifies that $\alpha_i$ is a group specific disturbance, similar to $\varepsilon_{it}$ except that for each group, there is but a single draw that enters the regression identically in each period (Greene, 1993 p.560).

A common formulation of the fixed effects model assumes that differences across units can be captured in differences in the constant term. Thus, in (4.33), each $\alpha_i$ is an unknown parameter to be estimated. Let $y_i$ and $X_i$ be the T observations for the $i$th unit, and let $\varepsilon_i$ be associated $T \times 1$ vector of disturbances. Then we may write (4.33) as

$$y_i = i\alpha_i + X_i\beta + \varepsilon_i \tag{4.34}$$

We used the fixed effects methodology in our study. There are two basic conditions under which a fixed effects regression model would be the most appropriate method to

estimate a panel data set. The first condition is satisfied if the unobservable factors that differentiate cross-section units are best characterized as parametric shifts of the regression function. This implies that a separate intercept is required for each individual in the sample. Given the nature of the cross-section units under investigation in this analysis, this condition is likely to hold. The second condition is satisfied if a relatively large proportion of the population is represented in the sample. This is most likely true in our analysis since the sample includes information on nearly all potential trading partners of Turkey under investigation.

Since our panel is made up of time series observations over the major trading partners of Turkey that are brought together both through a membership of the EU and geographical (or regional) designation, fixed effects model for the estimation of both the export and import functions is utilized.[13] Then, to capture the possible trade effects of the CU on the Turkish economy the fixed effects methodology is used.

Moreover, for the appropriateness of the choice of the fixed effects methodology we first test whether the fixed effects are statistically significant. The restricted residual sums of squares being that of OLS on the pooled model and the unrestricted residual sums of squares being that of the fixed effects regression are compared in F-test. The test statistics is based on an F- distribution with (N-1) and (NT-N-K) degrees of freedom, where K is the number of regressors besides the dummy variables representing the fixed effects. Our results show that the fixed effect is appropriate.

Secondly, we performed Hausman Tests based on Hausman (1978). The Haussman statistic tests for the correlation between the individual effects and explanatory variables. The null hypothesis of the Haussman (1978) test is that, assuming that both OLS and GLS are consistent, OLS is inefficient, the alternative being OLS is consistent but GLS is not.

[13] For an overview of this debate, see Erlat (1997).

Rejection of the null hypothesis thus constitutes evidence against the random effects model (see, for example, Hsiao [1986], Greene [1993] or Baltagi [1995]). In every set of estimates except one, the basic import equation, the Hausman statistic rejects the random effects specification, suggesting that unobserved time-invariant country heterogeneity does influence the exports and imports of Turkey. Therefore, we reject the random effects methodology based on the Hausman Tests we performed.

Since fixed effects model cannot estimate the effect of any time-invariant variable, the political stability and governance terms are not included in the fixed effects formulation. Though econometrically inferior, we also perform OLS estimations to capture the effects of these variables.

The regression models are presented, and the results based on both the fixed effects and the OLS methodology are examined in Chapter 5 to interpret the CU effects on the Turkish foreign trade with the world and especially with the EU.

# CHAPTER 5

# REGRESSION ANALYSIS

This chapter introduces the model specifications and continues with the econometric results and discussions. Designing the models for empirical investigation of the effects of the CU on the patterns of Turkey's trade with the world we use the framework developed by Neyapti et al. (2003). The export and import equations are presented in this chapter, and are followed by the results of the estimations and discussion of the major findings from these estimations.

Following Goldstein and Khan (1976); Murray and Ginman (1976); Stern *et al.* (1979), Goldstein and Khan (1984); and Brada *et al.* (1997), and the models discussed in the previous section, we form the baseline export and import equations, (5.1) and (5.4). Then, we extend these base models with relevant explanatory variables to see the effects of the customs union on Turkish trade with the equations (5.2) and (5.3) for the Turkish exports and with the equations (5.5) and (5.6) for the Turkish imports.

$$\ln XT_{it} = \alpha_{0i} + \alpha_1 \left(\ln gdp\right)_{it} + \alpha_2 \left(\ln rer\right)_{it} \text{ …….} \quad (5.1)$$

$$\ln XT_{it} = \alpha_{0i} + \alpha_1 \left(\ln gdp\right)_{it} + \alpha_2 \left(\ln rer\right)_{it} + \alpha_3 \left(cu\right) + \alpha_4 \left(deu * cu\right)_{it} \text{ ……} \quad (5.2)$$

$$\ln XT_{it} = \alpha_{0i} + \alpha_1 \left(\ln gdp\right)_{it} + \alpha_2 \left(\ln rer\right)_{it} + \alpha_3 \left(cu\right) + \alpha_4 \left(deu * cu\right)_{it} + \alpha_5 \left(cu * \ln gdp\right)_{it} + \alpha_6 \left(cu * \ln rer\right)_{it} + \alpha_7 \left(deucu * \ln gdp\right)_{it} + \alpha_8 \left(deucu * \ln rer\right)_{it} \text{ …..} \quad (5.3)$$

$$\ln MT_{it} = \beta_{0i} + \beta_1 \left(\ln gdpT\right)_{it} + \beta_2 \left(\ln rer\right)_{it} \text{ ……..} \quad (5.4)$$

$$\ln MT_{it} = \beta_{0i} + \beta_1 \left(\ln gdpT\right)_{it} + \beta_2 \left(\ln rer\right)_{it} + \beta_3 \left(cu\right) + \beta_4 \left(deu * cu\right)_{it} \text{ ……..…} \quad (5.5)$$

$$\ln MT_{it} = \beta_{0i} + \beta_1 \left(\ln gdpT\right)_{it} + \beta_2 \left(\ln rer\right)_{it} + \beta_3 \left(cu\right)_{it} + \beta_4 \left(deu * cu\right)_{it}$$

$$+\beta_5 \left(cu * \ln gdpT\right)_{it} + \beta_6 \left(cu * \ln rer\right)_{it} + \beta_7 \left(deucu * \ln gdpT\right)_{it} + \beta_8 \left(deucu * \ln rer\right)_{it} \ \ldots \qquad (5.6)$$

Table 5.1 presents the estimations of models (5.1) through (5.6). The fixed-effects model is used in the panel data estimation of these equations using cross-section weights. Estimations are carried out with the Eviews Software, Version 3.1.14 Selecting cross-section weights, Eviews estimates a feasible generalized least squares (GLS) specification assuming the presence of cross-section heteroscedasticity.

The models (5.1) and (5.4) are the traditional formulations of export and import equations, respectively. The fundamental export equation (5.1) relates the income of the partner countries and the exchange rate; while the import equation (5.4) combines the domestic income that is the income of Turkey, and the exchange rate. Following the Keynesian line of argument, it is expected that an increase in domestic income will stimulate imports yielding positive income elasticity.

Table 5.1 shows that the sign of (ln rer) is negative in export equations and positive in import equations meaning an increase in real price of foreign exchange is expected to improve the trade balance. The estimated price elasticities are significantly different from zero at the 1 per cent level in all of the equations. The calculated price elasticities in import equations are smaller than (in absolute value) the calculated price elasticities in export equations. We have observed that the Turkish bilateral exports and imports are price inelastic; since the elasticities are less than one in absolute values.

Positive sign of (ln gdp) means that the relationship between the trade balance and world income is pro-cyclical. The estimated income elasticities are significantly different from zero at the 1 per cent level in all of the export equations meaning that the Turkish

[14] EViews is a registered trademark of *Quantitative Micro Sof*tware, 4521 Campus Drive, Suite 336, Irvine CA, 92612.

exports are income elastic. In import equations coefficients of income variables have positive signs. The coefficient of (ln gdpT) is 1.75 in equation (5.4). In equation (5.5) and (5.6), the coefficient of (ln gdpT) is 1.52.

The first observation from the examination of the regressions (5.2) and (5.5) that the Custom Union Agreement has had a positive and significant impact both on the Turkish exports and imports and on the direction of trade. The coefficients of the (cu) dummy are positive and statistically significant at 1 per cent level in these equations, 0.58 and 0.23 respectively. This indicates a significant increase in the trade volumes of Turkey after the Customs Union Agreement came into effect. The analysis of the (deu*cu) dummy variable in both equations gives interesting results. The coefficient of (deu*cu) dummy is negative and significant at 1 per cent level (-0.26) in equation (5.2). This shows that the increase in exports to the EU is less than the average increase in Turkey's exports after the Customs Union Agreement. We have the opposite situation in import equation (5.5). The coefficient of (deu*cu) dummy is positive and significant at 1 per cent level (0.23) in equation (5.5) displaying the increase in imports from the EU is more than the average increase in Turkey's exports after the Customs Union Agreement.

The third equations in export and import models, (5.3) and (5.6) are intended to test the additional structural and behavioral changes in export supply and import demand in Turkey after the Agreement. The Customs Union brought new regulations in the trade of Turkey those are discussed in Chapter 2 of the study. Therefore, we aim to evaluate the responsiveness of the Turkish exports and imports to possible changes.

**Table 5.1: Fixed-Effect Results:**

| Variables / Model | (5.1) | (5.2) | (5.3) | (5.4) | (5.5) | (5.6) |
|---|---|---|---|---|---|---|
| LNGDP | 2,10*** | 1,76*** | 1,79*** | | | |
| | (0,04) | (0,05) | (0,05) | | | |
| LNGDPT | | | | 1,75*** | 1,52*** | 1,52*** |
| | | | | (0,03) | (0,04) | (0,14) |
| LNRER | -0,67*** | -0,44*** | -0,40*** | 0,28*** | 0,29*** | 0,37*** |
| | (0,06) | (0,07) | (0,08) | (0,06) | (0,06) | (0,06) |
| CU | | 0,58*** | 3,44*** | | 0,23*** | 13,71* |
| | | (0,05) | (0,38) | | (0,04) | (7,03) |
| DEUCU | | -0,26*** | -1,74 | | 0,23*** | -2,13 |
| | | (0,06) | (1,16) | | (0,05) | (10,85) |
| CULNGDP | | | -0,12*** | | | |
| | | | (0,02) | | | |
| CULNGDPT | | | | | | -0,52* |
| | | | | | | (0,27) |
| CULNRER | | | 0,17 | | | -0,48*** |
| | | | (0,18) | | | (0,15) |
| DEUCULNGDP | | | 0,06 | | | |
| | | | (0,05) | | | |
| DEUCULNGDPT | | | | | | 0,09 |
| | | | | | | (0,42) |
| DEUCULNRER | | | -0,99*** | | | -0,09 |
| | | | (0,33) | | | (0,27) |
| (unweighted statistics) R-bar squared | 0,86 | 0,86 | 0,86 | 0,86 | 0,86 | 0,86 |
| # of cross-sections used | 155 | 155 | 155 | 156 | 156 | 156 |
| total panel (unbalanced) observations | 2193 | 2193 | 2193 | 2065 | 2065 | 2065 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

Note: figures in parentheses are standard errors

We performed Wald Tests (see Table 5.2) based on F distribution for significance of the sum of the coefficients estimated for the interactive variables in equations (5.3) and (5.6). All of the null hypotheses, but the hypothesis (lnrer+culnrer=0), are rejected at 1 per cent significance level for equation (5.3). Since the coefficient of the (cu*lgdp) is -0.12 and the coefficient of the (deucu*lgdp) is 0.06 we may say that the responsiveness of the Turkish exports to income changes declined slightly. However, we still have positive and significant impact of the income levels of the trading partners of Turkey. The coefficient of the (cu*lrer) is 0.17 but the coefficient is neither significant at 5 nor 10 per cent significance levels. However, the coefficient of the (deucu*lrer) is -0.99 and the coefficient is statistically significant at 1 per cent level. Our results maintain the sensitivity of export demand to price

changes. Moreover, following the Customs Union Agreement, demand for Turkish exports in the EU countries have become more price sensitive.

For the equation (5.6), neither the null hypotheses for the price variables (lnrer+culnrer=0) nor (lnrer+culnrer+deuculnrer=0) rejected at 10 per cent significance level. In other words, we can not reject the hypotheses that the sum of the price coefficients is in fact zero. Since the coefficient of the (cu*lgdpt) is -0.52 and the coefficient of the (deucu*lgdpt) is 0.09 we may say that the responsiveness of the Turkish imports to income changes declined slightly. However, we still have positive and significant impact of the income level of the Turkey's income level. The coefficient of the (cu*lrer) is -0.48 and the coefficient is statistically significant at 1 per cent level. However, the coefficient of the (deucu*lrer) is -0.09 but the coefficient is neither significant at 5 nor 10 per cent significance levels. We thus observe a picture such that the price responsiveness of imports significantly declined during the CU period to an extent that import demand became insensitive to price changes.

The Turkish economy has suffered economic crises in 1994 and in 2001. Besides these crises, The Marmara Earthquake that occurred in 1999 led to an important decline in the overall demand. One of the direct indicators of the crisis over the financial markets was the rapid rate of depreciation of the TL. Turkey declared the surrender of the pegged exchange rate system on February 2001, thereby letting the exchange rates to free float. Therefore, we are motivated to examine the impact on the Turkey's bilateral trade of the economic and financial crises that occurred in the Turkish economy. We included three crises dummies for each of these events into the exports and import equations (see table 5.3).

Due to an appreciation of the Turkish Lira (see Chapter 3) imports increased rapidly, exports slowed down, and the current account deficits reached to significant levels before the 1994 crisis. What followed was a major devaluation of Turkish lira and a financial collapse.

The government consequently introduced a stabilization and structural adjustment program on April 5, 1994, the core of which consisted of a fiscal retrenchment to reduce inflation and to improve the external balance. The dummy for the 1994 crisis is positive and statistically significant at 1 per cent level in all of the equations except the model (5.4). As a result of Turkey's currency crisis in 1994, output fell dramatically, inflation rose to three-digit levels, the Central Bank lost half of its reserves, and the exchange rate (against the U.S. dollar) depreciated by more than fifty per cent in the first three months of the year.

The dummy for the 2001 crisis is positive and statistically significant at 5 per cent level in model (5.5). In models (5.1) through (5.4) we observe positive and significant (at 1 per cent level) coefficient for the 2001 crisis dummy. However, the significance disappears in the equation (5.6). Therefore, the significance in the change in imports is not robust. The latest crisis of February 2001 was unprecedented in intensity. Since the month in which the devaluation occurred was February, then significant positive impact for the rest of the 2001 was expected due to adjustment effects of devaluation. The interpretation of the 1999 earthquake is different. The coefficient is only significant for the models (5.1) and (5.6). The coefficient is negative in the model (5.6) and it is reasonable due to a decrease in income level of Turkey, the major effect of the Marmara Earthquake.

**Table 5.2: Wald test results for the significance of the sum of the coefficients in Table 5.1, Equations (5.3) and (5.6).**

| Model | Null Hypothesis | Coefficient Sums | F-Statistic | Probability |
|---|---|---|---|---|
| Export | lnrer+culnrer=0 | -0,23 | 1,92 | 0,166 |
| | lnrer+culnrer+deuculnrer=0 | -1,23 | 18,51*** | 0,000 |
| | lngdp+culngdp=0 | 1,67 | 1315,35*** | 0,000 |
| | lngdp+culngdp+deuculngdp=0 | 1,73 | 725,89*** | 0,000 |
| Import | lnrer+culnrer=0 | -0,11 | 0,69 | 0,405 |
| | lnrer+culnrer+deuculnrer=0 | -0,21 | 0,79 | 0,375 |
| | lngdpT+culngdpT=0 | 1,00 | 13,92*** | 0,000 |
| | lngdpT+culngdpT+deuculngdpT=0 | 1,09 | 11,55*** | 0,001 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

**Table 5.3: Fixed-Effect Results with crises periods:**

| Variables / Model | (5.1) | (5.2) | (5.3) | (5.4) | (5.5) | (5.6) |
|---|---|---|---|---|---|---|
| LNGDP | 2,05*** | 1,74*** | 1,76*** | | | |
| | (0,04) | (0,05) | (0,05) | | | |
| LNGDPT | | | | 1,74*** | 1,51*** | 1,51*** |
| | | | | (0,03) | (0,04) | (0,04) |
| LNRER | -0,71*** | -0,51*** | -0,45*** | 0,25*** | 0,24*** | 0,32*** |
| | (0,07) | (0,07) | (0,08) | (0,06) | (0,06) | (0,06) |
| CU | | 0,57*** | 3,50*** | | 0,25*** | 6,94 |
| | | (0,05) | (0,41) | | (0,04) | (17,21) |
| DEUCU | | -0,28*** | -1,92* | | 0,21*** | -5,88 |
| | | (0,06) | (1,15) | | (0,05) | (10,88) |
| CULNGDP | | | -0,12*** | | | |
| | | | (0,02) | | | |
| CULNGDPT | | | | | | -0,26 |
| | | | | | | (0,66) |
| CULNRER | | | 0,05 | | | -0,46*** |
| | | | (0,18) | | | (0,16) |
| DEUCULNGDP | | | 0,06 | | | |
| | | | (0,04) | | | |
| DEUCULNGDPT | | | | | | 0,23 |
| | | | | | | (0,42) |
| DEUCULNRER | | | -0,98*** | | | -0,08 |
| | | | (0,32) | | | (0,28) |
| D1994 | 0,14*** | 0,27*** | 0,27*** | 0,08 | 0,17*** | 0,16*** |
| | (0,05) | (0,06) | (0,06) | (0,05) | (0,05) | (0,05) |
| D1999 | 0,11** | -0,02 | -0,04 | 0,04 | -0,07 | -0,12* |
| | (0,05) | (0,06) | (0,06) | (0,05) | (0,05) | (0,06) |
| D2001 | 0,54*** | 0,39*** | 0,39*** | 0,33*** | 0,13** | 0,11 |
| | (0,06) | (0,06) | (0,06) | (0,05) | (0,06) | (0,18) |
| (unweighted statistics) R-bar squared | 0,86 | 0,86 | 0,86 | 0,86 | 0,86 | 0,86 |
| # of cross-sections used | 155 | 155 | 155 | 156 | 156 | 156 |
| total panel (unbalanced) observations | 2193 | 2193 | 2193 | 2065 | 2065 | 2065 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

Note: figures in parentheses are standard errors

**Table 5.4: Wald test results for the significance of the sum of the coefficients for Table 5.3, Equations (5.3) and (5.6).**

| Model | Null Hypothesis | Coefficient Sums | F-Statistic | Probability |
|---|---|---|---|---|
| Export | lnrer+culnrer=0 | -0,4 | 5,46** | 0,019 |
| | lnrer+culnrer+deuculnrer=0 | -1,38 | 23,77*** | 0,000 |
| | lngdp+culngdp=0 | 1,64 | 1183,43*** | 0,000 |
| | lngdp+culngdp+deuculngdp=0 | 1,71 | 689,00*** | 0,000 |
| Import | lnrer+culnrer=0 | -0,14 | 0,92 | 0,338 |
| | lnrer+culnrer+deuculnrer=0 | -0,21 | 0,72 | 0,396 |
| | lngdpT+culngdpT=0 | 1,25 | 3,59* | 0,058 |
| | lngdpT+culngdpT+deuculngdpT=0 | 1,48 | 4,34** | 0,037 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

OLS estimations are utilized to investigate the effects of the indices of political stability, voice and accountability, government effectiveness, regulatory quality, rule of law, and control of corruption since we cannot estimate the effect of any time-invariant variable with fixed effects methodology (see Table 4 and Table 5 in Appendix).

We observe positive and significant relationship with the Turkish exports and political stability, government effectiveness, rule of law, and control of corruption. However, we did not find any significant relationship for voice and accountability, and regulatory quality. For the import equations, we see that all of the six measures of governance have positive impact on the Turkish imports. These regressions show that the procurement in the governance measures of the trading partners of Turkey have increased both the Turkish exports and imports.

These pooled models may be biased due to the omission of fixed effects. However, when the fixed effect and the pooled model give different results, it is often interpreted as a sign of misspecification of the pooled model (see Baltagi, 1995, section 10.6.2.). It also appears that the two models give the same qualitative answers for the income and price effects on the Turkish exports and imports. To confirm the robustness of our estimation results, the

regressions reported above are also estimated separately for the EU and Non-EU countries. The results of these estimations are reported in Table 5.5.

Table 5.5 shows that the results of the regressions separately for the EU and Non-EU countries support the conclusions of the Table 5.1 and 5.3. A significant increase in the price elasticity of exports to the EU after the CU and a significant decrease in the price elasticity of imports from the EU after the CU are observed in the regressions for the EU sample only. The regressions without EU countries are also show a significant decrease in the price elasticity of imports from Non-EU countries after the CU.

We also performed regressions for the regional and income sub-samples. Countries are classified as low-income, lower-middle-income, upper-middle-income, and high-income for their per capita income; and Americas, Asia, Europe and Central Asia, Middle East and North Africa, and Sub-Saharan Africa for their geographical locations (see Table 6 and Table 7 in Appendix for the country classifications).

For Middle East and North Africa countries we observe that (see Table 14 and 15 in Appendix) the real exchange rate does not have significant impact for both the Turkish exports to and imports from Middle East and North Africa countries. However, when we consider the (cu*lrer) variable in the complete export equation then the negative effect of the real exchange rate is captured as expected. Income effects are as expected, and the regressions with crises periods show the negative effects of the Marmara Earthquake on the Turkish imports.

In the regressions for the Sub-Saharan Africa Countries we see that the effect of the real exchange rate on the Turkish exports to the Sub-Saharan Africa Countries is stronger than those on the Turkish imports from those countries. The (cu*lrer) variable is not statistically significant in both export and import equations. When we focus on the crises periods, we only see the significant negative effects of the 1994 crisis on the Turkish exports.

For the region of Americas Table 8 and Table 9 in Appendix show that the income elasticities of the Turkish exports have declined in the CU period and the income elasticities of the Turkish imports are increased in the CU period. We do not observe any significant effect of the real exchange rates on neither the Turkish exports nor imports after the CU period. The positive effect of the 1994 crisis on the Turkish imports from Americas countries is also significant.

We see that the income elasticity of the Turkish exports is decreased in the CU period for the Asian countries. For the income elasticity of the Turkish imports we observe contrary results. We observe that the variable (cu*lgdpT) is not statistically significant for the complete import model in the regressions without crises periods. When we look at the sum of the coefficients of (lgdpT) and (cu*lgdpT) it is observed that the income effect on the Turkish imports has disappeared. However, we do not observe the same in the regressions with crises periods. We also discern the negative effects of the earthquake on the Turkish imports from the Asian countries like Middle East and North Africa Countries.

Income elasticity of the Turkish exports to Europe and Central Asia countries has increased after the CU, while we observe the opposite for the income elasticity of imports. However, the Customs Union Agreement has a noticeable impact on the Turkish imports from Europe and Central Asian countries. This comes from the significant and positive coefficient of the (cu) variable, which is 16.09. This shows that the importance of the CU on the Turkish imports from the EU. The most remarkable impact of the CU on the foreign trade of the Turkey is in the Turkish imports from the EU. The only significant crisis dummy is the one that stands for the 1994 crisis in the basic export equation, and it has a negative effect.

We observe that the Turkish exports to the low-income countries have increased after the CU. However, price elasticities of both the Turkish exports and imports have decreased after the CU. We have similar observation for the income elasticities with these income group

countries. The price elasticity of the Turkish exports to the lower-middle-income, to the upper-middle-income group, and to the high-income group is increased after the CU. The other variables behave in the same way as we observed in the regression of the low-income countries. Our results for the crises dummies do not show robust results.

We tried to do a regression analysis in this section. It is thus possible to conclude that there was a significant effect of the Custom Union on Turkish trade; both exports and imports increased during this period. Furthermore, changes have occurred in income and price elasticities of both exports and imports after the Custom Union.

**Table 5.5: Regression results using only EU and non-EU samples:**

**Regressions for the EU sample only:**

| **Variables / Model** | **(1.1)** | **(1.2)** | **(1.3)** | **(2.1)** | **(2.2)** | **(2.3)** |
|---|---|---|---|---|---|---|
| LNGDP | 1,83*** | 1,44*** | 1,34*** | | | |
| | (0,05) | (0,07) | (0,07) | | | |
| LNGDPT | | | | 1,76*** | 1,41*** | 1,38*** |
| | | | | (0,04) | (0,04) | (0,05) |
| LNRER | -0,62*** | 0,00 | 0,43** | 0,19 | 0,56*** | 0,72*** |
| | (0,16) | (0,17) | (0,18) | (0,12) | (0,10) | (0,11) |
| CU | | 0,49*** | 2,89*** | | 0,51*** | 6,24 |
| | | (0,06) | (1,06) | | (0,04) | (7,09) |
| CULNGDP | | | -0,09** | | | |
| | | | (0,04) | | | |
| CULNGDPT | | | | | | -0,22 |
| | | | | | | (0,27) |
| CULNRER | | | -1,34*** | | | -0,81*** |
| | | | (0,29) | | | (0,21) |
| (unweighted statistics) R-bar squared | 0,93 | 0,94 | 0,94 | 0,92 | 0,93 | 0,93 |
| # of cross-sections used | 14 | 14 | 14 | 14 | 14 | 14 |
| total panel (unbalanced) observations | 308 | 308 | 308 | 308 | 308 | 308 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

Note: figures in parentheses are standard errors

**Regressions with non-EU countries:**

| **Variables / Model** | **(1.1)** | **(1.2)** | **(1.3)** | **(2.1)** | **(2.2)** | **(2.3)** |
|---|---|---|---|---|---|---|
| LNGDP | 1,88*** | 1,63*** | 1,69*** | | | |
| | (0,02) | (0,06) | (0,06) | | | |
| LNGDPT | | | | 1,68*** | 1,53*** | 1,56*** |
| | | | | (0,05) | (0,06) | (0,06) |
| LNRER | -0,60*** | -0,45*** | -0,44*** | 0,21*** | 0,17** | 0,22*** |
| | (0,07) | (0,08) | (0,08) | (0,07) | (0,07) | (0,08) |
| CU | | 0,67*** | 4,15*** | | 0,19*** | 14,48* |
| | | (0,05) | (0,42) | | (0,05) | (7,49) |
| CULNGDP | | | -0,15*** | | | |
| | | | (0,02) | | | |
| CULNGDPT | | | | | | -0,55* |
| | | | | | | (0,29) |
| CULNRER | | | 0,21 | | | -0,34** |
| | | | (0,19) | | | (0,16) |
| (unweighted statistics) R-bar squared | 0,81 | 0,82 | 0,82 | 0,80 | 0,80 | 0,80 |
| # of cross-sections used | 148 | 148 | 148 | 148 | 148 | 148 |
| total panel (unbalanced) observations | 1912 | 1912 | 1912 | 1786 | 1786 | 1786 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

Note: figures in parentheses are standard errors

# CHAPTER 6

# CONCLUSION

On 6 March 1995, the European Union and Turkey signed agreement on Customs Union. Turkey's tariffs and levies on imports of manufactured products from the European Union were eliminated by this agreement. Trade in agricultural products, with the exception of agro-industrial products, that is processed food, was excluded. Turkey would also apply EU's common external tariff on imports from third countries. Finally, liberalization of Turkish foreign trade has gained an irrevocable momentum with the realization of substantial adjustments to Common Custom Tariff System with the European Union (EU) in 1996.

In this study, we investigate the benefits of customs union from the perspective of its possible associations with key trade indicators; exports and imports. Our empirical analysis involves estimating the effects on exports and imports of Turkey of the Customs Union Agreement, price and income changes, and economic crises controlling for additional institutional variables. The findings also support the empirical literature that imports (exports) are positively related to domestic income (income of the trade partners), and devaluation has a favorable effect on the Turkish exports. Furthermore, our results reveal that the behavior of Turkish exports and imports have changed after the CU period considering both income and price elasticities.

Moreover, we observe that income elasticity of both exports to and imports from all countries other than the EU are lower in the CU period. On the contrary, it is found that, the elasticity of Turkish exports to the EU has increased after the CUA while the elasticity of Turkish exports to the Non-EU countries is decreased after the CU period.

The price elasticity of Turkish exports to the EU countries increased after the CUA. This indicates that Turkish exporters are faced with increased competition. Moreover, there

are no statistically significant differences among income elasticities of both Turkish exports and imports for EU and the rest of the countries.

There is also somewhat weak evidence that the income elasticity of imports is lower after CU. The robustness of the parameters that are the interactive CU dummy variable with the income and price variables are observed when the other interactive and dummy variables are added to the regressions.

Our results indicate that, Turkey's liberalized trade regime allowed both the real exchange rate and domestic and world incomes to influence the foreign trade of Turkey. Our empirical investigation suggests that customs union has positive effect on both imports and exports of Turkey. We argue that the role of the institutional variables should not be underestimated when one assesses the impact of the CU.

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# APPENDIX

**Table 1: Average Annual Growth Rate of Turkey's Exports During 1995-2001 (%)**

| Section | EU | Total |
|---|---|---|
| ANIMALS & ANIMAL PRODUCTS | -2,58 | -6,02 |
| VEGETABLE PRODUCTS | -3,18 | -0,46 |
| ANIMAL OR VEGETABLE FATS | 0,45 | -11,02 |
| PREPARED FOODSTUFS | -0,46 | 0,95 |
| MINERAL PRODUCTS | 3,44 | 4,21 |
| CHEMICAL PRODUCTS | 4,99 | 6,33 |
| PLASTICS & RUBBER | 11,67 | 9,63 |
| HIDES & SKINS | -4,41 | -1,48 |
| WOOD & WOOD PRODUCTS | 0,52 | 7,90 |
| WOOD PULP PRODUCTS | 11,32 | 11,16 |
| TEXTILES & TEXTILE ARTICLES | 3,88 | 3,79 |
| FOOTWEAR, HEADGEAR | 2,42 | 1,52 |
| ARTICLES OF STONE, PLASTER, CEMENT, ASBESTOS | 8,23 | 9,92 |
| PEARLS, PRECIOUS OR SEMI-PRECIOUS STONES, METALS | 13,45 | 37,23 |
| BASE METALS & ARTICLES THEREOF | 11,68 | 5,58 |
| MACHINERY & MECHANICAL APPLICANCES | 15,47 | 15,52 |
| TRANSPORTATION EQUIPMENT | 27,96 | 25,81 |
| INSTRUMENTS - MEASURING, MUSICAL | 9,33 | 47,75 |
| ARMS & AMMUNITION | 3,73 | 14,02 |
| MISCELANEOUS | 20,30 | 12,71 |
| WORKS OF ART | 72,30 | 55,07 |

Source: SIS

**Table 2: Average Annual Growth Rate of Turkey's Imports During 1995-2001 (%)**

| Section | EU | Total |
|---|---|---|
| ANIMALS & ANIMAL PRODUCTS | -34,51 | -27,58 |
| VEGETABLE PRODUCTS | -4,75 | -7,92 |
| ANIMAL OR VEGETABLE FATS | -15,57 | -11,20 |
| PREPARED FOODSTUFS | -4,86 | 1,80 |
| MINERAL PRODUCTS | 3,56 | 9,85 |
| CHEMICAL PRODUCTS | 3,55 | 2,31 |
| PLASTICS & RUBBER | 2,98 | 2,71 |
| HIDES & SKINS | -0,75 | -3,13 |
| WOOD & WOOD PRODUCTS | 1,35 | -1,89 |
| WOOD PULP PRODUCTS | 3,03 | -2,55 |
| TEXTILES & TEXTILE ARTICLES | 8,12 | 1,71 |
| FOOTWEAR, HEADGEAR | 14,49 | 11,56 |
| ARTICLES OF STONE, PLASTER, CEMENT, ASBESTOS | -3,44 | -1,15 |
| PEARLS, PRECIOUS OR SEMI-PRECIOUS STONES, METALS | 72,20 | 89,53 |
| BASE METALS & ARTICLES THEREOF | -7,95 | -2,98 |
| MACHINERY & MECHANICAL APPLICANCES | 2,29 | 3,71 |
| TRANSPORTATION EQUIPMENT | 2,16 | -3,81 |
| INSTRUMENTS - MEASURING, MUSICAL | 0,20 | 3,00 |
| ARMS & AMMUNITION | 16,39 | 19,49 |
| MISCELANEOUS | 4,03 | 6,29 |
| WORKS OF ART | 51,26 | 54,19 |

Source: SIS

**Table 3: Abbreviations for All Variables**

lgdp: Logarithm of GDP of the country (current US$)

lgdpT: Logarithm of GDP of Turkey (current US$)

lrer: Logarithm of bilateral exchange rate (foreign currency over TL)

cu: Dummy for joining the CU

deu: Dummy of being the member of the EU.

polins: Political instability index

ruleoflow: Rule of law index

contcorr: Control of corruption index

regual: regularity quality index

goveff: Government effectiveness index

voaccount: Voice and accountability index

**Table 4: OLS Results for Export Equations**

| Variables / Model | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| C | -9,55*** | -9,07*** | -8,33*** | -8,84*** | -9,53*** | -8,55*** | -9,75*** |
| | (0,63) | (0,67) | (0,67) | (0,69) | (0,66) | (0,68) | (0,67) |
| LNGDP | 1,05*** | 1,00*** | 0,96*** | 1,01*** | 1,04*** | 0,98*** | 1,07*** |
| | (0,03) | (0,03) | (0,03) | (0,03) | (0,03) | (0,03) | (0,03) |
| LNRER | -0,23* | -0,08 | 0,02 | -0,12 | -0,20 | -0,08 | -0,29** |
| | (0,14) | (0,14) | (0,14) | (0,14) | (0,14) | (0,14) | (0,14) |
| CU | 3,01*** | 5,31*** | 4,51*** | 5,12*** | 4,89*** | 5,16*** | 4,32*** |
| | (1,05) | (1,15) | (1,12) | (1,16) | (1,13) | (1,15) | (1,12) |
| DEUCU | -2,63 | -6,94 | -7,08 | -6,24 | -4,82 | -6,70 | -3,27 |
| | (5,75) | (5,71) | (5,65) | (5,73) | (5,74) | (5,69) | (5,75) |
| CULNGDP | -0,09** | -0,18** | -0,15*** | -0,17*** | -0,17*** | -0,17*** | -0,14*** |
| | (0,04) | (0,05) | (0,05) | (0,05) | (0,05) | (0,05) | (0,05) |
| CULNRER | 0,90** | 0,71* | 0,85** | 0,85** | 0,93** | 0,81** | 0,98** |
| | (0,38) | (0,38) | (0,38) | (0,38) | (0,38) | (0,38) | (0,38) |
| DEUCULNGDP | 0,13 | 0,29 | 0,29 | 0,26 | 0,21 | 0,28 | 0,16 |
| | (0,22) | (0,21) | (0,21) | (0,21) | (0,21) | (0,21) | (0,22) |
| DEUCULNRER | -1,66 | -1,54 | -1,65 | -1,66 | -1,72 | -1,63 | -1,69 |
| | (1,59) | (1,57) | (1,56) | (1,58) | (1,58) | (1,57) | (1,59) |
| POLINS | | 0,26*** | | | | | |
| | | (0,05) | | | | | |
| RULEOFLOW | | | 0,42*** | | | | |
| | | | (0,05) | | | | |
| CONTCORR | | | | 0,18*** | | | |
| | | | | (0,05) | | | |
| REGUAL | | | | | 0,05 | | |
| | | | | | (0,07) | | |
| GOVEFF | | | | | | 0,30*** | |
| | | | | | | (0,06) | |
| VOACCOUNT | | | | | | | -0,09 |
| | | | | | | | (0,05) |
| (unweighted statistics) R-bar squared | 0,56 | 0,54 | 0,55 | 0,53 | 0,54 | 0,54 | 0,54 |
| # of cross-sections used | 155 | 137 | 142 | 136 | 142 | 136 | 145 |
| total panel (unbalanced) observations | 2193 | 2100 | 2126 | 2091 | 2126 | 2094 | 2143 |

*, ** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

Note: figures in parentheses are standard errors

**Table 5: OLS Results for Import Equations**

| Variables / Model | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| C | -7,11 | -19,59*** | -22,27*** | -21,24*** | -19,12*** | -23,61*** | -17,88*** |
| | (5,80) | (5,27) | (5,14) | (5,24) | (5,59) | (5,11) | (5,53) |
| LNGDPT | 0,92*** | 1,26*** | 1,37*** | 1,39*** | 1,26*** | 1,41*** | 1,26*** |
| | (0,23) | (0,21) | (0,20) | (0,21) | (0,22) | (0,20) | (0,22) |
| LNRER | -1,16*** | -0,28 | -0,07 | -0,16 | -0,54*** | -0,17 | -0,48** |
| | (0,20) | (0,19) | (0,18) | (0,19) | (0,20) | (0,18) | (0,20) |
| CU | -23,47 | -23,45 | -18,44 | -29,22 | -20,72 | -17,18 | -23,64 |
| | (34,37) | (31,63) | (30,56) | (31,62) | (33,13) | (30,79) | (32,85) |
| DEUCU | 21,33 | 23,17 | 18,01 | 31,89 | 25,05 | 21,19 | 27,67 |
| | (95,45) | (85,87) | (83,72) | (85,46) | (90,75) | (83,24) | (90,12) |
| CULNGDPT | 0,87 | 0,88 | 0,69 | 1,1 | 0,77 | 0,64 | 0,88 |
| | (1,33) | (1,22) | (1,18) | (1,22) | (1,28) | (1,19) | (1,27) |
| CULNRER | 0,94 | 0,08 | 0,49 | 0,57 | 0,72 | 0,52 | 0,63 |
| | (0,58) | (0,53) | (0,51) | (0,53) | (0,56) | (0,51) | (0,55) |
| DEUCULNGDPT | -0,63 | -0,78 | -0,59 | -1,13 | -0,83 | -0,73 | -0,94 |
| | (3,68) | (3,32) | (3,23) | (3,30) | (3,50) | (3,21) | (3,48) |
| DEUCULNRER | 0,44 | 1,00 | 0,66 | 0,40 | 0,17 | 0,37 | 0,21 |
| | (2,52) | (2,26) | (2,21) | (2,25) | (2,39) | (2,19) | (2,38) |
| POLINS | | 1,36*** | | | | | |
| | | (0,07) | | | | | |
| RULEOFLOW | | | 1,53*** | | | | |
| | | | (0,07) | | | | |
| CONTCORR | | | | 1,29*** | | | |
| | | | | (0,07) | | | |
| REGUAL | | | | | 1,08*** | | |
| | | | | | (0,09) | | |
| GOVEFF | | | | | | 1,54*** | |
| | | | | | | (0,07) | |
| VOACCOUNT | | | | | | | 1,02*** |
| | | | | | | | (0,07) |
| (unweighted statistics) R-bar squared | 0,10 | 0,24 | 0,29 | 0,25 | 0,16 | 0,28 | 0,18 |
| # of cross-sections used | 156 | 138 | 143 | 137 | 143 | 137 | 147 |
| total panel (unbalanced) observations | 2065 | 1987 | 2009 | 1982 | 2009 | 1984 | 2023 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

Note: figures in parentheses are standard errors

**Table 6: Classification of Economies by Income, 1999 (Source: World Bank)**

| Low-income | Lower Middle-income | Upper Middle-income | High-income |
|---|---|---|---|
| Afghanistan | Albania | American Samoa | Andorra |
| Angola | Algeria | Antigua and Barbuda | Aruba |
| Armenia | Belarus | Argentina | Australia |
| Azerbaijan | Belize | Bahrain | Austria |
| Bangladesh | Bolivia | Barbados | Bahamas, The |
| Benin | Bosnia and Herzegovina | Botswana | Belgium |
| Bhutan | Bulgaria | Brazil | Bermuda |
| Burkina Faso | Cape Verde | Chile | Brunei |
| Burundi | Colombia | Croatia | Canada |
| Cambodia | Costa Rica | Czech Republic | Cayman Islands |
| Cameroon | Cuba | Estonia | Channel Islands |
| Central African Republic | Djibouti | Gabon | Cyprus |
| Chad | Dominica | Grenada | Denmark |
| China | Dominican Republic | Hungary | Faeroe Islands |
| Comoros | Ecuador | Isle of Man | Finland |
| Congo, Dem. Rep. | Egypt, Arab Rep. | Korea, Rep. | France |
| Congo, Rep. | El Salvador | Lebanon | French Polynesia |
| Cote d'Ivoire | Equatorial Guinea | Libya | Germany |
| Eritrea | Fiji | Malaysia | Greece |
| Ethiopia | Georgia | Mauritius | Greenland |
| Gambia, The | Guatemala | Mayotte | Guam |
| Ghana | Guyana | Mexico | Hong Kong, China |
| Guinea | Iran, Islamic Rep. | Oman | Iceland |
| Guinea-Bissau | Iraq | Palau | Ireland |
| Haiti | Jamaica | Panama | Israel |
| Honduras | Jordan | Poland | Italy |
| India | Kazakhstan | Puerto Rico | Japan |
| Indonesia | Kiribati | Saudi Arabia | Kuwait |
| Kenya | Latvia | Seychelles | Liechtenstein |
| Korea, Dem. Rep. | Lithuania | Saudi Arabia | Luxembourg |
| Kyrgyz Republic | Macedonia, FYR | Seychelles | Macao, China |
| Lao PDR | Maldives | Slovak Republic | Malta |
| Lesotho | Marshall Islands | St. Kitts and Nevis | Monaco |

**Table 6: Classification of Economies by Income, 1999 (Cont'd) (Source: World Bank)**

| Low-income | Lower Middle-income | Upper Middle-income | High-income |
|---|---|---|---|
| Liberia | Micronesia, Fed. Sts. | St. Lucia | N. Mariana Islands |
| Madagascar | Morocco | Trinidad and Tobago | Netherlands |
| Malawi | Namibia | Turkey | Netherlands Antilles |
| Mali | Papua New Guinea | Uruguay | New Caledonia |
| Mauritania | Paraguay | Venezuela, RB | New Zealand |
| Moldova | Peru | | Norway |
| Mongolia | Philippines | | Portugal |
| Mozambique | Romania | | Qatar |
| Myanmar | Russian Federation | | Singapore |
| Nepal | Samoa | | Slovenia |
| Nicaragua | South Africa | | Spain |
| Niger | Sri Lanka | | Sweden |
| Nigeria | St. Vincent and the Grenadines | | Switzerland |
| Pakistan | Suriname | | Taiwan, China |
| Rwanda | Swaziland | | United Arab Emirates |
| Sao Tome and Principe | Syrian Arab Republic | | United Kingdom |
| Senegal | Thailand | | United States |
| Sierra Leone | Tonga | | Virgin Islands (U.S.) |
| Senegal | Tunisia | | |
| Sierra Leone | Ukraine | | |
| Solomon Islands | Uzbekistan | | |
| Somalia | Vanuatu | | |
| Sudan | West Bank and Gaza | | |
| Tajikistan | Yugoslavia, FR (Serbia/Montenegro) | | |
| Tanzania | | | |
| Togo | | | |
| Turkmenistan | | | |
| Uganda | | | |
| Vietnam | | | |
| Yemen, Rep. | | | |
| Zambia | | | |
| Zimbabwe | | | |

**Table 7: Classification of Economies by Region, 1999 (Source: World Bank)**

| Sub-Saharan Africa | Asia | Europe and Central Asia | Middle East and North Africa | Americas |
|---|---|---|---|---|
| Angola | Afghanistan | Albania | Algeria | Antigua and Barbuda |
| Benin | American Samoa | Andorra | Bahrain | Argentina |
| Botswana | Australia | Armenia | Egypt, Arab Rep. | Aruba |
| Burkina Faso | Bangladesh | Austria | Iran, Islamic Rep. | Bahamas, The |
| Burundi | Bhutan | Azerbaijan | Iraq | Barbados |
| Cameroon | Brunei | Belarus | Israel | Belize |
| Cape Verde | Cambodia | Belgium | Jordan | Bermuda |
| Central African Republic | China | Bosnia and Herzegovina | Kuwait | Bolivia |
| Chad | Fiji | Bulgaria | Lebanon | Brazil |
| Comoros | French Polynesia | Channel Islands | Libya | Canada |
| Congo, Dem. Rep. | Guam | Croatia | Malta | Cayman Islands |
| Congo, Rep. | Hong Kong, China | Cyprus | Morocco | Chile |
| Cote d'Ivoire | India | Czech Republic | Oman | Colombia |
| Djibouti | Indonesia | Denmark | Qatar | Costa Rica |
| Equatorial Guinea | Japan | Estonia | Saudi Arabia | Cuba |
| Eritrea | Kiribati | Faeroe Islands | Syrian Arab Republic | Dominica |
| Ethiopia | Korea, Dem. Rep. | Finland | Tunisia | Dominican Republic |
| Gabon | Korea, Rep. | France | United Arab Emirates | Ecuador |
| Gambia, The | Lao PDR | Georgia | West Bank and Gaza | El Salvador |
| Ghana | Macao, China | Germany | Yemen, Rep. | Grenada |
| Guinea | Malaysia | Greece | | Guatemala |
| Guinea-Bissau | Maldives | Greenland | | Guyana |
| Kenya | Marshall Islands | Hungary | | Haiti |
| Lesotho | Micronesia, Fed. Sts. | Iceland | | Honduras |
| Liberia | Mongolia | Ireland | | Jamaica |
| Madagascar | Myanmar | Isle of Man | | Mexico |
| Malawi | N. Mariana Islands | Italy | | Netherlands Antilles |
| Mali | Nepal | Kazakhstan | | Nicaragua |
| Mauritania | New Caledonia | Kyrgyz Republic | | Panama |
| Mauritius | New Zealand | Latvia | | Paraguay |
| Mayotte | Pakistan | Liechtenstein | | Peru |
| Mozambique | Palau | Lithuania | | Puerto Rico |
| Namibia | Papua New Guinea | Luxembourg | | St. Kitts and Nevis |

**Table 7: Classification of Economies by Region, 1999 (Cont'd) (Source: World Bank)**

| Sub-Saharan Africa | Asia | Europe and Central Asia | Middle East and North Africa | Americas |
|---|---|---|---|---|
| Niger | Philippines | Macedonia, FYR | | St. Lucia |
| Nigeria | Samoa | Moldova | | St. Vincent and the Grenadines |
| Rwanda | Singapore | Monaco | | Suriname |
| Sao Tome and Principe | Solomon Islands | Netherlands | | Trinidad and Tobago |
| Senegal | Sri Lanka | Norway | | United States |
| Seychelles | Taiwan, China | Poland | | Uruguay |
| Sierra Leone | Thailand | Portugal | | Venezuela, RB |
| Somalia | Tonga | Romania | | Virgin Islands (U.S.) |
| South Africa | Vanuatu | Russian Federation | | |
| Sudan | Vietnam | Slovak Republic | | |
| Swaziland | | Slovenia | | |
| Tanzania | | Spain | | |
| Togo | | Sweden | | |
| Uganda | | Switzerland | | |
| Zambia | | Tajikistan | | |
| Zimbabwe | | Turkey | | |
| | | Turkmenistan | | |
| | | Ukraine | | |
| | | United Kingdom | | |
| | | Uzbekistan | | |
| | | Yugoslavia, FR (Serbia/Montenegro) | | |

**Table 8: Regression Results (Americas)**

| Variables / Dependent Variable | LXT | LXT | LXT | LMT | LMT | LMT |
|---|---|---|---|---|---|---|
| LNGDP | 2,85*** | 2,31*** | 2,36*** | | | |
| | (0,10) | (0,14) | (0,14) | | | |
| LNGDPT | | | | 1,59*** | 1,64*** | 1,62*** |
| | | | | (0,11) | (0,13) | (0,14) |
| LNRER | -0,76*** | -0,61*** | -0,57*** | 0,69*** | 0,68*** | 0,78*** |
| | (0,18) | (0,18) | (0,18) | (0,23) | (0,20) | (0,22) |
| CU | | 0,72*** | 4,51*** | | -0,05 | -48,79** |
| | | (0,12) | (0,74) | | (0,12) | (19,10) |
| CULNGDP | | | -0,15*** | | | |
| | | | (0,03) | | | |
| CULNGDPT | | | | | | 1,88** |
| | | | | | | (0,74) |
| CULNRER | | | 0,19 | | | -0,29 |
| | | | (0,47) | | | (0,47) |
| (unweighted statistics) R-bar squared | 0,77 | 0,79 | 0,78 | 0,79 | 0,79 | 0,80 |
| # of cross-sections used | 34 | 34 | 34 | 34 | 34 | 34 |
| total panel (unbalanced) observations | 482 | 482 | 482 | 448 | 448 | 448 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

Note: figures in parentheses are standard errors

**Table 9: Regression Results With Crises Periods (Americas)**

| Variables / Dependent Variable | LXT | LXT | LXT | LMT | LMT | LMT |
|---|---|---|---|---|---|---|
| LNGDP | 2,85*** | 2,31*** | 2,35*** | | | |
| | (0,10) | (0,15) | (0,14) | | | |
| LNGDPT | | | | 1,60*** | 1,64*** | 1,62*** |
| | | | | (0,10) | (0,16) | (0,14) |
| LNRER | -0,78*** | -0,64*** | -0,59*** | 0,61*** | 0,60** | 0,68*** |
| | (0,18) | (0,18) | (0,18) | (0,20) | (0,24) | (0,22) |
| CU | | 0,73*** | 4,65*** | | -0,04 | -46,87** |
| | | (0,12) | (0,76) | | (0,15) | (20,59) |
| CULNGDP | | | -0,16*** | | | |
| | | | (0,03) | | | |
| CULNGDPT | | | | | | 1,81** |
| | | | | | | (0,79) |
| CULNRER | | | 0,20 | | | -0,26 |
| | | | (0,48) | | | (0,48) |
| D1994 | 0,05 | 0,10 | 0,04 | 0,48** | 0,48** | 0,52** |
| | (0,18) | (0,19) | (0,18) | (0,20) | (0,24) | (0,21) |
| D1999 | 0,10 | 0,13 | 0,21 | 0,11 | 0,12 | 0,20 |
| | (0,18) | (0,19) | (0,18) | (0,19) | (0,23) | (0,19) |
| D2001 | 0,02 | 0,28 | 0,48 | 0,14 | 0,14 | 0,10 |
| | (0,45) | (0,43) | (0,42) | (0,40) | (0,47) | (0,40) |
| (unweighted statistics) R-bar squared | 0,77 | 0,78 | 0,78 | 0,79 | 0,79 | 0,80 |
| # of cross-sections used | 34 | 34 | 34 | 34 | 34 | 34 |
| total panel (unbalanced) observations | 482 | 482 | 482 | 448 | 448 | 448 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

Note: figures in parentheses are standard errors

**Table 10: Regression Results (Asia)**

| Variables / Dependent Variable | LXT | LXT | LXT | LMT | LMT | LMT |
|---|---|---|---|---|---|---|
| LNGDP | 2,10*** | 2,28*** | 2,28*** | | | |
| | (0,09) | (0,11) | (0,11) | | | |
| LNGDPT | | | | 2,47*** | 2,30*** | 2,43*** |
| | | | | (0,10) | (0,13) | (0,28) |
| LNRER | -0,49*** | -0,65*** | -0,57*** | 0,17 | 0,11 | 0,33 |
| | (0,18) | (0,18) | (0,20) | (0,15) | (0,15) | (0,39) |
| CU | | -0,33*** | 2,88*** | | 0,20** | 50,24 |
| | | (0,11) | (0,99) | | (0,10) | (33,17) |
| CULNGDP | | | -0,13*** | | | |
| | | | (0,04) | | | |
| CULNGDPT | | | | | | -1,93 |
| | | | | | | (1,28) |
| CULNRER | | | -0,13 | | | -1,04 |
| | | | (0,45) | | | (0,89) |
| (unweighted statistics) R-bar squared | 0,83 | 0,83 | 0,83 | 0,86 | 0,86 | 0,86 |
| # of cross-sections used | 27 | 27 | 27 | 28 | 28 | 28 |
| total panel (unbalanced) observations | 362 | 362 | 362 | 356 | 356 | 356 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

Note: figures in parentheses are standard errors

**Table 11:Regression Results With Crises Periods (Asia)**

| Variables / Dependent Variable | LXT | LXT | LXT | LMT | LMT | LMT |
|---|---|---|---|---|---|---|
| LNGDP | 2,13*** | 2,30*** | 2,29*** | | | |
| | (0,14) | (0,11) | (0,11) | | | |
| LNGDPT | | | | 2,46*** | 2,32*** | 2,46*** |
| | | | | (0,10) | (0,13) | (0,13) |
| LNRER | -0,49* | -0,64*** | -0,56*** | 0,16 | 0,10 | 0,33* |
| | (0,27) | (0,18) | (0,19) | (0,14) | (0,15) | (0,17) |
| CU | | -0,31*** | 2,93*** | | 0,16* | 47,71*** |
| | | (0,11) | (0,97) | | (0,09) | (13,82) |
| CULNGDP | | | -0,13*** | | | |
| | | | (0,04) | | | |
| CULNGDPT | | | | | | -1,84*** |
| | | | | | | (0,53) |
| CULNRER | | | -0,08 | | | -1,01** |
| | | | (0,45) | | | (0,39) |
| D1994 | 0,41 | 0,37** | 0,41** | 0,05 | 0,07 | 0,03 |
| | (0,29) | (0,19) | (0,19) | (0,19) | (0,19) | (0,18) |
| D1999 | 0,12 | 0,09 | 0,04 | -0,39*** | -0,34** | -0,35** |
| | (0,27) | (0,17) | (0,18) | (0,15) | (0,15) | (0,14) |
| D2001 | -0,21 | -0,17 | -0,16 | 0,02 | 0,03 | 0,04 |
| | (0,43) | (0,28) | (0,28) | (0,26) | (0,25) | (0,26) |
| (unweighted statistics) R-bar squared | 0,83 | 0,83 | 0,83 | 0,86 | 0,86 | 0,86 |
| # of cross-sections used | 27 | 27 | 27 | 28 | 28 | 28 |
| total panel (unbalanced) observations | 362 | 362 | 362 | 356 | 356 | 356 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

Note: figures in parentheses are standard errors

**Table 12:Regression Results (Europe and Central Asia)**

| Variables / Dependent Variable | LXT | LXT | LXT | LMT | LMT | LMT |
|---|---|---|---|---|---|---|
| LNGDP | 1,61*** | 1,34*** | 1,26*** | | | |
| | (0,05) | (0,06) | (0,06) | | | |
| LNGDPT | | | | 1,69*** | 1,41*** | 1,40*** |
| | | | | (0,04) | (0,04) | (0,04) |
| LNRER | -0,30*** | 0,04 | 0,30* | 0,22** | 0,30*** | 0,46*** |
| | (0,10) | (0,11) | (0,14) | (0,09) | (0,08) | (0,09) |
| CU | | 0,39*** | -1,35*** | | 0,42*** | 16,69*** |
| | | (0,05) | (0,47) | | (0,04) | (5,05) |
| CULNGDP | | | 0,06*** | | | |
| | | | (0,02) | | | |
| CULNGDPT | | | | | | -0,59** |
| | | | | | | (0,23) |
| CULNRER | | | -0,55*** | | | -0,61*** |
| | | | (0,20) | | | (0,16) |
| (unweighted statistics) R-bar squared | 0,84 | 0,85 | 0,85 | 0,91 | 0,91 | 0,91 |
| # of cross-sections used | 39 | 39 | 39 | 39 | 39 | 39 |
| total panel (unbalanced) observations | 586 | 586 | 586 | 582 | 582 | 582 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

Note: figures in parentheses are standard errors

**Table 13:Regression Results With Crises Periods (Europe and Central Asia)**

| Variables / Dependent Variable | LXT | LXT | LXT | LMT | LMT | LMT |
|---|---|---|---|---|---|---|
| LNGDP | 1,61*** | 1,34*** | 1,26*** | | | |
| | (0,05) | (0,06) | (0,06) | | | |
| LNGDPT | | | | 1,69*** | 1,41*** | 1,39*** |
| | | | | (0,04) | (0,04) | (0,04) |
| LNRER | -0,31*** | 0,02 | 0,27** | 0,23** | 0,29*** | 0,45*** |
| | (0,10) | (0,11) | (0,14) | (0,09) | (0,08) | (0,10) |
| CU | | 0,37*** | -1,28*** | | 0,43*** | 16,28*** |
| | | (0,05) | (0,48) | | (0,04) | (6,11) |
| CULNGDP | | | 0,06*** | | | |
| | | | (0,02) | | | |
| CULNGDPT | | | | | | -0,61*** |
| | | | | | | (0,24) |
| CULNRER | | | -0,54*** | | | -0,60*** |
| | | | (0,20) | | | (0,16) |
| D1994 | -0,18** | -0,10 | -0,12 | -0,01 | 0,09 | 0,08 |
| | (0,07) | (0,08) | (0,08) | (0,07) | (0,06) | (0,06) |
| D1999 | -0,01 | -0,01 | -0,06 | -0,04 | -0,04 | -0,03 |
| | (0,09) | (0,09) | (0,09) | (0,08) | (0,06) | (0,06) |
| D2001 | 0,27 | 0,17 | 0,13 | 0,16 | -0,02 | -0,03 |
| | (0,19) | (0,19) | (0,19) | (0,14) | (0,11) | (0,11) |
| (unweighted statistics) R-bar squared | 0,84 | 0,85 | 0,85 | 0,91 | 0,91 | 0,91 |
| # of cross-sections used | 39 | 39 | 39 | 39 | 39 | 39 |
| total panel (unbalanced) observations | 586 | 586 | 586 | 582 | 582 | 582 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

Note: figures in parentheses are standard errors

**Table 14:Regression Results (Middle East and North Africa)**

| Variables / Dependent Variable | LXT | LXT | LXT | LMT | LMT | LMT |
|---|---|---|---|---|---|---|
| LNGDP | 2,06*** | 2,07*** | 1,94*** | | | |
| | (0,10) | (0,13) | (0,13) | | | |
| LNGDPT | | | | 1,33*** | 1,09*** | 1,08*** |
| | | | | (0,12) | (0,15) | (0,15) |
| LNRER | 0,02 | 0,02 | 0,03 | 0,11 | 0,17 | 0,19 |
| | (0,10) | (0,11) | (0,11) | (0,19) | (0,18) | (0,18) |
| CU | | 0,01 | -3,08 | | 0,46*** | -25,37 |
| | | (0,11) | (2,00) | | (0,15) | (36,27) |
| CULNGDP | | | 0,13 | | | |
| | | | (0,08) | | | |
| CULNGDPT | | | | | | 0,99 |
| | | | | | | (1,40) |
| CULNRER | | | -0,87*** | | | 0,11 |
| | | | (0,33) | | | (0,57) |
| (unweighted statistics) R-bar squared | 0,81 | 0,81 | 0,81 | 0,77 | 0,78 | 0,78 |
| # of cross-sections used | 15 | 15 | 15 | 15 | 15 | 15 |
| total panel (unbalanced) observations | 280 | 280 | 280 | 271 | 271 | 271 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

Note: figures in parentheses are standard errors

**Table 15: Regression Results With Crises Periods (Middle East and North Africa)**

| Variables / Dependent Variable | LXT | LXT | LXT | LMT | LMT | LMT |
|---|---|---|---|---|---|---|
| LNGDP | 2,08*** | 2,09*** | 1,96*** | | | |
| | (0,10) | (0,13) | (0,13) | | | |
| LNGDPT | | | | 1,37*** | 1,13*** | 1,13*** |
| | | | | (0,12) | (0,16) | (0,16) |
| LNRER | 0,05 | 0,05 | 0,06 | 0,03 | 0,09 | 0,09 |
| | (0,10) | (0,12) | (0,11) | (0,18) | (0,18) | (0,18) |
| CU | | -0,01 | -3,09 | | 0,41*** | -2,25 |
| | | (0,11) | (2,00) | | (0,15) | (37,86) |
| CULNGDP | | | 0,13 | | | |
| | | | (0,08) | | | |
| CULNGDPT | | | | | | 0,10 |
| | | | | | | (1,46) |
| CULNRER | | | -0,78** | | | -0,17 |
| | | | (0,33) | | | (0,57) |
| D1994 | -0,07 | -0,07 | -0,09 | 0,01 | -0,04 | -0,04 |
| | (0,16) | (0,16) | (0,16) | (0,23) | (0,23) | (0,23) |
| D1999 | 0,05 | 0,04 | 0,02 | -0,61** | -0,55** | -0,56** |
| | (0,18) | (0,18) | (0,18) | (0,24) | (0,24) | (0,24) |
| D2001 | 0,72* | 0,70* | 0,67* | -0,94 | -0,93 | -0,95 |
| | (0,37) | (0,38) | (0,40) | (0,58) | (0,58) | (0,63) |
| (unweighted statistics) R-bar squared | 0,81 | 0,81 | 0,81 | 0,77 | 0,78 | 0,78 |
| # of cross-sections used | 15 | 15 | 15 | 15 | 15 | 15 |
| total panel (unbalanced) observations | 280 | 280 | 280 | 271 | 271 | 271 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

Note: figures in parentheses are standard errors

**Table 16:Regression Results (Sub-Saharan Africa)**

| Variables / Dependent Variable | LXT | LXT | LXT | LMT | LMT | LMT |
|---|---|---|---|---|---|---|
| LNGDP | 2,73*** | 1,68*** | 1,67*** | | | |
| | (0,25) | (0,26) | (0,27) | | | |
| LNGDPT | | | | 2,03*** | 1,95*** | 2,07*** |
| | | | | (0,19) | (0,24) | (0,25) |
| LNRER | -1,98*** | -1,12*** | -1,18*** | 0,37* | 0,37* | 0,49** |
| | (0,19) | (0,19) | (0,21) | (0,19) | (0,19) | (0,22) |
| CU | | 1,29*** | 0,77 | | 0,10 | 42,12 |
| | | (0,13) | (1,99) | | (0,17) | (27,50) |
| CULNGDP | | | 0,02 | | | |
| | | | (0,09) | | | |
| CULNGDPT | | | | | | -1,62 |
| | | | | | | (1,02) |
| CULNRER | | | 0,32 | | | -0,76 |
| | | | (0,46) | | | (0,52) |
| (unweighted statistics) R-bar squared | 0,56 | 0,62 | 0,62 | 0,60 | 0,60 | 0,59 |
| # of cross-sections used | 40 | 40 | 40 | 40 | 40 | 40 |
| total panel (unbalanced) observations | 483 | 483 | 483 | 408 | 408 | 408 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

Note: figures in parentheses are standard errors

**Table 17:Regression Results With Crises Periods (Sub-Saharan Africa)**

| Variables / Dependent Variable | LXT | LXT | LXT | LMT | LMT | LMT |
|---|---|---|---|---|---|---|
| LNGDP | 2,80*** | 1,76*** | 1,75*** | | | |
| | (0,26) | (0,38) | (0,27) | | | |
| LNGDPT | | | | 2,03*** | 1,94*** | 2,07*** |
| | | | | (0,19) | (0,24) | (0,25) |
| LNRER | -2,02*** | -1,18*** | -1,25*** | 0,36* | 0,36* | 0,48** |
| | (0,19) | (0,28) | (0,21) | (0,20) | (0,20) | (0,22) |
| CU | | 1,28*** | 0,88 | | 0,10 | 43,85 |
| | | (0,19) | (2,01) | | (0,18) | (27,71) |
| CULNGDP | | | 0,02 | | | |
| | | | (0,09) | | | |
| CULNGDPT | | | | | | -1,69 |
| | | | | | | (1,07) |
| CULNRER | | | 0,35 | | | -0,76 |
| | | | (0,46) | | | (0,52) |
| D1994 | -0,64** | -0,57 | -0,57** | -0,19 | -0,20 | -0,19 |
| | (0,26) | (0,36) | (0,25) | (0,28) | (0,28) | (0,28) |
| D1999 | 0,16 | 0,17 | 0,18 | 0,08 | 0,08 | 0,11 |
| | (0,29) | (0,39) | (0,27) | (0,28) | (0,28) | (0,28) |
| D2001 | 0,35 | 0,24 | 0,20 | 0,17 | 0,14 | 0,20 |
| | (0,62) | (0,76) | (0,53) | (0,50) | (0,51) | (0,51) |
| (unweighted statistics) R-bar squared | 0,56 | 0,62 | 0,62 | 0,60 | 0,59 | 0,59 |
| # of cross-sections used | 40 | 40 | 40 | 40 | 40 | 40 |
| total panel (unbalanced) observations | 483 | 483 | 483 | 408 | 408 | 408 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

Note: figures in parentheses are standard errors

**Table 18:Regression Results (High-Income)**

| Variables / Dependent Variable | LXT | LXT | LXT | LMT | LMT | LMT |
|---|---|---|---|---|---|---|
| LNGDP | 1,97*** | 1,73*** | 1,70*** | | | |
| | (0,04) | (0,06) | (0,06) | | | |
| LNGDPT | | | | 1,67*** | 1,38*** | 1,36*** |
| | | | | (0,03) | (0,03) | (0,04) |
| LNRER | -0,37*** | -0,06 | 0,12 | 0,47*** | 0,63*** | 0,81*** |
| | (0,12) | (0,13) | (0,14) | (0,09) | (0,08) | (0,09) |
| CU | | 0,32*** | 0,24 | | 0,44*** | 5,02 |
| | | (0,05) | (0,59) | | (0,03) | (5,61) |
| CULNGDP | | | 0,00 | | | |
| | | | (0,02) | | | |
| CULNGDPT | | | | | | -0,18 |
| | | | | | | (0,22) |
| CULNRER | | | -0,78*** | | | -0,89*** |
| | | | (0,24) | | | (0,16) |
| (unweighted statistics) R-bar squared | 0,87 | 0,87 | 0,87 | 0,91 | 0,91 | 0,91 |
| # of cross-sections used | 32 | 32 | 32 | 33 | 33 | 33 |
| total panel (unbalanced) observations | 633 | 633 | 633 | 637 | 637 | 637 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

Note: figures in parentheses are standard errors

**Table 19:Regression Results With Crises Periods (High-Income)**

| Variables / Dependent Variable | LXT | LXT | LXT | LMT | LMT | LMT |
|---|---|---|---|---|---|---|
| LNGDP | 1,91*** | 1,72*** | 1,69*** | | | |
| | (0,05) | (0,06) | (0,06) | | | |
| LNGDPT | | | | 1,65*** | 1,38*** | 1,36*** |
| | | | | (0,05) | (0,04) | (0,04) |
| LNRER | -0,39*** | -0,17 | 0,05 | 0,45*** | 0,56*** | 0,76*** |
| | (0,13) | (0,13) | (0,14) | (0,09) | (0,08) | (0,09) |
| CU | | 0,27*** | 0,07 | | 0,45*** | -0,80 |
| | | (0,06) | (0,58) | | (0,04) | (19,33) |
| CULNGDP | | | 0,00 | | | |
| | | | (0,02) | | | |
| CULNGDPT | | | | | | 0,04 |
| | | | | | | (0,74) |
| CULNRER | | | -0,94*** | | | -0,88*** |
| | | | (0,24) | | | (0,18) |
| D1994 | 0,06 | 0,14* | 0,10 | -0,01 | 0,10* | 0,06 |
| | (0,08) | (0,08) | (0,08) | (0,07) | (0,06) | (0,06) |
| D1999 | 0,12 | 0,03 | -0,00 | 0,15** | -0,04 | -0,08 |
| | (0,08) | (0,08) | (0,08) | (0,06) | (0,06) | (0,07) |
| D2001 | 0,46*** | 0,33*** | 0,37*** | 0,31*** | 0,03 | 0,07 |
| | (0,08) | (0,09) | (0,08) | (0,06) | (0,06) | (0,20) |
| (unweighted statistics) R-bar squared | 0,87 | 0,87 | 0,87 | 0,91 | 0,91 | 0,91 |
| # of cross-sections used | 32 | 32 | 32 | 33 | 33 | 33 |
| total panel (unbalanced) observations | 633 | 633 | 633 | 637 | 637 | 637 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

Note: figures in parentheses are standard errors

**Table 20: Regression Results (Low Income)**

| Variables / | LXT | LXT | LXT | LMT | LMT | LMT |
|---|---|---|---|---|---|---|
| LNGDP | 1,65*** | 0,74*** | 1,08*** | | | |
| | (0,17) | (0,17) | (0,19) | | | |
| LNGDPT | | | | 2,27*** | 2,14*** | 2,32*** |
| | | | | (0,14) | (0,18) | (0,19) |
| LNRER | -1,22*** | -0,75*** | -0,95*** | 0,29** | 0,26** | 0,52*** |
| | (0,13) | (0,14) | (0,15) | (0,13) | (0,13) | (0,15) |
| CU | | 1,19*** | 7,47*** | | 0,14 | 26,20 |
| | | (0,10) | (1,12) | | (0,12) | (17,63) |
| CULNGDP | | | -0,28*** | | | |
| | | | (0,05) | | | |
| CULNGDPT | | | | | | -1,01 |
| | | | | | | (0,68) |
| CULNRER | | | 0,79** | | | -1,28*** |
| | | | (0,34) | | | (0,33) |
| (unweighted statistics) R-bar squared | 0,70 | 0,74 | 0,75 | 0,69 | 0,69 | 0,69 |
| # of cross-sections used | 51 | 51 | 51 | 53 | 53 | 53 |
| total panel (unbalanced) observations | 612 | 612 | 612 | 546 | 546 | 546 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

Note: figures in parentheses are standard errors

**Table 21: Regression Results With Crises Periods (Low Income)**

| Variables / Dependent Variable | LXT | LXT | LXT | LMT | LMT | LMT |
|---|---|---|---|---|---|---|
| LNGDP | 1,52*** | 0,75*** | 1,13*** | | | |
| | (0,17) | (0,17) | (0,18) | | | |
| LNGDPT | | | | 2,26*** | 2,15*** | 2,25*** |
| | | | | (0,14) | (0,18) | (0,19) |
| LNRER | -1,16*** | -0,76*** | -0,93*** | 0,31** | 0,30** | 0,50*** |
| | (0,14) | (0,14) | (0,15) | (0,13) | (0,13) | (0,15) |
| CU | | 1,16*** | 7,61*** | | 0,13 | 11,82 |
| | | (0,11) | (1,12) | | (0,14) | (43,95) |
| CULNGDP | | | -0,29*** | | | |
| | | | (0,05) | | | |
| CULNGDPT | | | | | | -0,45 |
| | | | | | | (1,69) |
| CULNRER | | | 0,71** | | | -1,03*** |
| | | | (0,35) | | | (0,38) |
| D1994 | -0,11 | 0,16 | 0,20 | 0,38* | 0,42** | 0,44** |
| | (0,19) | (0,19) | (0,18) | (0,20) | (0,21) | (0,20) |
| D1999 | 0,37** | -0,01 | 0,12 | 0,04** | 0,04 | 0,01 |
| | (0,18) | (0,16) | (0,17) | (0,02) | (0,04) | (0,06) |
| D2001 | 0,88*** | 0,47** | 0,46** | 0,40** | 0,35* | 0,35 |
| | (0,22) | (0,19) | (0,19) | (0,18) | (0,19) | (0,46) |
| (unweighted statistics) R-bar squared | 0,71 | 0,74 | 0,75 | 0,69 | 0,69 | 0,69 |
| # of cross-sections used | 51 | 51 | 51 | 53 | 53 | 53 |
| total panel (unbalanced) observations | 612 | 612 | 612 | 546 | 546 | 546 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

Note: figures in parentheses are standard errors

**Table 22: Regression Results (Lower Middle Income)**

| Variables / Dependent Variable | LXT | LXT | LXT | LMT | LMT | LMT |
|---|---|---|---|---|---|---|
| LNGDP | 2,08*** | 1,77*** | 1,78*** | | | |
| | (0,11) | (0,13) | (0,13) | | | |
| LNGDPT | | | | 2,33*** | 2,15*** | 2,27*** |
| | | | | (0,13) | (0,16) | (0,17) |
| LNRER | -0,26** | -0,15 | -0,07 | 0,52*** | 0,43** | 0,45** |
| | (0,10) | (0,11) | (0,11) | (0,13) | (0,13) | (0,15) |
| CU | | 0,44*** | 1,43 | | 0,20** | 42,40*** |
| | | (0,08) | (1,05) | | (0,09) | (13,85) |
| CULNGDP | | | -0,04 | | | |
| | | | (0,04) | | | |
| CULNGDPT | | | | | | -1,63*** |
| | | | | | | (0,53) |
| CULNRER | | | -0,46* | | | -0,38 |
| | | | (0,24) | | | (0,26) |
| (unweighted statistics) R-bar squared | 0,84 | 0,84 | 0,84 | 0,82 | 0,83 | 0,82 |
| # of cross-sections used | 45 | 45 | 45 | 44 | 44 | 44 |
| total panel (unbalanced) observations | 568 | 568 | 568 | 525 | 525 | 525 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

Note: figures in parentheses are standard errors

**Table 23: Regression Results (Lower Middle Income)**

| Variables / Dependent Variable | LXT | LXT | LXT | LMT | LMT | LMT |
|---|---|---|---|---|---|---|
| LNGDP | 2,01*** | 1,73*** | 1,74*** | | | |
| | (0,11) | (0,13) | (0,13) | | | |
| LNGDPT | | | | 2,42 | 2,23*** | 2,25*** |
| | | | | (10,12) | (0,17) | (0,18) |
| LNRER | -0,29** | -0,17 | -0,09 | 0,45 | 0,35** | 0,35** |
| | (0,11) | (0,11) | (0,11) | (9,73) | (0,15) | (0,17) |
| CU | | 0,44*** | 1,13 | | 0,23* | 63,29 |
| | | (0,09) | (1,09) | | (0,12) | (42,28) |
| CULNGDP | | | -0,03 | | | |
| | | | (0,05) | | | |
| CULNGDPT | | | | | | -2,43 |
| | | | | | | (1,63) |
| CULNRER | | | -0,56** | | | -0,52* |
| | | | (0,25) | | | (0,31) |
| D1994 | 0,07 | 0,22* | 0,23* | 0,23 | 0,29* | 0,31** |
| | (0,10) | (0,12) | (0,13) | (9,93) | (0,15) | (0,15) |
| D1999 | 0,23** | 0,06 | -0,04 | -0,05 | -0,16 | -0,36** |
| | (0,09) | (0,11) | (0,12) | (9,20) | (0,14) | (0,17) |
| D2001 | 0,44*** | 0,27* | 0,32** | 0,47 | 0,33** | -0,19 |
| | (0,15) | (0,15) | (0,15) | (11,08) | (0,17) | (0,45) |
| (unweighted statistics) R-bar squared | 0,84 | 0,84 | 0,84 | 0,82 | 0,83 | 0,83 |
| # of cross-sections used | 45 | 45 | 45 | 44 | 44 | 44 |
| total panel (unbalanced) observations | 568 | 568 | 568 | 525 | 525 | 525 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

Note: figures in parentheses are standard errors

**Table 24: Regression Results (Upper Middle Income)**

| Variables / Dependent Variable | LXT | LXT | LXT | LMT | LMT | LMT |
|---|---|---|---|---|---|---|
| LNGDP | 2,68*** | 2,60*** | 2,64*** | | | |
| | (0,11) | (0,15) | (0,15) | | | |
| LNGDPT | | | | 1,48*** | 1,53*** | 1,59*** |
| | | | | (0,09) | (0,11) | (0,12) |
| LNRER | -0,93*** | -0,78*** | -0,91*** | 0,02 | 0,03 | 0,10 |
| | (0,19) | (0,20) | (0,22) | (0,17) | (0,17) | (0,20) |
| CU | | 0,17 | 2,24 | | -0,06 | 35,15** |
| | | (0,11) | (1,40) | | (0,10) | (14,98) |
| CULNGDP | | | -0,08 | | | |
| | | | (0,06) | | | |
| CULNGDPT | | | | | | -1,36** |
| | | | | | | (0,58) |
| CULNRER | | | 0,80* | | | -0,44 |
| | | | (0,48) | | | (0,37) |
| (unweighted statistics) R-bar squared | 0,85 | 0,85 | 0,85 | 0,82 | 0,82 | 0,82 |
| # of cross-sections used | 27 | 27 | 27 | 26 | 26 | 26 |
| total panel (unbalanced) observations | 380 | 380 | 380 | 357 | 357 | 357 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

Note: figures in parentheses are standard errors

**Table 25: Regression Results With Crises Periods (Upper Middle Income)**

| Variables / Dependent Variable | LXT | LXT | LXT | LMT | LMT | LMT |
|---|---|---|---|---|---|---|
| LNGDP | 2,69*** | 2,52*** | 2,56*** | | | |
| | (0,11) | (0,15) | (0,16) | | | |
| LNGDPT | | | | 1,50*** | 1,56*** | 1,57*** |
| | | | | (0,09) | (0,12) | (0,12) |
| LNRER | -1,12*** | -0,98*** | -1,09*** | -0,08 | -0,07 | 0,08 |
| | (0,19) | (0,20) | (0,22) | (0,18) | (0,18) | (0,21) |
| CU | | 0,25* | 2,15 | | -0,08 | 26,32 |
| | | (0,13) | (1,39) | | (0,12) | (46,83) |
| CULNGDP | | | -0,08 | | | |
| | | | (0,06) | | | |
| CULNGDPT | | | | | | -1,02 |
| | | | | | | (1,80) |
| CULNRER | | | 0,74 | | | -0,59 |
| | | | (0,49) | | | (0,41) |
| D1994 | 0,42*** | 0,48*** | 0,50*** | 0,07 | 0,05 | 0,03 |
| | (0,14) | (0,16) | (0,16) | (0,14) | (0,15) | (0,15) |
| D1999 | -0,09 | -0,10 | -0,05 | -0,25* | -0,21 | -0,29 |
| | (0,14) | (0,16) | (0,17) | (0,14) | (0,15) | (0,18) |
| D2001 | 0,36** | 0,33* | 0,26 | 0,26* | 0,31** | 0,11 |
| | (0,16) | (0,18) | (0,19) | (0,14) | (0,15) | (0,49) |
| (unweighted statistics) R-bar squared | 0,85 | 0,85 | 0,85 | 0,82 | 0,82 | 0,82 |
| # of cross-sections used | 27 | 27 | 27 | 26 | 26 | 26 |
| total panel (unbalanced) observations | 380 | 380 | 380 | 357 | 357 | 357 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

Note: figures in parentheses are standard errors

**Table 26: Wald Coefficients Tests (Americas)**

| Model | Null Hypothesis | Coefficient Sums | F-Statistic | Probability |
|---|---|---|---|---|
| export | lnrer+culnrer=0 | lnrer+culnrer=-0,38 | 0,67 | 0,412 |
| | lngdp+culngdp=0 | lngdp+culngdp=2,21 | 246,33*** | 0,000 |
| import | lnrer+culnrer=0 | lnrer+culnrer=-0,49 | 1,13 | 0,288 |
| | lngdpT+culngdpT=0 | lngdpT+culngdpT=3,50 | 23,27*** | 0,000 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

**Table 27: Wald Coefficients Tests (Americas) (With Crises Periods)**

| Model | Null Hypothesis | Coefficient Sums | F-Statistic | Probability |
|---|---|---|---|---|
| export | lnrer+culnrer=0 | lnrer+culnrer=-0,39 | 0,72 | 0,396 |
| | lngdp+culngdp=0 | lngdp+culngdp=2,19 | 240,09*** | 0,000 |
| import | lnrer+culnrer=0 | lnrer+culnrer=-0,42 | 0,83 | 0,363 |
| | lngdpT+culngdpT=0 | lngdpT+culngdpT=3,43 | 19,27*** | 0,000 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

**Table 28: Wald Coefficients Tests (Asia)**

| Model | Null Hypothesis | Coefficient Sums | F-Statistic | Probability |
|---|---|---|---|---|
| export | lnrer+culnrer=0 | lnrer+culnrer=-0,44 | 2,83* | 0,093 |
| | lngdp+culngdp=0 | lngdp+culngdp=2,15 | 373,69*** | 0,000 |
| import | lnrer+culnrer=0 | lnrer+culnrer=-0,71 | 0,96 | 0,328 |
| | lngdpT+culngdpT=0 | lngdpT+culngdpT=0,50 | 0,16 | 0,694 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

**Table 29: Wald Coefficients Tests (Asia) (With Crises Periods)**

| Model | Null Hypothesis | Coefficient Sums | F-Statistic | Probability |
|---|---|---|---|---|
| export | lnrer+culnrer=0 | lnrer+culnrer=-0,48 | 2,41 | 0,122 |
| | lngdp+culngdp=0 | lngdp+culngdp=2,16 | 373,02*** | 0,000 |
| import | lnrer+culnrer=0 | lnrer+culnrer=-0,68 | 4,40** | 0,037 |
| | lngdpT+culngdpT=0 | lngdpT+culngdpT=0,62 | 1,39 | 0,239 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

**Table 30: Wald Coefficients Tests (Europe and Central Asia)**

| Model | Null Hypothesis | Coefficient Sums | F-Statistic | Probability |
|---|---|---|---|---|
| export | lnrer+culnrer=0 | lnrer+culnrer=-0,25 | 2,72* | 0,099 |
| | lngdp+culngdp=0 | lngdp+culngdp=1,32 | 457,41*** | 0,000 |
| import | lnrer+culnrer=0 | lnrer+culnrer=-0,15 | 1,22 | 0,269 |
| | lngdpT+culngdpT=0 | lngdpT+culngdpT=0,81 | 12,60*** | 0,001 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

**Table 31: Wald Coefficients Tests (Europe and Central Asia) (With Crises Periods)**

| Model | Null Hypothesis | Coefficient Sums | F-Statistic | Probability |
|---|---|---|---|---|
| export | lnrer+culnrer=0 | lnrer+culnrer=-0,27 | 3,07* | 0,080 |
| | lngdp+culngdp=0 | lngdp+culngdp=1,32 | 449,86*** | 0,000 |
| import | lnrer+culnrer=0 | lnrer+culnrer=-0,15 | 1,24 | 0,266 |
| | lngdpT+culngdpT=0 | lngdpT+culngdpT=0,78 | 11,15*** | 0,001 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

**Table 32: Wald Coefficients Tests (Middle East and North Africa)**

| Model | Null Hypothesis | Coefficient Sums | F-Statistic | Probability |
|---|---|---|---|---|
| export | lnrer+culnrer=0 | lnrer+culnrer=-0,84 | 6,55** | 0,011 |
| | lngdp+culngdp=0 | lngdp+culngdp=2,07 | 206,54*** | 0,000 |
| import | lnrer+culnrer=0 | lnrer+culnrer=0,30 | 0,25 | 0,616 |
| | lngdpT+culngdpT=0 | lngdpT+culngdpT=2,07 | 2,22 | 0,137 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

**Table 33: Wald Coefficients Tests (Middle East and North Africa) (With Crises Periods)**

| Model | Null Hypothesis | Coefficient Sums | F-Statistic | Probability |
|---|---|---|---|---|
| export | lnrer+culnrer=0 | lnrer+culnrer=-0,72 | 4,50** | 0,035 |
| | lngdp+culngdp=0 | lngdp+culngdp=2,09 | 208,07*** | 0,000 |
| import | lnrer+culnrer=0 | lnrer+culnrer=-0,08 | 0,02 | 0,892 |
| | lngdpT+culngdpT=0 | lngdpT+culngdpT=1,23 | 0,72 | 0,396 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

**Table 34: Wald Coefficients Tests (Sub-Saharan Africa)**

| Model | Null Hypothesis | Coefficient Sums | F-Statistic | Probability |
|---|---|---|---|---|
| export | lnrer+culnrer=0 | lnrer+culnrer=-0,86 | 4,20** | 0,041 |
| | lngdp+culngdp=0 | lngdp+culngdp=1,69 | 38,72*** | 0,000 |
| import | lnrer+culnrer=0 | lnrer+culnrer=-0,27 | 0,3 | 0,585 |
| | lngdpT+culngdpT=0 | lngdpT+culngdpT=0,45 | 0,18 | 0,669 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

**Table 35: Wald Coefficients Tests (Sub-Saharan Africa) (With Crises Periods)**

| Model | Null Hypothesis | Coefficient Sums | F-Statistic | Probability |
|---|---|---|---|---|
| export | lnrer+culnrer=0 | lnrer+culnrer=-0,90 | 4,45** | 0,035 |
| | lngdp+culngdp=0 | lngdp+culngdp=1,77 | 41,67*** | 0,000 |
| import | lnrer+culnrer=0 | lnrer+culnrer=-0,28 | 0,33 | 0,565 |
| | lngdpT+culngdpT=0 | lngdpT+culngdpT=0,38 | 0,13 | 0,715 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

**Table 36: Wald Coefficients Tests (High-Income)**

| Model | Null Hypothesis | Coefficient Sums | F-Statistic | Probability |
|---|---|---|---|---|
| export | lnrer+culnrer=0 | lnrer+culnrer=-0,66 | 8,46 | 0,004 |
| | lngdp+culngdp=0 | lngdp+culngdp=1,70 | 764,58*** | 0,000 |
| import | lnrer+culnrer=0 | lnrer+culnrer=-0,08 | 0,35 | 0,555 |
| | lngdpT+culngdpT=0 | lngdpT+culngdpT=1,18 | 30,34*** | 0,000 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

**Table 37: Wald Coefficients Tests (High-Income) (With Crises Periods)**

| Model | Null Hypothesis | Coefficient Sums | F-Statistic | Probability |
|---|---|---|---|---|
| export | lnrer+culnrer=0 | lnrer+culnrer=-0,89 | 15,34*** | 0,000 |
| | lngdp+culngdp=0 | lngdp+culngdp=1,69 | 771,36*** | 0,000 |
| import | lnrer+culnrer=0 | lnrer+culnrer=-0,12 | 0,48 | 0,486 |
| | lngdpT+culngdpT=0 | lngdpT+culngdpT=1,40 | 3,55* | 0,060 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

**Table 38: Wald Coefficients Tests (Low Income)**

| Model | Null Hypothesis | Coefficient Sums | F-Statistic | Probability |
|---|---|---|---|---|
| export | lnrer+culnrer=0 | lnrer+culnrer=-0,16 | 0,27 | 0,604 |
| | lngdp+culngdp=0 | lngdp+culngdp=0,80 | 21,39*** | 0,000 |
| | | | | |
| import | lnrer+culnrer=0 | lnrer+culnrer=-0,76 | 7,94*** | 0,005 |
| | lngdpT+culngdpT=0 | lngdpT+culngdpT=1,31 | 4,10** | 0,043 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

**Table 39: Wald Coefficients Tests (Low Income) (With Crises Periods)**

| Model | Null Hypothesis | Coefficient Sums | F-Statistic | Probability |
|---|---|---|---|---|
| export | lnrer+culnrer=0 | lnrer+culnrer=-0,22 | 0,48 | 0,490 |
| | lngdp+culngdp=0 | lngdp+culngdp=0,84 | 24,35*** | 0,000 |
| | | | | |
| import | lnrer+culnrer=0 | lnrer+culnrer=-0,53 | 2,71 | 0,100 |
| | lngdpT+culngdpT=0 | lngdpT+culngdpT=1,80 | 1,15 | 0,283 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

**Table 40: Wald Coefficients Tests (Lower Middle Income)**

| Model | Null Hypothesis | Coefficient Sums | F-Statistic | Probability |
|---|---|---|---|---|
| export | lnrer+culnrer=0 | lnrer+culnrer=-0,53 | 5,20** | 0,023 |
| | lngdp+culngdp=0 | lngdp+culngdp=1,74 | 173,98*** | 0,000 |
| | | | | |
| import | lnrer+culnrer=0 | lnrer+culnrer=0,07 | 0,11 | 0,737 |
| | lngdpT+culngdpT=0 | lngdpT+culngdpT=0,64 | 1,58 | 0,209 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

**Table 41: Wald Coefficients Tests (Lower Middle Income) (With Crises Periods)**

| Model | Null Hypothesis | Coefficient Sums | F-Statistic | Probability |
|---|---|---|---|---|
| export | lnrer+culnrer=0 | lnrer+culnrer=-0,65 | 7,31*** | 0,007 |
| | lngdp+culngdp=0 | lngdp+culngdp=1,71 | 163,42*** | 0,000 |
| | | | | |
| import | lnrer+culnrer=0 | lnrer+culnrer=-0,17 | 0,36 | 0,549 |
| | lngdpT+culngdpT=0 | lngdpT+culngdpT=-0,18 | 0,01 | 0,914 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

**Table 42: Wald Coefficients Tests (Upper Middle Income)**

| Model | Null Hypothesis | Coefficient Sums | F-Statistic | Probability |
|---|---|---|---|---|
| export | lnrer+culnrer=0 | lnrer+culnrer=-0,11 | 0,06 | 0,800 |
| | lngdp+culngdp=0 | lngdp+culngdp=2,56 | 278,11*** | 0,000 |
| import | lnrer+culnrer=0 | lnrer+culnrer=-0,34 | 1,03 | 0,311 |
| | lngdpT+culngdpT=0 | lngdpT+culngdpT=0,23 | 0,17 | 0,682 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.

**Table 43: Wald Coefficients Tests (Upper Middle Income) (With Crises Periods)**

| Model | Null Hypothesis | Coefficient Sums | F-Statistic | Probability |
|---|---|---|---|---|
| export | lnrer+culnrer=0 | lnrer+culnrer=-0,35 | 0,56 | 0,454 |
| | lngdp+culngdp=0 | lngdp+culngdp=2,48 | 250,82*** | 0,000 |
| import | lnrer+culnrer=0 | lnrer+culnrer=-0,51 | 1,93 | 0,165 |
| | lngdpT+culngdpT=0 | lngdpT+culngdpT=0,55 | 0,09 | 0,758 |

*** reject null at 1 per cent significance level.

** reject null at 5 per cent significance level but not 1 per cent.

* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.