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Trade and beyond-trade analysis of preferential trade agreements.

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Trade & beyond-trade analysis of preferential trade agreements

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Abstract

In order to harness globalisation various international institutions and instruments have emerged. In the international trade field, the multilateral trading system, that is the WTO materialized as a global platform for trade liberalisation and related issues. Along the same time and with similar objectives a myriad of PTAs also developed and have now become a prominent feature of international trade policy. It is not only the number and geographical spread of PTAs that has increased dramatically over the years, but the scope of these agreements has also extended well beyond trade into non-trade provisions such as foreign investment, labor market, intellectual property rights and dispute settlement mechanisms.

Such developments bring several issues to the forefront. As the geographical spread widens, more and more countries are faced with the costly process of successfully negotiating these agreements to their benefit. The central question that arises in this context is that, aside from the potential benefits, what are the associated costs? These approximations (such as trade diversion, tariff revenue loss, impact on domestic production) facilitate the negotiating process of the proposed agreement. Motivated by this, chapter 1 of this dissertation estimates the consequences of the European Union Economic Partnership Agreement (EU-EPA) on a set of economic indicators for the Fijian economy. The EU-EPAs are a set of proposed reciprocal free trade agreements between the EU and the African Caribbean Pacific (ACP) group of countries, designed specifically to replace the previous non-reciprocal and WTO incompatible trading arrangements between the two parties. The EU-EPA makes an interesting case to be evaluated since for many of the signatory countries from the ACP group, this will be their first comprehensive reciprocal agreement with a developed country which perhaps explains the prolonged negotiation process, with many of the involved ACP countries yet to sign a full EPA.

Several researchers have studied the likely consequences of the EU-EPA on the ACP countries. The African and Caribbean countries have attracted larger research interest than the Pacific group. Fiji and Papua New Guinea, as part of the ACP region signed an interim EU-EPA in 2007. However, there is no empirical investigation on the consequences of the EPA on either of these countries. On this note, this study contributes to the existing litersature by investigating the consequences of this agreement on Fiji's imports, tariff revenue, (selected) production, consumption, prices and exports under a full and partial liberalisation scenario, using a partial equilibrium framework. Our findings reveal that the potential import substitution and tariff revenue losses are considerably lessened under a partial liberalisation scenario. Moreover, while the EU-EPA will produce tariff revenue losses for Fiji, the losses are estimated to be much smaller than those concluded for other ACP member countries. Likewise, our results also indicate very negligible effect on Fiji's imports from the region and on domestic production.

The latter two studies are motivated by the changing nature of PTAs and therefore extend the debate into two of its non-trade impacts - namely Foreign Direct Investment (FDI) and international labor mobility. Traditionally, goods trade had a central role in PTAs and this attracted research interest on its trade effects. The more recent PTAs have extended into non-trade provisions such as foreign investment, labor market, intellectual property rights and hence effects on motivations beyond trade are pragmatic. In light of these developments, the PTA-FDI relationship for a group of ACP countries was investigated in the second study. While the existing literature on the PTA-FDI nexus has focused on a number of regional agreements, the coverage of the ACP states is limited. Moreover, studies that do exist on individual ACP countries or sub-regional groups have explored the traditional determinants of FDI but research that explains if PTAs matter for FDI is still in its infancy. Hence, this chapter contributes to the existing literature by focusing on the role of PTAs in attracting FDI in the ACP group, along with the inclusion of other important determinants like Bilateral Investment Treaties (BIT), Double Taxation Treaties (DTT), office hours overlap and surrounding market potential. With the use of a gravity specification, we conclude the prevalence of market seeking FDI in the ACP group, with an important role played by regional integration to unlock this market potential in this otherwise fragmented group of countries. Moreover, results also indicate

that trade and FDI act as substitutes, supported by the negative coefficients on the trade openness and number of PTAs variables. Greater bilateral distance and smaller office hours overlap discourages FDI. The presence of a double taxation treaty encourages FDI. We find that aggregation of countries in our sample masks regional differences. A decomposition of the ACP group into its regional subsamples reveals that a bilateral PTA with investment provisions, with or without a BIT, reduces FDI in Africa. A bilateral PTA without investment provisions does the same, unless a bilateral BIT is in place, in which case, FDI increases. For the Caribbean, we find no significant link between a PTA, with or without investment provisions, and FDI. Additionally, we find a possible signalling role for BITs, specifically for BITs signed with OECD countries. We do not find any significant role for BITs in the natural resources sector.

Chapter 3 empirically investigated the consequences of PTAs on international labor mobility. While the flow of goods, services and financial capital has been liberalised over the years, the movement of labor across borders has remained restricted. Undoubtedly, the extent to which labor can be liberalised is not purely within the frameworks of trade policy. Moreover, the movement of people has broader economic, social and political implications. Given this complex nature of migration and the fact that a nation's border security and immigration laws will always have greater control over the cross-border movement of workers indicates that labor as a factor of production will not experience the extent of liberalisation as in other factor markets such as goods, services and financial capital. Moreover, the potential risks from migration, current global tensions such as drugs, human trafficking, and terrorism along with governments' concerns of potential welfare burdens has resulted in tighter immigration policies across many countries. Despite these however, the existing literature and international organisations have emphasised on the positive attributes of the temporary movement of workers. There are no global organisations that facilitate the cross-border flow of workers which is in contrast to the existence of such frameworks for the international flow of other productive factors such as goods, services and capital. The World Trade Organisation (WTO) has a very narrow provision for skilled labor movement only, but the developing and less developed countries have a greater interest in mobilising their unskilled/semi-skilled workers, which they have in abundance. Given this slow progress, policy makers have resorted to alternative options such as Bilateral Labor Agreements (BLAs) and PTAs.

However, to the best of our knowledge, there are no empirical investigations on the PTA-labor mobility nexus in the existing litersture. Thus, based on the argument that PTAs may stimulate labor mobility, we investigated for any such role in the third chapter. A gravity model was adopted to investigate this relationship. Our findings reveal that a common PTA between the labor origin country and labor host country is relevant in stimulating cross-border worker movement, and it is the presence of labor provision that makes PTAs more influential. Relatively higher income opportunities, high origin country unemployment, host or origin population growth and origin political stability positively impacts bilateral worker migration. While host political stability is not significant, lack of job opportunities in the host country is negative and significant. Moreover, consistent with the important role of information and social support emphasized in the related literature, we find that the presence of previous migrants from the same origin country is also relevant in cross-border labor mobility.

Key words: Preferential trade agreements, foreign direct investment, European Union Economic Partnership Agreement, labor mobility.

Declaration

This thesis is submitted to Bond University in fulfilment of the requirements of the degree of Doctor of Philosophy. This thesis represents my own original work towards this research degree and contains no material which has been previously submitted for a degree or diploma at this University or any other institution, except where due acknowledgement is made.

Signature:

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List of Abbreviations

ACP	African Caribbean Pacific
AMSP	Accompanying Measures for Sugar Protocol
BIT	Bilateral Investment Treaty
BLA	Bilateral Labor Agreement
CAP	Common Agricultural Policy
CARICOM	Caribbean Community
CEMAC	Central African Economic and Monetary Community
CES	Constant Elasticity of Substitution
CGE	Computable General Equilibrium Analysis
COMESA	Common Market for Eastern and Southern Africa
CUSFTA	Canada US Free Trade Agreement
DTT	Double Taxation Treaty
EAC	East African Community
EBA	Everything But Arms
EC	European Commission
ECOWAS	Economic Community of West African States
EEA	European Economic Area
EEC	European Economic Community
EFTA	European Free Trade Association
ENC	European Union's Neighbouring Countries
EU	European Union
EU-EPA	European Union's Economic Partnership Agreement
EU-Fiji EPA	European Union -Fiji Economic Partnership Agreement

FDI	Foreign Direct Investment
FEM	Fixed Effects Model
FGLS	Feasible Generalized Least Squares
FIBOS	Fiji Islands Bureau of Statistics
FIRCA	Fiji Islands Revenue & Customs Authority
GATS	General Agreement on Trade in Services
GCC	Gulf Corporation Countries
GDP	Gross Domestic Product
GSP	Generalised System of Preferences
GTAP	Global Trade Analysis Project
HS6	Harmonised System 6
ILO	International Labor Organisation
IMF	International Monetary Fund
IOM	International Organisation for Migration
IPS	Im-Pesaran-Shin
ITC	International Trade Centre
LDC	Less Developed Country
MERCOSUR	Common Market for the South
MFN	Most Favored Nation
MSG	Melanesian Spearhead Group
NAFTA	North American Free Trade Agreement
NELM	New Economics of Labor Migration
NZ	New Zealand
OECD	Organisation for Economic Cooperation and Development

OSCE	Organisation for Security and Co-operation in Europe
PACER	Pacific Agreement on Closer Economic Relations
PEA	Partial Equilibrium Analysis
PICTA	Pacific Island Countries Trade Agreement
PPP	Purchasing Power Parity Adjusted
PTA	Preferential Trade Agreement
RBF	Reserve Bank of Fiji
RIA	Regional Integration Agreement
ROW	Rest of the World
RTA	Regional Trade Agreement
SADC	South African Development Community
SP	Sugar Protocol
SPARTECA	South Pacific Regional Trade and Economic Agreement
SPM	Special Preferential Market
SPS	Special Preferential Sugar
TC	Tropical Cyclone
UK	United Kingdom
UNCTAD	United Nations Conference on Trade and Development
US	United States
WAEMU	West African Economic and Monetary Union
WDI	World Development Indicators
WTO	World Trade Organisation

Dissertation structure

This thesis consists of three chapters. Each chapter addresses a research question, all of which are related to the phenomenon of preferential trade agreements. The central motivation for this research stems from the prolonged negotiation of the European Union's Economic Partnership Agreement with the African Caribbean Pacific region. Accordingly, chapter 1 examines the potential impact of the European Union Economic Partnership agreement on selected economic variables of the Fijian economy. Chapter 2 and chapter 3 comprehend the changing nature of Preferential Trade Agreements and extend the debate into two of its non-trade impacts - namely Foreign Direct Investment and international labor mobility.

Each chapter consists of its own introduction, key stylized facts, literature review, empirical framework, results and conclusion. The introduction lays out the research question, motivation, contribution, aim and scope of research for each chapter. The background details and developments of relevant economic indicators relevant to each research question are provided in the key stylized facts section of the respective chapter. Related literature is reviewed in the literature review section, following which the empirical framework and results are discussed. Finally, the conclusion section of each chapter summarises the main findings, limitations and future research of that respective study. The references section at the end of the thesis includes all the reference materials used in this thesis, while the appendix section (divided into three parts) contains the corresponding appendix material for each chapter.

Chapter 1

Impact of the European Union-Fiji Economic Partnership Agreement (EU-Fiji EPA) on Fiji's selected economic variables

1.1: Introduction

In Chapter 1 of this thesis, we estimate the likely effects of the European Union-Economic Partnership Agreement (EU-EPA) on trade, tariff revenue and selected production related variables for the Fijian economy. At this juncture, it must be noted that this study is not a comprehensive welfare analysis of the consequences of the EU-Fiji EPA but is focused on the implications for a selected set of variables for Fiji only, conducted in a partial equilibrium setting. These include its impact on imports, tariff revenue, (selected) domestic production, consumption, export supply and prices. While the EU will also open its market to Fiji products, the consequences for Fiji's exports into the EU market (or equivalently, EU's imports from Fiji) are not covered in this study. On this note, this study is equivalent to looking at unilateral tariff reduction by Fiji. Fiji, along with the other African, Caribbean & Pacific (ACP) countries has a long colonial history with the EU. For over four decades, Fiji (as part of the ACP group) has benefited from the EU's preferential trading arrangement institutionalised under a series of Lome provisions since the 1970's. However, due to the incompatibility of the Lome provisions with the World Trade Organisation (WTO) rules, in the year 2000, the EU and the ACP partner states concluded the Cotonou Agreement as a successor to the 25-year-old Lome Convention. At the same time, it was agreed to trigger negotiations for a WTO compatible EPA between the EU and the ACP region.

Formal negotiations for an EU-EPA were launched in late 2003 and eventuated into years of prolonged discussions. The ACP countries/sub regions involved in these discussions have progressed at different rates and are at different stages in terms of the depth and degree of their negotiation with the EU. From the Pacific group, Fiji signed an interim EU-EPA in 2007. Most of the negotiating blocks were unable to complete the EPA discussions by the deadline of December 2007, and this prompted the EU to resort to interim EPA's designed to serve as a bridge until the conclusion of the EPA discussions. These interim EPA's contain market access offers that are compatible to the requirements of the WTO, with commitments to consult on all pending issues in the proposed EPA's (Muluvi, Onyango, Otieno, & Githuku, 2016).

The EU-EPA makes an interesting case to be evaluated given that for many of the proposed signatory countries from the ACP group, this agreement would be their first comprehensive reciprocal deal with a developed country. The transition towards a WTO compatible agreement with the EU represents a marked shift in the trade policy of these ACP countries. Evidently, policy makers are daunted with the question of the potential consequences of entering into this trade agreement (Dodson, 2013; Greenway & Milner, 2006; and others). Moreover, there is a strong asymmetry between the two trading partners (ACP and the EU), in terms of both the trade relationship and bargaining expertise (Fontagne, Laborde, & Mitaritonna, 2010). Collectively, the ACP depends on the EU for exports and imports (although the magnitude of trade relations varies at individual country level). From 1995 to 2015, the average percentage share of the EU in total ACP exports and imports was around 29 percent and 28 percent, respectively. However, in contrast the ACP is not of significant economic value to the EU. The average percentage share of ACP in total EU exports and imports over the period 1995-2015 was only 1.7 percent and 1.6 percent, respectively[1]. Additionally, the ACP group is heavily concentrated on a narrow range of products for export, with high rates of protection on imported products. Hence, information on the trade and fiscal related consequences of the EU-EPA may facilitate the EPA negotiation and decision process and provide a basis for formulating adjustment policies (such as tax reforms, subsidies) that may be required due to this marked shift in international trade

[1] These percentage shares (discussed and illustrated in detail in Figure 1-4 and Figure 1-5) have been calculated using trade data from the UNCTD stat database.

relations (Brenton, Hoppe, & von Uexkull, 2007; Milner, Morrissey, & McKay, 2005; Thomy, Tularam, & Siriwardana, 2013).

Since Fiji is not categorised as a Least Developed Country (LDC), it cannot retain duty free access to the EU market through the Everything But Arms (EBA) provision, an option for the LDC's that do not plan to sign the EPA. Hence, to continue with the trading privileges similar (to some extent) to the Lome provisions, it is essential for Fiji to negotiate for an EPA with the EU. Over the years, under the umbrella of the various series of Lome conventions, Fiji did not have to provide similar preferences to the EU in return. However, the EPA's are designed to align to the WTO's requirements and hence will be reciprocal and cover substantially all trade. This implies that the ACP group is now faced with the challenge of providing the EU preferential access into their markets as well. The ACP will remove tariffs on their imports from the EU, and this will extend to cover substantially all imports from the EU (equivalent to around 80 percent of imports from the EU). Hence, two economic consequences of the EU-EPA that have remained a central concern for the ACP member countries are firstly, the fear that the influx of cheaper EU imports will drive out local production and secondly, the possible effects on government tariff revenue due to import liberalisation. However, from a more balanced perspective, a move towards trade liberalisation also brings its own sets of benefits. Over time the ACP countries could gain from the dynamic effects of the EPA's in the form of higher domestic and foreign investment, economies of scale, the spill-over effects of enhanced credibility of trade policy reforms (McQueen, 1998), exposure to global production networks, access to cheaper EU products and the EU market for exports (Muluvi et al., 2016). Amidst these however remain the concerns of an influx of competing EU products into the domestic market and the consequent challenges for local producers, and the loss of government tariff revenue due to removal of import duties (Fontagne et al., 2010; Milner et al., 2005; Muluvi et al., 2016; Thomy et al., 2013). Moreover, while the ACP countries will also gain duty free access to the EU market for their exports, the extent to which this opportunity can be utilised depends on the ability of these economies to overcome their supply side hurdles (Berisha-Krasniqi, Bouet, & Mevel, 2008; Muluvi et al., 2016; Perez & Karingi, 2007). Many of the ACP countries have over the years depended on the exports of a few selected commodities to the EU while export diversification strategies have remained futile. Hence, while there are both possible gains and losses to be realised from these EPA's, a crucial

concern is whether the benefits from such reciprocal deals will outweigh the costs (Milner et al., 2005). The process of negotiating and confirming a PTA can be a costly affair with huge adjustment costs on an economy, particularly for relatively smaller economies faced with limited resources and bargaining capacity (Dodson, 2013; Fontagne et al., 2010).

Based on the arguments noted above, estimating the likely economic costs (such as trade diversion, tariff revenue loss and reduction in domestic production) are important ingredients for the bargaining process. This can be for example in terms of identifying sensitive products for exclusion from liberalisation, negotiating on development assistance if available, flexibility in implementation and bargaining on additional provisions. Above all, the possible direct consequences on government tariff revenue has created much concern given that import duties account for between 20 per cent to 40 per cent of total government revenue in most ACP countries (McQueen, 1998). While highlighting that the level of protection applied on EU products varies within the ACP, Fontagne et al. (2010) mentioned the Central African Economic and Monetary Community (CEMAC), Common Market for Eastern and Southern Africa (COMESA) and the Pacific group as the three most protected economies with average tariffs of 13.5 percent, 13.1 percent and 12 percent, respectively. For the case of Fiji, custom duties[2] ranked as the third important source of government revenue, averaging around 24 percent of total tax income in the period 2000 to 2015 (Fiji Islands Bureau of Statistics [FIBOS], 2017). The removal of import duties implies surrendering these tax revenues which will impact the fiscal budget and therefore may require policy makers to substitute these revenues with alternative sources or otherwise cut back on essential expenditure such as health and education.

The onset of the EU-EPA negotiations has attracted research interest from scholars with most of the studies focusing on either a sample of ACP countries (such as Dodson, 2013; Fontagne et al., 2010; Greenway & Milner, 2006; Mbithi, Gor, & Osoro, 2015; Milner et al., 2005; Thomy et al., 2013; and others) or on individual ACP member states (including Berisha-Krasniqi et al., 2008; Dodson, 2013; Nwali & Arene, 2015). These studies have explored the likely trade and welfare consequences of an EU-EPA using either total imports or specific sectoral imports such as agricultural or manufactured goods. While the African and Caribbean countries are included in many of these studies, the Pacific Island members

[2] See Figure 1.0 in the Appendix for the distribution of income by source.

are not adequately represented. The two countries from the Pacific region that are involved in the EU-ACP EPA negotiations are Papua New Guinea and Fiji. Hence, this study contributes by focusing on the implications of the EU-EPA utilising data on the Fijian economy which has a large stake in securing an EU-EPA given that firstly, it is not a LDC and hence cannot opt for the EBA provision and secondly and more importantly, it is heavily dependent on the EU market for its sugar exports - a key commodity foreign exchange earner for Fiji. A trade agreement is not a totally unfamiliar policy for the Fijian economy. In fact, Fiji is a member of the WTO and is signatory to a few trade agreements and hence is not completely alienated from this policy. However, the EU-EPA is Fiji's first reciprocal and comprehensive agreement with a developed economy, which has triggered concerns on the possible consequences.

Motivated by this, we adopt a partial equilibrium approach in this study and assess the likely effects of the proposed EU-Fiji EPA on a set of Fiji's economic indicators. These include Fiji's imports at a detailed disaggregated level, results from which are then linked to possible tariff revenue consequences. We also analyse the effects on selected exports, domestic production, consumption and prices.

The two broad quantitative approaches for this kind of analysis are the Partial Equilibrium Analysis (PEA) and the Computable General Equilibrium Analysis (CGE). While both these techniques are utilised for analysing trade policy impacts, they differ in terms of coverage and depth. The PEA analyses the impact of a policy change only on the markets that are directly affected while ignoring any consequent effects on all related markets and hence the economy wide effects (Dodson, 2013). It therefore allows a detailed analysis of the directly affected market. The CGE approach considers all related markets and while it provides a more comprehensive impact assessment, it lacks the detailed spectrum. Admittedly, the EU-EPA is certainly expected to have much wider and deeper impacts than just trade, production and tariff revenue implications that this study has focused on. As mentioned earlier, over time, the ACP countries could gain from the dynamic effects of the EPA's such as higher investment, openness to competition, economies of scale and greater confidence in their trade policy reforms when anchored through international treaties (McQueen, 1998). However, given that our objective is to conduct a detailed sectoral effect on imports, identify the sensitive sectors (that may need special treatment, attention

in the negotiation process and immediate adjustment policies) and the consequent effects on government revenue, we adopted a PEA approach. The PEA method provides greater insight in line with our objectives. We conducted our analysis under two different scenarios. These include full liberalisation and partial liberalisation. Full liberalisation is where tariffs are removed on all imports from the EU market whereas under partial liberalisation, only 80 percent of the EU goods are imported tariff free. A PEA enables us to specifically discount those items from our analysis that are listed as excluded items in Fiji's interim EPA document. Additionally, we extended our analysis on imports and tariff revenue by assuming an external tariff liberalisation along with the EU-EPA. As argued in Richardson (1993), because of the endogeneity of import protection in a trade agreement setting, the welfare losses associated with trade diversion can be reduced with a concurrent reduction of external tariffs. Hinkle and Schiff (2004) also recommended along the same line, noting that limiting liberalisation to PTA partners only amidst high MFN tariffs on the rest of the world can produce costly trade diversion. Hence, in this third setup, the tariffs applied on the ROW and regional imports are also reduced along with the reduction of tariffs on EU imports.

Our empirical framework is developed through manipulation of the Constant Elasticity of Substitution (CES) expenditure system. It allows estimating the impacts on a broader set of variables compared to the narrow coverage (mainly impact on imports in a trade diversion and trade creation framework) of the existing methods in the literature. These include the impact on domestic production, prices and exports in addition to the impact on imports and tariff revenue.

The rest of this chapter is organised as follows: After an introduction of this research in section 1.1, we provide some broad stylized facts in section 1.2. These background details establish the economic relationship between the ACP and the EU and the development from the initial Lome provisions to the current EPA's. Next, the discussion looks at the EU-ACP trade relationship and then narrows to focus on Fiji's economic background and economic relationship with the EU. In section 1.3, we present a review of related theoretical and empirical literature. Section 1.4 explains the research method and data, while section 1.5 presents and explains the results. Finally, in section 1.6, we conclude this chapter.

1.2: Key stylized facts

1.2.1: A brief overview of the EU-ACP relationship

The EU's relationship with the ACP dates back to the era of colonialism whereby the Treaty of Rome (signed in 1957) captured this association and provided preferential market access and financial aid to its colonies (Hurt, 2012). As these colonies gained their independence, the two groups maintained their relationship through a series of conventions up until the year 2000. Table 1-1 summarises these conventions and their main provisions. The first of these institutional treaties was the Yaounde Convention (signed in 1963) between the then 6 members of the European Economic Community (EEC) and a group of 18 newly independent African countries. The Yaounde convention continued the economic relation between these two groups and was later revised in 1969 (Yaounde II Convention) with two more ACP members, Madagascar and Mauritius joining in. The main premise of the Yaounde convention was the provision of commercial and financial support from the EEC to this group of 18 African countries.

In 1973, after Ireland, Denmark and the UK joined the EEC[3], the former colonies of the UK were provided with the opportunity to establish a relationship with the EEC. This resulted in the creation of the ACP group and the first Lome Convention which was signed in 1975. The Lome convention defined trade and aid relations between Europe and its former colonies, providing preferential market access to ACP products. The main highlight of Lome I was the four lucrative commodity protocols (for bananas, sugar, beef, and rum) which offered the eligible ACP countries a guaranteed quota, duty-free access and comparatively higher prices than what was offered in other markets (Bishop, Heron, & Payne, 2013). The Lome treaty was revised three times; Lome II (1981), Lome III (1985) and Lome IV (1989). Each series of revision continued the initial provisions with additional elements and upgrades. In the second Lome Convention, the mining sector received major attention. In Lome III, the main upgrade was the shift in the EEC's approach in development assistance to the ACP countries. They encouraged the ACP group to pursue self-reliant development, hence discouraging the dependence on aid.

[3] Table 1.0 in the Appendix illustrates the historical timeline of the EEC and the later EU evolution.

Major changes were incorporated in Lome IV which ranged from a wider list of goods that were granted preferential access into the EU market to broader socio-economic issues such as democracy, human rights and the rule of law. After 25 years of existence, the Cotonou agreement replaced the Lome convention in the year 2000. The Cotonou Agreement laid the foundations for the EU-EPA's which were proposed to redesign the trade and economic relation between the EU and the ACP group (Bishop et al., 2013; Girvan, 2010).

Table 1-1: Key elements of the EU-ACP conventions.

Agreement	Year Signed	Membership & Main provisions
Yaounde Convention I	1963	Members: EEC (6 members) and 18 African countries. Commercial and financial aid.
Yaounde Convention II	1971	Members: EEC (6 members) & 20 African states (inclusion of Madagascar & Mauritius). Commercial and financial aid.
Lome I	1975	Members: EEC (9) & ACP group (46). Reduced tariff and non-tariff barriers on most exports from ACP to EEC. Founded on the basis of complete equality between partners. Focused on economic development and social progress of the ACP states with EU financial, technical and industrial aid. Each state was independent in formulating own economic policies. Preferential and guaranteed prices for commodities (cocoa, coffee, groundnuts, tea, mining products). Separate trading protocols (sugar, beef, banana, rum) which provided fixed quota and comparatively higher prices.
Lome II	1981	Members: EEC (9) & ACP group (58). Continued with Lome I provisions with few revisions. Major change: Introduced guaranteed price for mining products.
Lome III	1985	Members: EEC (10) & ACP group (65). Continued with Lome II provisions with additional provisions. Major revision: A shift from industrial development focus to encouraging self-reliant development in the ACP.
Lome IV	1989	Members: EEC (12) & ACP group (68). Provisions from previous conventions were revised with more comprehensive coverage.

		Broadened in scope to allow almost all ACP exports to enter the EEC without quantitative restrictions and customs duties. Non-reciprocity was maintained. Included human rights, democracy, good governance, environmental concerns and resource management (agriculture, fisheries, services).
Cotonou Agreement & the shift towards EPA's	2000	Members: EU (15) & ACP group (77). Platform for negotiating reciprocal EPAs and hence shifting away from the non-reciprocal Lome provisions. Promote economic growth and development in ACP. Facilitate the transition of ACP into the world economy. Improve ACP market access in EU, inclusion of WTO+ issues (competition, investment).

(Source: Consolidated from Bishop et al., 2013; Berends, 2016; Heron, 2011; Hurt, 2012; Vaughan, 2000)

The three complementary dimensions that the Cotonou framework was planned to operate through included political dialogue, economic and trade cooperation and development cooperation (Keijzer & Negre, 2014). While there are controversies on the main motives for the departure from the Lome provisions into EPA's, three main explanations for such change are highlighted in Berends (2016). The first argument in Berends (2016) is that it was recognised that the Lome provisions had failed to sustain or increase the ACP groups EU market share. The continued struggle by the ACP states to enter the global economy and sluggish economic success despite the years of Lome agreement contributed to its ultimate replacement. This was acknowledged by the EU itself in their Green Paper on Relations between the EU and the ACP countries (1996) in which they stated that the EU-ACP relationship needed an in-depth examination and a major over-haul given the lack of success under the past Lome provisions and amidst the changing global environment (some of which includes the emergence of the trade principles of the WTO, the enlargement of the EU itself, and EU's growing interest in forming trade agreements with other countries/regions). Secondly, with the formation of the WTO in 1995, the incompatibility of the Lome Provisions (zero tariffs on ACP goods and commodity protocols that differentiated between ACP states and non-ACP countries) with the Most Favored Nation (MFN) principle of the WTO became an issue. According to the MFN principle, any preferential treatment accorded to one WTO member must be extended to all other WTO

members, thus preventing any discrimination. This entered the limelight with the Banana protocol dispute lodged in 1993 by Latin American countries and the US, and the Sugar Protocol dispute of 2002 led by Australia, Thailand and Brazil. Both these commodity protocols provided preferential arrangements and market share privilege to the ACP countries, which fuelled concerns on the unfair advantage granted to ACP producers. This resulted in the EU designing new trading arrangements (proposed as EU-EPA's) with the ACP states. Finally, the third argument in Berends (2016) for the shift to EPAs is the recognition by African leaders themselves and the EU that the region needed to move from being aid dependent into trade and investment (with greater openness) as the engine of growth. Moreover, according to Keck and Piermartini (2005), the need for a review of the formal link between the EU and ACP also brewed from dissatisfaction by both parties on certain aspects of the existing provisions. The ACP group demanded duty free access for products covered by the Common Agricultural Policy (CAP), simpler rules of origin, and more aid from the EU, while the EU was dissatisfied with issues such as governance, human rights, democratisation and the use of development aid by the ACP countries. The Cotonou Agreement therefore paved the way for major changes to the EU-ACP trade relations. Apart from being broader in scope, this agreement also included non-state actors and local governments into development cooperation. The EU commenced negotiations for reciprocal and comprehensive EPA's with the ACP group in late 2003.

1.2.2: The European Union's Economic Partnership Agreement (EU-EPA)

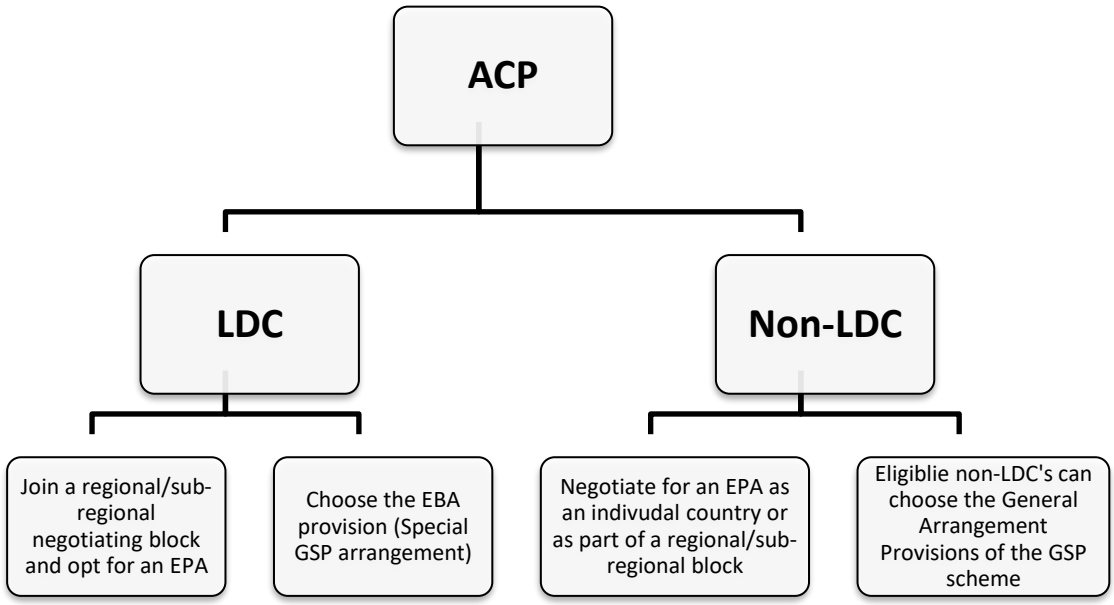
The EU-EPA's are therefore a set of proposed free trade agreements between the EU and the ACP group, with the Cotonou Agreement (2000) being the stepping stone into initiating and developing the negotiations on these EPA's. These new agreements would be reciprocal, liberalise substantially all trade, and also include provisions on investment, services, competition, government procurement and trade facilitation (Murray-Evans, 2015). The previous Lome convention provisions were non-reciprocal - which implied that the ACP countries had their own different level of tariffs imposed on imports from the EU (which also contributed to government income) but were able to export most of their products to the EU duty free. The shift towards reciprocity in the EPA's implies that the ACP countries will have to remove the tariffs on imports from the EU as well. In this

section, we provide some background details on the structure of the EPA negotiations, the options available to the ACP countries, the negotiation groups, status and outcomes.

1.2.2.1: Options, structure and status of the EPA negotiations

The ACP group comprises a very heterogeneous collection of countries. The economic importance of the EU in their trade, the composition of trade, culture, politics and their respective development status vary from each other (Fontagne et al., 2010). The EU's proposal to the ACP group reflected this heterogeneity. They divided the ACP group by development status[4] (LDC and non-LDC) and proposed different choice sets based on their respective status. These options are summarised in Figure 1-1 below.

Figure 1-1: EPA negotiation options for the ACP countries.



(Source: Compiled by author using Fontagne et al., 2010; Mcqueen ,1998; Milner et al.,2005)

The LDC's were granted the option of either (i) joining a sub-regional group and negotiating for an EPA or (ii) choosing the EU's Everything But Arms (EBA) provision which offers non-reciprocal Lome type provisions. The non-LDC's had the option of either (i) negotiating for an EPA as an individual country or as part of a sub-regional group or (ii)

[4] See Table 1-2 for the development status of each ACP member.

the eligible non-LDC's could utilise the general arrangements under the Generalised System of Preferences (GSP) scheme.

This proposal (summarised in Figure 1-1) implied that from the African group of countries the 33 LDC's could either choose the EBA provision or join a sub-regional African group to negotiate for an EPA. From the Caribbean group, only Haiti is classified as a LDC while in the Pacific, except for Fiji and Papua New Guinea, all others had the option of continuing with Lome-type provisions under the EBA umbrella. For the eligible non-LDC's, while the GSP provision was an option, many countries chose to pursue EPA negotiations instead. The problem with the GSP provision was that it reflected a significant downgrade from the Lome provisions because it featured less generous tariff preferences and rules of origin (Busse & Luehje, 2007). As outlined in Bishop et al. (2013), the GSP offered preferences on approximately 54 percent of tariff lines in comparison to approximately 95 percent under Lome. Moreover, the GSP scheme is also a unilateral scheme with the EU granting preferential treatment to developing countries. This implies that the provisions can be withdrawn at any time by the preference-granting country (Bishop et al., 2013) and hence does not provide secured and guaranteed preferential treatment as would a PTA. Moreover, the GSP is a provision by the EU for all developing countries. Hence this does not provide any differential treatment for the ACP group from the other non-ACP developing countries. This therefore places the ACP developing countries in direct competition with the non-ACP developing countries.

While initially the ACP had maintained, and the EU had also indicated interest in conducting negotiations with the ACP as a group, the negotiation phase later divided the ACP countries into seven negotiating blocks. Table 1-2 shows the countries under each of these seven negotiating blocks. While the Caribbean and the Pacific countries remained within their geographical clusters, a few countries from the African continent joined negotiating blocks which are different from their otherwise common economic groupings. Congo-Democratic Republic falls under the Southern African Development Community (SADC) but negotiated the EPA as part of Central Africa. Likewise, Madagascar, Malawi, Mauritius, Zambia and Zimbabwe are also part of SADC but negotiated for the EPA under Eastern and Southern Africa (ESA).

The timeframe that these seven groups of countries accorded to the negotiating process of the EU-EPA's clearly varies from each other (see Table 1-2). The Caribbean countries (excluding Haiti) were the first regional group to sign a full EPA with the EU in 2008. Other African sub-regional groups and the Pacific group exhibited greater reluctance in agreeing to a full EPA, therefore signing interim agreements instead. Fiji and Papua New Guinea were the only two countries from the Pacific group and also the first two countries from the whole ACP group to agree to an interim EPA in 2007. This was followed by the Caribbean's full EPA signed in 2008. Then in 2009, from the Eastern & Southern Africa cohort, all four non-LDC's (Madagascar, Mauritius, Seychelles, Zimbabwe) signed an interim EPA while the LDC's did not. From Central Africa, none of the five LDC's chose the EPA but instead opted for the EBA provision. Of the three non-LDC's, only Cameroon signed an interim EPA in 2013, while Congo decided to utilise the GSP provision. Gabon remains as a non-signatory and as an upper-middle income country, it is not eligible for the GSP scheme either. Interestingly, the East African Community which comprises of four LDC's and only one non-LDC signed an interim EPA as a group in 2014. Similarly, the mix of LDC's and non-LDC's from the West African sub-region also signed the interim EPA in 2014. Finally, the last sub-region to reach an agreement was the SADC, which except for Angola signed their interim EPA in 2016.

Table 1-2: EU-ACP negotiation blocks, development status, EPA status and trade relations with the EU.

ACP subregional negotiating group & individual members	Economic development status	EPA Status	Main Items exported to the EU
Central Africa			
Cameroon	Non-LDC	Signed Interim EPA in 2013	Oil & related products, cocoa, wood, copper, bananas, diamonds
Central African Rep.	LDC	Non-signatory to EPA-under EBA	
Chad	LDC	Non-signatory to EPA-under EBA	
Congo	Non-LDC	Non-signatory to EPA-under GSP	
Congo-Democratic[1]	LDC	Non-signatory to EPA-under EBA	
Equatorial Guinea	LDC	Non-signatory to EPA-under EBA	
Gabon	Non-LDC	Non-signatory	
Sao Tome & Principe	LDC	Non-signatory to EPA-under EBA	
Eastern & Southern Africa (ESA)			
Comoros	LDC	Initialled only	sugar, coffee, fish, tobacco, copper and crude oil
Djibouti	LDC	Non-signatory to EPA-under EBA	
Eritrea	LDC	Non-signatory to EPA-under EBA	
Ethiopia	LDC	Non-signatory to EPA-under EBA	
Madagascar[2]	Non-LDC	Signed Interim EPA in 2009	

Malawi[2]	LDC	Non-signatory to EPA-under EBA	
Mauritius[2]	Non-LDC	Signed Interim EPA in 2009	
Seychelles	Non-LDC	Signed Interim EPA in 2009	
Sudan	LDC	Non-signatory to EPA-under EBA	
Zambia[2]	LDC	Initialled only	
Zimbabwe[2]	Non-LDC	Signed Interim EPA in 2009	
East African Community (EAC)			
Burundi	LDC	All members signed interim EPA in 2014 (as a group)	coffee, cut flowers, tea, tobacco, fish and vegetables
Kenya	Non-LDC		
Rwanda	LDC		
Tanzania	LDC		
Uganda	LDC		
Southern African Development Community (SADC)			
Angola	LDC	Non-signatory- under EBA All other members signed Interim EPA in 2016 (as a group, except Angola)	Diamonds, beef, fish, oil, aluminium, platinum, manufactured goods, wine
Botswana	Non-LDC		
Lesotho	LDC		
Mozambique	LDC		
Namibia	Non-LDC		
South Africa	Non-LDC		
Swaziland	Non-LDC		
West Africa (ECOWAS & WAEMU)			
Benin	LDC	Signed Interim EPA in 2014 (as a group)	Mineral fuels and food products
Burkina Faso	LDC		
Cape Verde	Non-LDC		
Gambia	LDC		
Ghana	Non-LDC		
Guinea	LDC		
Guinea Bissau	LDC		
Ivory Coast			
Liberia	LDC		
Mauritania	LDC		
Mali	LDC		
Niger	LDC		
Nigeria	Non-LDC		
Senegal	LDC		
Sierra Leone	LDC		
Togo	LDC		
Caribbean			
Antigua & Barbua	LDC	Signed full EPA in 2008 (as a group, except Haiti)	Fuel and mining products, notably petroleum gas and oils, bananas, sugar and rum, minerals,
Bahamas	Non-LDC		
Barbados	Non-LDC		
Belize	LDC		
Dominica	LDC		
Dominican Republic	LDC		
Grenada	LDC		
Guyana	Non-LDC		
Haiti	LDC		
Jamaica	Non-LDC		

St Lucia St Vincent & the Grenadines St Kitts & Nevis Suriname Trinidad & Tobago	LDC LDC LDC Non-LDC Non-LDC Non-LDC		notably gold, corundum, aluminium oxide and hydroxide, and iron ore products, fertilisers
Pacific			
Cook Islands Fiji Kiribati Marshall Islands Micronesia Nauru Niue Palau Papua New Guinea Samoa Solomon Islands Tonga Tuvalu Vanuatu	Non-LDC Non-LDC LDC Non-LDC Non-LDC Non-LDC Non-LDC Non-LDC Non-LDC LDC LDC Non-LDC LDC LDC	Non-Signatory-under GSP Signed Interim EPA in 2007 Non-Signatory-under EBA Non-Signatory-under GSP Non-Signatory-under GSP Non-Signatory-under GSP Non-Signatory-under GSP Non-Signatory-under GSP Signed Interim EPA in 2007 Non-Signatory-under EBA Non-Signatory–under EBA Non-Signatory-under GSP Non-Signatory-under EBA Non-Signatory-under EBA	Sugar, palm oil, coffee, coconut, and fish.

(Source: Compiled using the various fact sheets on the interim EPA and the EPA state of play updates (as at June 2017) from the European Commission website (http://ec.europa.eu)).[1]Congo-Democratic Republic falls under SADC but is negotiating the EPA as part of Central Africa. [2]Madagascar, Malawi, Mauritius, Zambia and Zimbabwe are part of SADC but are negotiating the EPA under ESA.

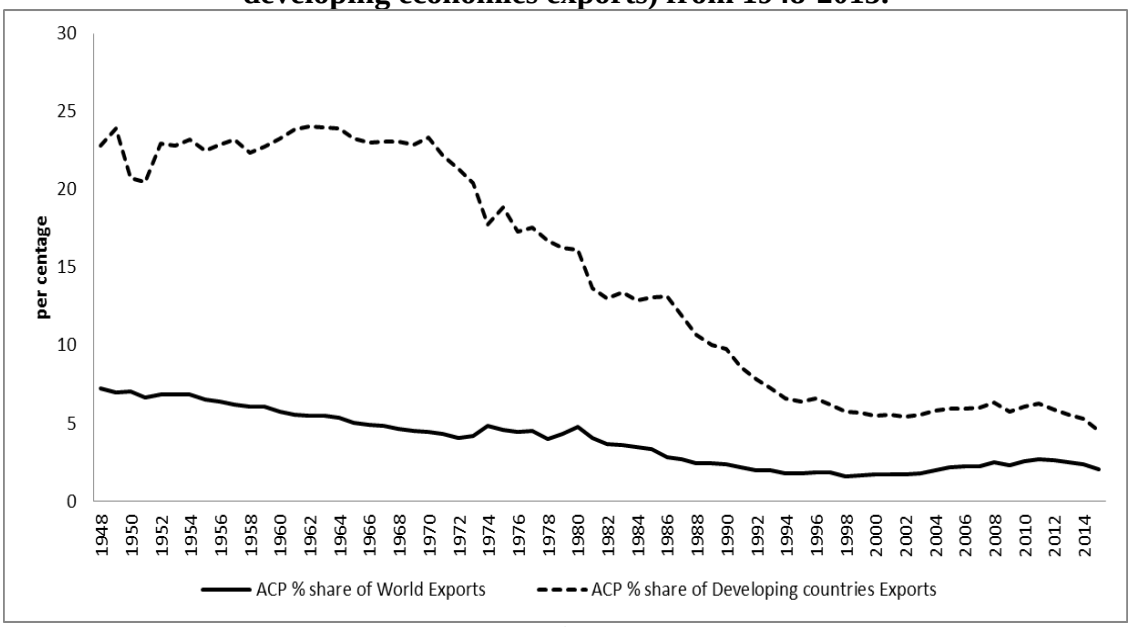
1.2.3: The EU-ACP trade relationship

As mentioned earlier, one of the underlying reasons for shifting away from the Lome provisions was the recognition by the EU that despite 25 years of existence, the Lome provisions had not materialised into improved trade performance of the ACP countries. This is evident in Figure 1-2, which shows the trend in the ACP's percentage share in world exports and in developing economies exports, from 1948 to 2015.

The ACP's percentage share of developing economies exports has declined continuously from 1974 onwards despite the birth of the Lome Provisions during this same period (1975 to 2000). When related in terms of world exports, Figure 1-2 indicates that the relative share of the ACP group in world exports is very low. A declining trend is evident over the years and the performance has remained subdued (below 7 percent), plunging to only 2.0 percent in 2015. Hence, Figure 1-2 does not reveal any significant breakthroughs in the export performance of the ACP group. This is despite the series of revised Lome

provisions that outlined integration of the ACP group into the world economy through increased trade as a major objective.

Figure 1-2: ACP's export performance (as a percentage share of world exports and developing economies exports) from 1948-2015.



(Source: Compiled using trade merchandise data from UNCTAD available at unctadstat.unctad.org)

Figure 1-3 shows the percentage growth in total exports and total imports for the ACP group from 1995-2015 which exhibits sharp fluctuations over the years, a reflection of the group's narrow export base and hence the vulnerability to fluctuations in global commodity prices. In particular, the ACP group's total exports to the world plunged sharply in 2009 and 2015 (by 27.6 percent and 28.0 percent, respectively). The drop in exports in 2009 largely reflected the impact of the global economic crisis on demand, commodity prices and trade finance (WTO, 2010). The decline in 2015 was driven by the oil-exporting African countries[5] following a 60 percent decline in global oil prices (due to increased global oil supply) along with domestic and political turmoil in some African countries (WTO, 2016). The peak of a 36.9 percent growth in the group's exports (in 2010) reflected the recovery in world demand and escalations in the prices of fuels and mining products (WTO, 2011).

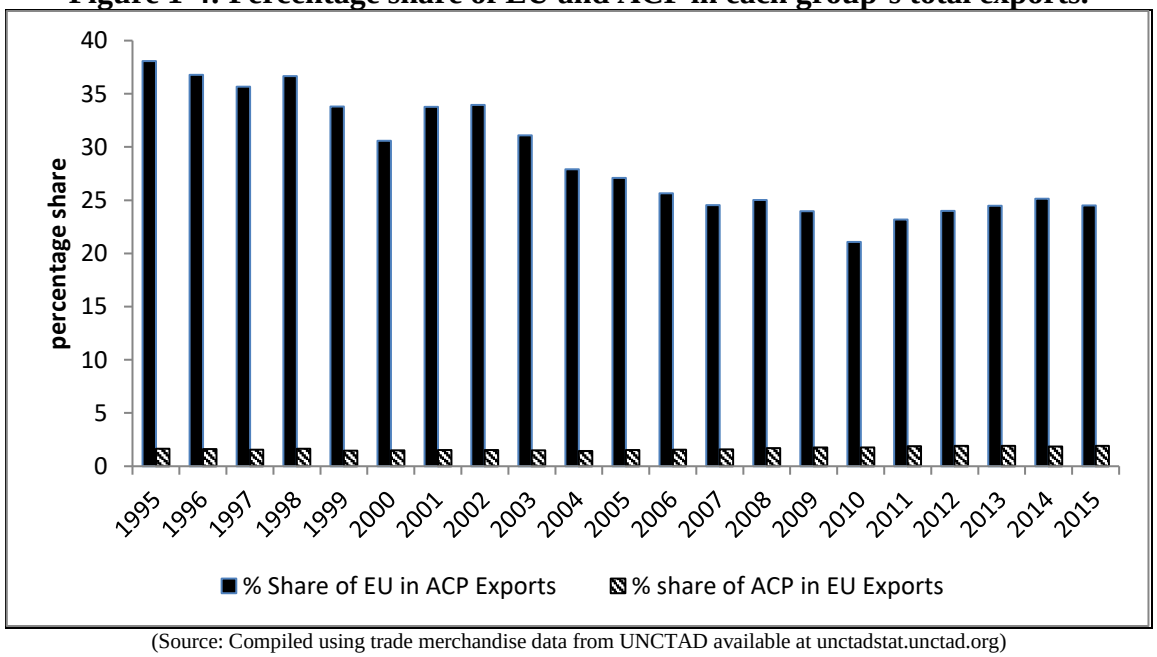
[5] Algeria, Angola, Chad, Equatorial Guinea, Gabon, Libya, Nigeria, Sudan (WTO, 2016).

Figure 1-3: Percentage growth in ACP world exports & imports (1995-2015).

(Source: Compiled using merchandise trade data from UNCTAD available at unctadstat.unctad.org)

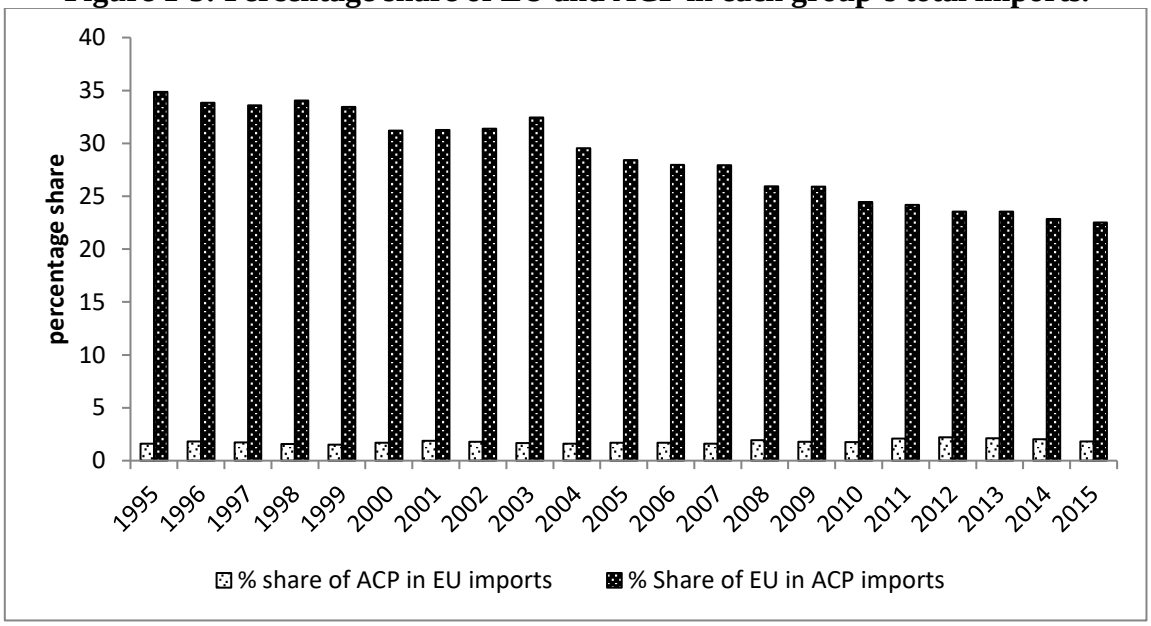
Next, we analyse the relative economic (trade) importance of the EU from the perspective of the ACP group, and vice versa. Figure 1-4 and Figure 1-5, which shows the percentage share of each group in the other group's total exports and imports clearly highlights the large difference in the degree of interdependency in trade between the EU and the ACP.

Figure 1-4: Percentage share of EU and ACP in each group's total exports.



(Source: Compiled using trade merchandise data from UNCTAD available at unctadstat.unctad.org)

Figure 1-5: Percentage share of EU and ACP in each group's total imports.



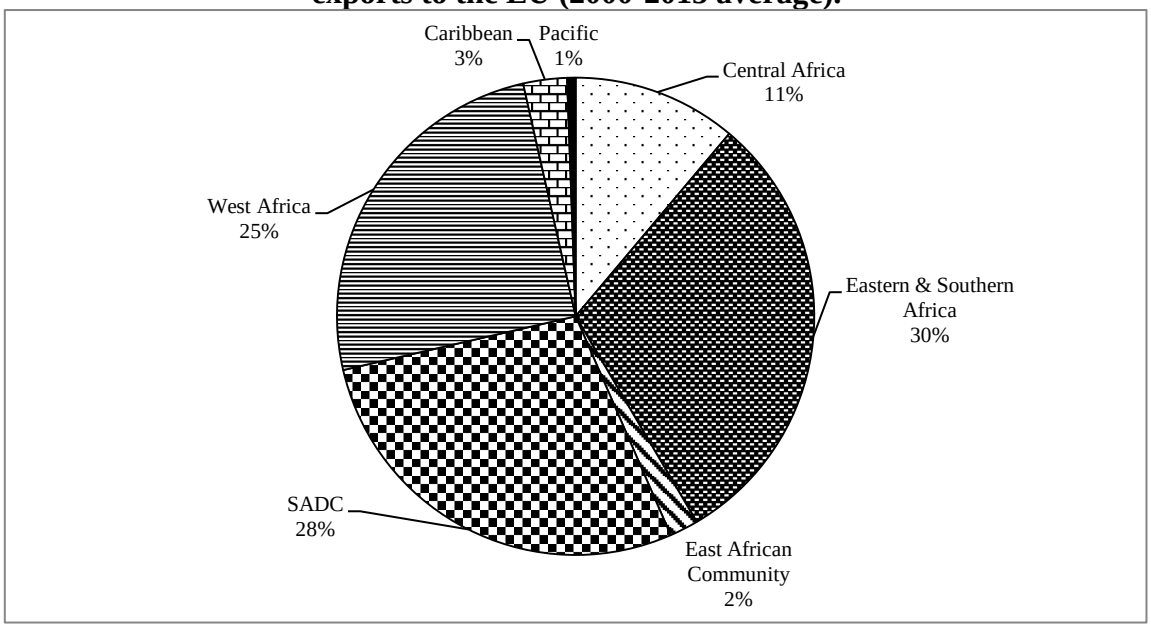
(Source: Compiled using trade merchandise data from UNCTAD available at unctadstat.unctad.org)

As revealed in Figure 1-4, the EU is a sizeable market for goods originating from the ACP. From 1995 to 2015, the share of the EU in total ACP exports averaged around 29 percent. However, from the EU's perspective, the ACP's trade importance is relatively insignificant. The average percentage share over the review period of the ACP in total EU exports was only 1.7 percent. Likewise, the ACP is not a significant source of imports for the EU (see Figure 1-5). The percentage share of ACP in total EU imports averaged around 1.6 percent from 1995-2015. However, during the same period, the ACP group imported an average of around 28 percent of its goods from the EU. Hence, while the ACP depends on the EU for both its exports and imports, from the EU's perspective, the ACP is insignificant in their trade share. This imbalance in the degree of trade dependence between these two groups indicates that as far as the EU-EPA negotiations are concerned, the stakes are far higher for the ACP than the EU (Fontagne et al., 2010). The EU is a significant trade partner of the ACP while from the EU's perspective, the ACP is not a significant trade partner.

When viewed at individual ACP member country or at sub-regional group level, the importance of the EU market as a source of imports and/or a market for exports varies. As an example, the inherent heterogeneity in the relative importance of the EU in exports for each sub-regional ACP group is illustrated in Figure 1-6. This figure shows the percentage share of each sub-regional ACP group in total ACP exports to the EU, averaged from 2000 to 2015. The three sub-regional groups that have percentage shares greater than 20 percent

are Eastern & Southern Africa, South African Developing Community and West Africa. For all these three groups[6], the top export items to the EU are petroleum oils, crude vegetable materials, natural gas, fruits and nuts, tobacco, coffee, fish, textiles, and sugar.

Figure 1-6: Percentage share of each sub-regional ACP group in the total ACP exports to the EU (2000-2015 average).



(Source: Compiled using trade merchandise data from UNCTAD stat available at unctadstat.unctad.org)

The Caribbean, Central Africa, East African Community and the Pacific have relatively smaller percentage shares in the total exports of the ACP to the EU. However, at an individual country level, certain countries from these groups depend largely on the exports of selected products to the EU market. For example, countries such as Fiji, Mauritius and Guyana have over the years benefitted from special preferences under the Sugar Protocol and thus depend heavily on the EU market for their sugar exports (Gilson, Hewitt, & Page, 2005).

1.2.4: The EU Sugar Protocol

The sugar industry is a significant contributor to economic growth in many ACP countries (European Commission [EC], 2016). Since the inception of the Lome provision in 1975, the EU has provided duty free, guaranteed market access (see Table 1-3 for sugar quotas

[6] Table 2.0 in the Appendix shows the export items above US$200m in value exported to the EU from Eastern & Southern Africa, SADC and West Africa.

provided) to 18[7] ACP sugar producers at prices that are almost three times the world market price (see Figure 1-7). These privileges are enshrined in the Sugar Protocol[8] that emerged in the initial Lome Convention (1975) and continued through into consecutive revisions (Serrano, 2007). Mauritius has the largest share in the ACP allocated quotas (37.9 percent), followed by Fiji and Guyana with 12.8 percent and 12.3 percent respectively.

Table 1-3: EU sugar quotas allocated to ACP countries in the Sugar Protocol.

ACP country	Quota (tonnes, white sugar)	% share of total ACP quota
Mauritius	491,031	37.93
Fiji	165,348	12.77
Guyana	159,410	12.31
Jamaica	118,696	9.17
Swaziland	117,845	9.10
Barbados	50,312	3.89
Trinidad & Tobago	43,751	3.38
Belize	40,349	3.12
Zimbabwe	30,225	2.33
Malawi	20,824	1.61
St. Kitts & Nevis	15,591	1.20
Madagascar	10,760	0.83
Congo	10,186	0.79
Côte d'Ivoire	10,186	0.79
Tanzania	10,186	0.79
Total	**1,294,700**	**100**

(Source: European Commission, 2004)

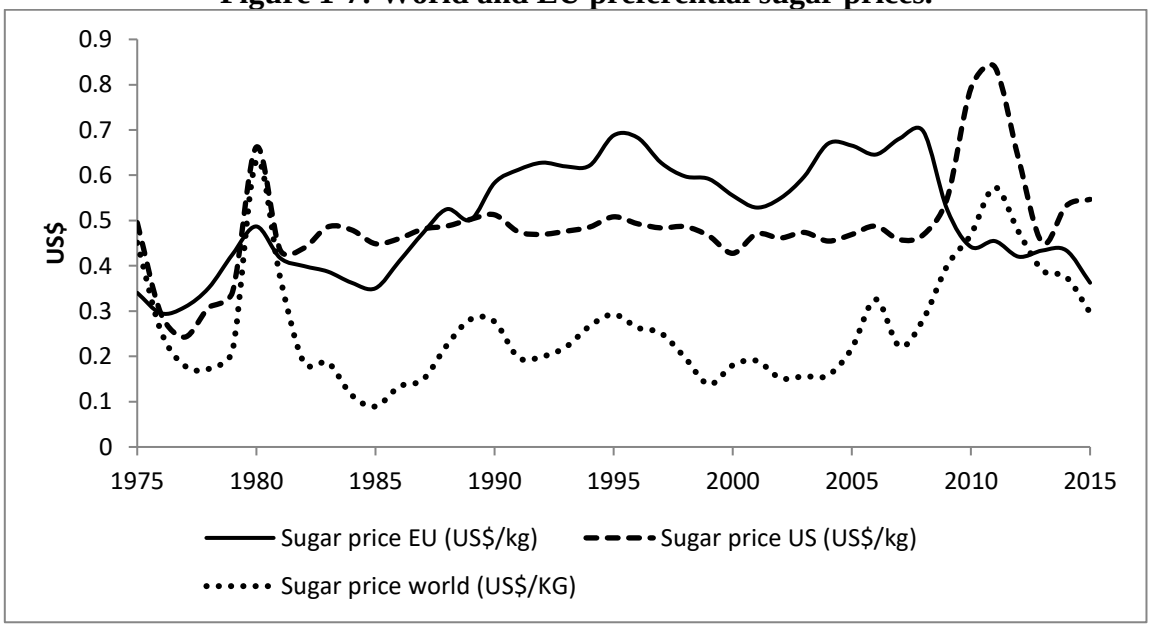
Moreover, in addition to being significantly higher than the world market sugar prices (see Figure 1-7), the EU sugar prices have also been comparatively less volatile, which makes the ACP's privilege and protection from these price fluctuations through the EU's guaranteed price more apparent. For instance, in the period 1980 to 1989, 1990 to 1999 and from 2000 to 2005 (prior to the EU sugar reforms and the consequent EU sugar price cuts) the average per annum change in the EU sugar price was only 2.2 percent. In contrast, the world market sugar price fluctuated by 18.3, -5.4 and 9.6 percent during these same

[7] The Sugar Protocol countries include Barbados, Belize, Guyana, Jamaica, Trinidad & Tobago, St Kitts & Nevis, Fiji, Republic of Congo, Ivory Coast, Kenya, Madagascar, Malawi, Mauritius, Mozambique, Swaziland, Tanzania, Zambia, and Zimbabwe (EC, 2004).
[8] The Sugar Protocol (SP) is an agreement between 19 ACP countries and the EU (formed under the Lome Convention-1975). These 19 ACP countries are allocated guaranteed-price quotas and in addition, most ACP countries benefitted from the annually allocated Special Preferential Sugar (SPS), under which raw sugar is imported at 85 percent of the SP price (EC, 2004).

periods, respectively. However, due to the series of EU sugar price cuts from late 2000, the gap between the world market and the EU sugar prices is now evidently narrower.

Evidently, as revealed in Figure 1-7, the EU has over the past years provided lucrative returns to the ACP for their sugar. This has allowed some high cost ACP sugar producers (see Table 1-4) to stay in business despite their lack of competitiveness and enabled them to invest this extra revenue from the sugar sector to meet their other budget obligations (Trade for Development, 2007).

Figure 1-7: World and EU preferential sugar prices.



(Source: Compiled using the World Banks commodity database available at http://www.worldbank.org/commodities)

As summarised in Gilson et al. (2005), the estimates of income transfer under the sugar protocol is substantial for some sugar exporting ACP countries (see Table 3.0 in the Appendix) with total income transfers approximated (using the average 2000-2002 prices) at US$584.2M. The resulting extra export revenue gained by these ACP sugar exporters due to the Sugar Protocol ranges from 0 percent to 11 percent of exports and of GDP as well (Gilson et al., 2005).

In 2003, in response to the sugar complaint against the EU lodged by Brazil, Australia and Thailand, the EU embarked on its sugar reform program that led to an end of the Sugar Protocol in 2009 (Richardson, 2009; Mcqueen, 1998). A new set of WTO compatible trade negotiations were triggered under the EU-EPA's which involved redesigning of the EU-

ACP trade relations including the sugar provisions. The export prices received by the ACP on their sugar exports to the EU was reduced by a cumulative 36 percent, phased over four years from 2006 to 2009 (EC, 2016). The EU-ACP sugar relations are currently under negotiation with transitory arrangements in place (Serrano, 2007). The revised arrangements will be captured under the provisions of the EU-EPA's, with the affected countries adopting different strategies in response to these sugar reforms (Agritrade, 2010). The EU has recognised the detrimental effects of its sugar industry reform on the ACP sugar dependent countries. Fiji is listed as one of the most affected countries with effects ranging from income losses, unemployment, and socio-economic problems (Serrano, 2007). In order to assist the affected ACP countries, the EU has allocated development funds under the Accompanying Measures for Sugar Protocol (AMSP) countries (EC, 2016). Hence, while the EU sugar reform is anticipated to affect the sugar exporting ACP countries, the impacts will differ across each country. Countries that depend heavily on the EU market and are high-cost sugar producers would face greater challenges. As summarised in Table 1-4, Barbados, Guyana, Jamaica, Fiji and Mauritius are high cost sugar producers with significant export dependence on the EU market. Malawi, Dominican Republic, Zambia and Zimbabwe while being cost competitive have access to alternative markets for their sugar output and depend less on the EU. These alternative markets include neighbouring countries, the US and the domestic market.

Table 1-4: ACP countries cost of sugar production and export dependence on the EU.

Cost of production		**Dependence on the EU market***	
High cost	**Cost competitive**	**High**	**Low**
Barbados, Guyana, Jamaica, Fiji, Mauritius	Malawi, Zambia, Dominican Republic, Zimbabwe, Mozambique, Swaziland, Belize	Barbados, Swaziland, Guyana, Belize, Fiji, Mauritius, Mozambique, Jamaica	Malawi, Dominican Republic, Zambia, Zimbabwe

(Source: Compiled from European Commission (2016)). *Countries that export more than 40 percent of their sugar output (2011-2014 average) to the EU are categorised as highly dependent.

1.2.5: An overview of the Fijian Economy

1.2.5.1: Introduction

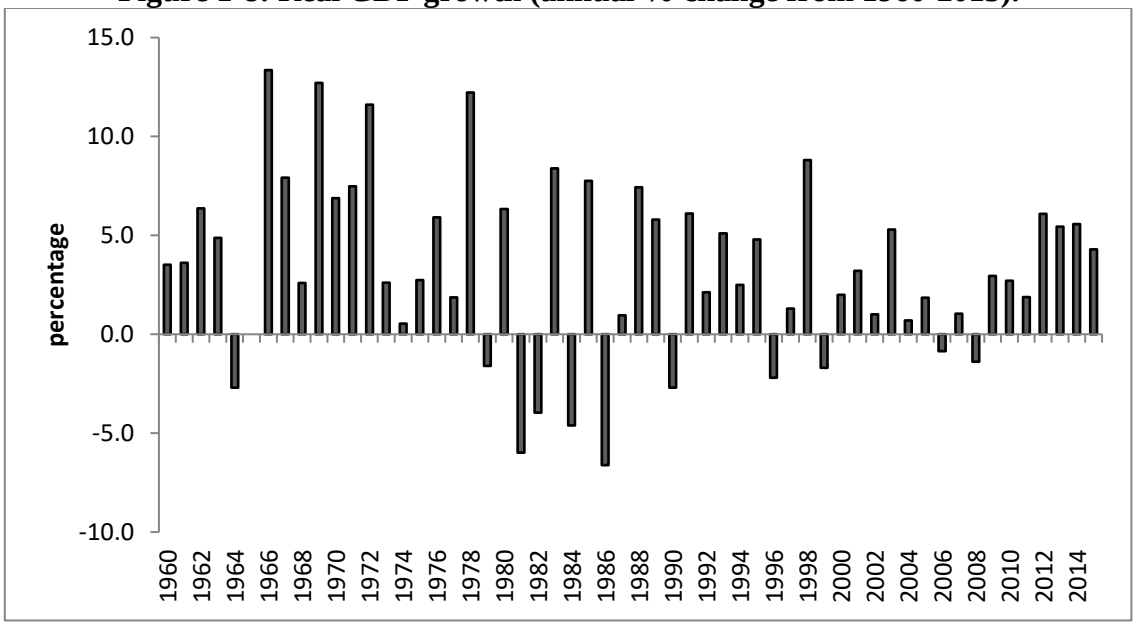
According to the World Bank's classification, Fiji is categorised as an upper middle-income country and is relatively the most developed of the Pacific island economies. With approximately 322 islands within its Exclusive Economic Zone (Fiji Sugar Corporation [FSC], 2002), Fiji is the focal point of economic activity in the South Pacific region. After being under British rule for 96 years, Fiji gained independence in 1970 (Secretariat of the Pacific Community [SPC], 2008). Fiji's economy is highly dependent on tourism, remittances and sugar for its foreign exchange earnings, with garments, fish, and gold also contributing significantly (Asian Development Bank [ADB], 2012). The economy has faced several domestic and global challenges over the years, which have stalled economic growth.

1.2.5.2: Fiji's economic growth and other key economic indicators

Economic growth over the past decades (see Figure 1-8) has been low, unstable and far below its potential (ADB, 2012). In the pre-independence period (1960-1969), average economic growth was 5.2 percent and dropped slightly to an average of 5.0 percent (1970-1979) following independence in 1970. However, after this period, real economic growth has only averaged approximately 2 percent (1.6 percent in 1980-1989, 2.4 percent in 1990-1999 and 1.6 percent in 2000-2009). On a positive note, economic growth over the past recent years (2009 to 2015) has remained positive (see Figure 1-8 and Table 1-6).

Several external and internal disturbances explain this turbulent growth path of the Fijian economy. These include a number of natural disasters, lack of economic and structural reforms, corruption, political turmoils and the erosion of preferential market access (ADB, 2012; Narayan & Prasad, 2007; and others). Prior to the 1987 political turmoils, Fiji embarked on import substitution policies with high barriers on imports to protect and grow its domestic industries while a shift towards a more open economy occurred in the late 1980s (ADB, 2012; Benson, 1997). While enriched with forestry, fisheries and mineral resources (SPC, 2008), the economy is heavily reliant on the sugar and tourism industries, which increases its vulnerability to both political turmoil and natural disasters.

Figure 1-8: Real GDP growth (annual % change from 1960-2015).



(Compiled using data from the International Monetary Fund (IMF) World Economic Outlook database available at www.imf.org)

Political havoc has been a constraint on Fiji's development efforts. Fiji's history has marked several coups over the years, which led to major economic impacts and international community backlash. These coups, with the first in 1987, resulted from efforts to overthrow the democratically elected governments in Fiji (Narayan & Prasad, 2007). In particular, the major political turmoils of 1987 caused a sharp decline in Fiji's economic growth in the same period (see Figure 1-8: a decline of 7.2 percent). Colonel Sitiveni Rabuka who later became the Prime Minister in 1992 and President in 1994 staged the two coups in 1987 (Narayan & Prasad, 2007). The economy recovered strongly in 1989, recording a 13.9 percent growth, underpinned by broad based recovery across all sectors (Reserve Bank of Fiji [RBF], 1990). Later, in the year 2000, businessman George Speight led Fiji's third coup, while the fourth coup followed in December 2006, after Fiji's military commander Commodore Frank Bainimarama took control over the country (Singh & Prasad, 2008). As shown in Figure 1-8, the third and the fourth coups however resulted in comparatively smaller declines in economic growth, compared to the 1987 coups. After seven years of military rule, Fiji held its elections in September 2014, with Commodore Frank Bainimarama democratically elected as Fiji's Prime Minister.

Apart from creating setbacks in economic progress, each of these political turmoils also tarnished the country's image in the international community. Suspension from international organisations, cutbacks in foreign aid and trade sanctions amplified the effects

of these political crises. Alongside these man-made disasters, natural disasters (particularly cyclones, droughts and flooding) also explain the stagnant economic progress over the years. Table 1-5 provides a summary of the natural disasters in Fiji since 1985 that caused estimated damages greater than US$10M. These disasters have caused extensive damage to infrastructure, crops and livelihoods (Benson, 1997). The most severe of these natural disasters was Cyclone Winston – a category 5 system that affected almost 80 percent of the population in 2016. The agriculture, manufacturing, mining, construction and services industries were largely affected by Cyclone Winston and contributed to slower growth in 2017 (RBF, 2016).

Table 1-5: Natural disasters in Fiji with estimated damages greater than US$10M.

Year	Disaster	Affected population	No of deaths	Estimated damage (US$M)
1985	TC Erick & Nigel	30000	30	39.7
1985	TC Gavin	2000	7	27.0
1986	TC Rajah	4000	1	14.0
1990	TC Rae	n/a	0	26.2
1990	TC Sina	n/a	n/a	10.1
1990	TC Mick	6000	0	18.5
1993	TC Kina	160000	49	100.0
1995	TC Gavin	2000	25	18.3
1997	Drought	n/a	n/a	60.0
2003	TC Ami	30000	15	22.1
2004	Flash Flood	n/a	10	11.6
2008	TC Gene	6000	8	20.5
2009	Flash Flood	n/a	11	113.0
2009	TC Mick	3845	3	31.0
2012	Flood	458	0	113.0
2013	TC Evan	70000	0	64.3
2016	TC Winston	540000	44	674.0

(Source: Compiled using reports from the Fiji National Disaster Management Office, 2016; Asian Development Bank, 2016). Note: TC is Tropical Cyclone.

Fiji's economy is largely agrarian, with subsistence agriculture still an important lifeline. Agriculture, fisheries and forestry are significant sectors in terms of contributions to GDP[9], employment and export earnings. Low export earnings (see Figure 1-9) have always been a concern for Fiji and with a narrow export base, Fiji's heavy dependence on a few commodities makes it more vulnerable. The main crops grown in the country include

[9] Table 4.0 in the Appendix shows the contribution to Fiji's GDP by sector (2011 to 2015).

sugarcane, copra, ginger, tropical fruits and vegetables, while livestock products include beef, pork and chicken (Sharma, 2006). Efforts to boost the manufacturing sector remain central, with the entry of Natural Waters of Fiji Limited in 1996 an important stimulus for growth. As regards services, the lucrative tourism industry continues as a major source of domestic growth and foreign exchange earner.

Fiji's GDP per capita (which is comparatively higher than its other Pacific island neighbours), shows an increasing trend from 2010 (see Table 1-6). In 2015, the GDP per capita increased by approximately 5 percent from the previous year, to reach 9052.0 international dollars. The country's population is below one million, with an average population growth of 0.7 percent over the past five years (2010-2015). Further, while the inflation rate increased in 2015 to 1.4 percent, after a significant decline in 2014, it remained below the levels experienced prior to 2014. Weak global oil prices, low trading partner inflation and the absence of major domestic supply side shocks backed the low inflation in 2014 and 2015 (RBF, 2016). However, the persistence of the unemployment rate at approximately 9.0 percent since 2010 indicates the struggles of the Fijian government in providing job opportunities.

Table 1-6: Key economic indicators for Fiji (2010-2015).

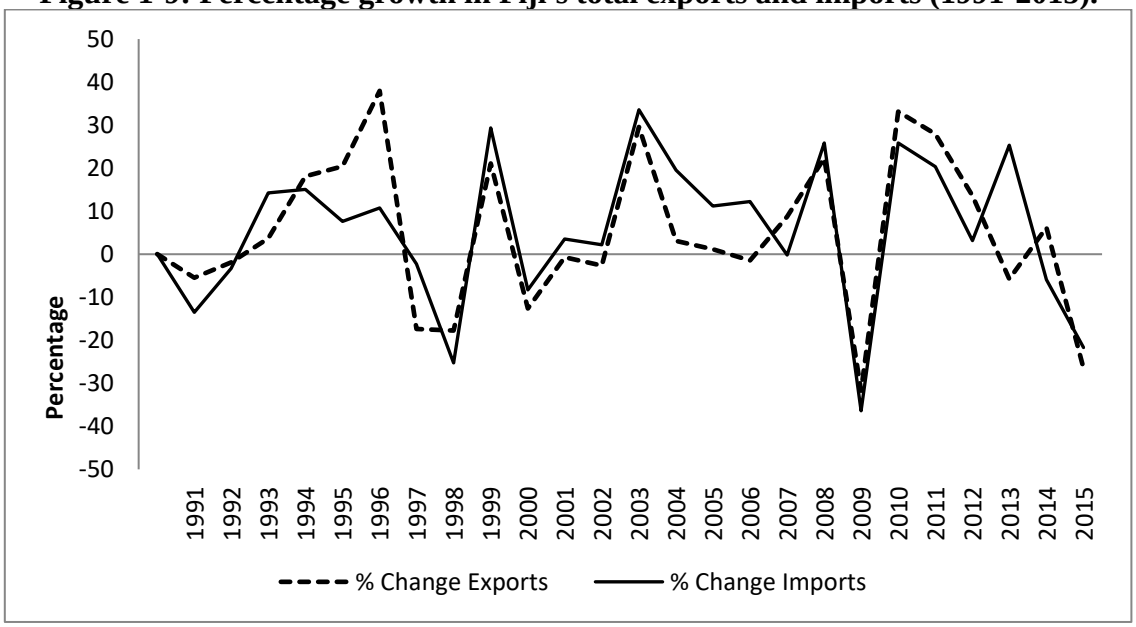
	2010	**2011**	**2012**	**2013**	**2014**	**2015**
Real GDP growth (annual %)	2.7	1.9	6.1	5.4	5.6	4.3
GDP per capita, PPP (constant 2011 international $)	7203.7	7486.8	7671.9	8106.2	8629.4	9052.0
Inflation, consumer prices (annual %)	3.7	7.3	3.4	2.9	0.5	1.4
Merchandise exports (current US$M)	841.4	1069.5	1220.6	1108.0	1373.3	1200.0
Merchandise imports (current US$M)	1808.5	2181.9	2252.6	2825.7	3250.5	2940.0
Population, total	859952	867327	874158	880487	886450	892145
Unemployment, total (% of total labor force) (national estimate)	8.9	9.0	8.6	8.7	8.8	8.8

(Source: Compiled using data from World Development Indicators available at http://data.worldbank.org & IMF World Economic Outlook database available at www.imf.org)

1.2.5.3: International trade

On the international front, Fiji joined the WTO in 1996. In addition to this, Fiji also joined several trade agreements in pursuit of its regional/global integration efforts. These include [10] the Melanesian Spearhead Group (MSG), Pacific Island Countries Trade Agreement (PICTA), Pacific Agreement on Closer Economic Relations (PACER)[11], South Pacific Regional Trade and Economic Cooperation Agreement (SPARTECA) and the interim EU-EPA. The EU-EPA is therefore Fiji's first reciprocal and comprehensive agreement with a developed country, reflecting a marked shift in their international trade policy.

Figure 1-9: Percentage growth in Fiji's total exports and imports (1991-2015).



(Source: Compiled using data from the IMF International Financial Statistics database available at www.imf.org).

Figure 1-9 illustrates Fiji's performance in total exports and imports from 1991 to 2015. As for any other small island developing state, exports are a crucial source of foreign exchange for Fiji. However, Fiji faces its own set of challenges in terms of generating export earnings - some of which includes a narrow export base, high costs of production, distant markets, instability in world commodity prices, lower productivity in the agricultural sector and natural disasters (Narayan & Narayan, 2004). Moreover, over the past years, Fiji relied

[10] Refer to Table 5.0 in the Appendix for details of these agreements.

[11] Fiji remains as a non-signatory to the PACER plus, due to disagreements on selected provisions. Papaua New Guinea and Tonga have also withdrawn, which has derailed negotiations on this agreement, which commenced in 2009. These 3 Pacific Island countries are significant economies in the region and some of their concerns include the impact on their local manufacturers, issue of labor mobility, and other effects due to the reciprocity of this agreements.

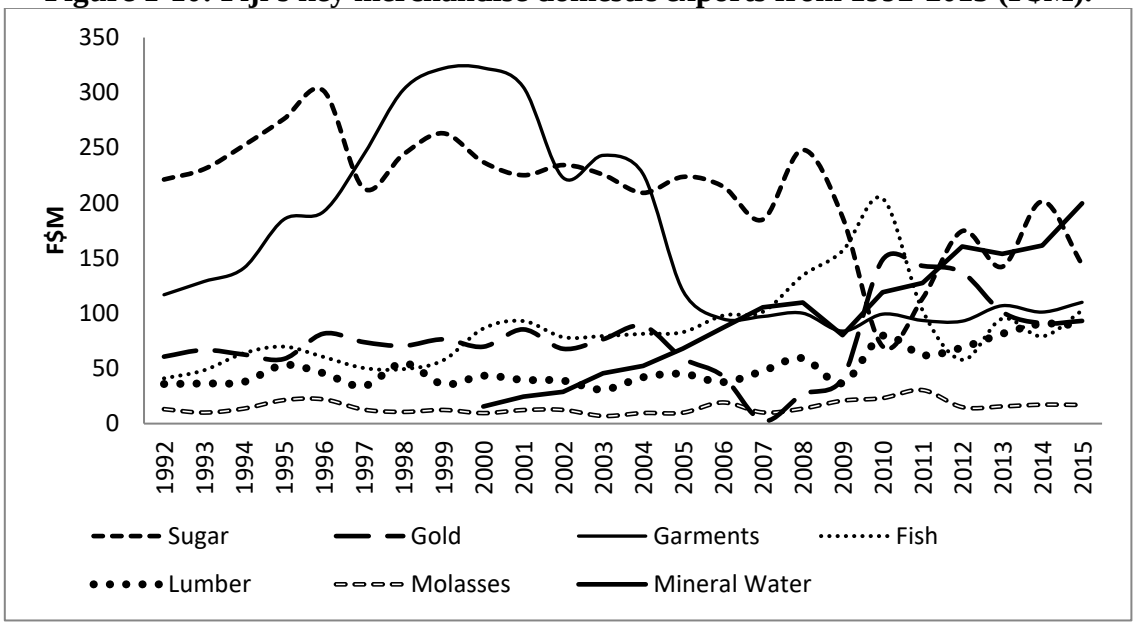
heavily on Australia, New Zealand, US and the EU for preferential access for their exports and the subsequent erosion of these arrangements has produced a dwindling effect on the economy (Narayan & Prasad, 2003).

As shown in Figure 1-9, Fiji's exports performance improved over the period 1991 to 1996, before a 17 percent decline in 1997. After remaining subdued in 1998 as well, exports rebounded strongly (21.1 percent growth) in 1999. In the 2000's, similar fluctuations were experienced. Positive export performances were experienced in 2003, 2008, 2010-2012 and 2014 while the years 2000, 2009, 2013 and 2015 showed declines.

In terms of Fiji's key commodity exports, Figure 1-10 indicates that the movements in sugar, gold, fish and garment earnings largely explain Fiji's exports performance. The sugar industry[12] is one of the main pillars of Fiji's economy in terms of exports, employment and economic growth. It however faces several challenges such as the expiry of land leases, mill inefficiency, low farm productivity and the erosion of preferential market access into the EU (ADB, 2012; Narayan & Prasad, 2003). Around 80 percent of Fiji's sugar is exported to the EU market and an end to the EU's preferential treatment to sugar imports from the ACP countries post 2017 will drastically reduce Fiji's exports earnings (Rakotoarisoa & Chang, 2017; and others). Furthermore, Fiji's garment sector had a short lucrative phase. The establishment of tax free zones in 1987 - the main feature of which was that companies exporting more than 70 percent of their annual production were provided a tax holiday for 13 years – attracted foreign investment in the garment sector (Narayan & Prasad, 2003). Apart from this domestic economic policy, preferential arrangements such as the SPARTECA contributed to a flourishing garment sector (Narayan & Prasad, 2003). As depicted in Figure 1-10, garment exports earnings even surpassed sugar in the late 1990s and the early 2000 period. However, returns from this sector began to decline following the end of the tax exemptions and the preferential trading arrangements. On a positive note, mineral water has emerged as a promising exports earner for Fiji with the US as its main market. After a small decline in 2009, export earnings from mineral water increased steadily to become the top commodity exports in 2015. The fisheries sector is also growing with export earnings surpassing the traditional export earners (sugar and garments) in 2010.

[12] The sugar industry and the interdependency with the EU is discussed in more detail in section 1.2.5.4.

Figure 1-10: Fiji's key merchandise domestic exports from 1992-2015 (F$M).



(Source: Reserve Bank of Fiji Quarterly Review (2016); Ministry of Finance & National Planning Fiji Budget Supplements (various issues)).

Next, Table 1-7 shows Fiji's main export partners, for each of the five years since 2000. Evidently, due to geographical location, Australia dominated other trading partners, with the percentage of market share above 20 percent for most of the years. Surprisingly, New Zealand is relatively less important as an export partner despite the close geographical location. The EU and the US had almost similar levels of market share in 2000 and 2005, however the EU's share declined substantially in 2010 and 2015, reflecting the decline in sugar export earnings following the EU sugar reforms.

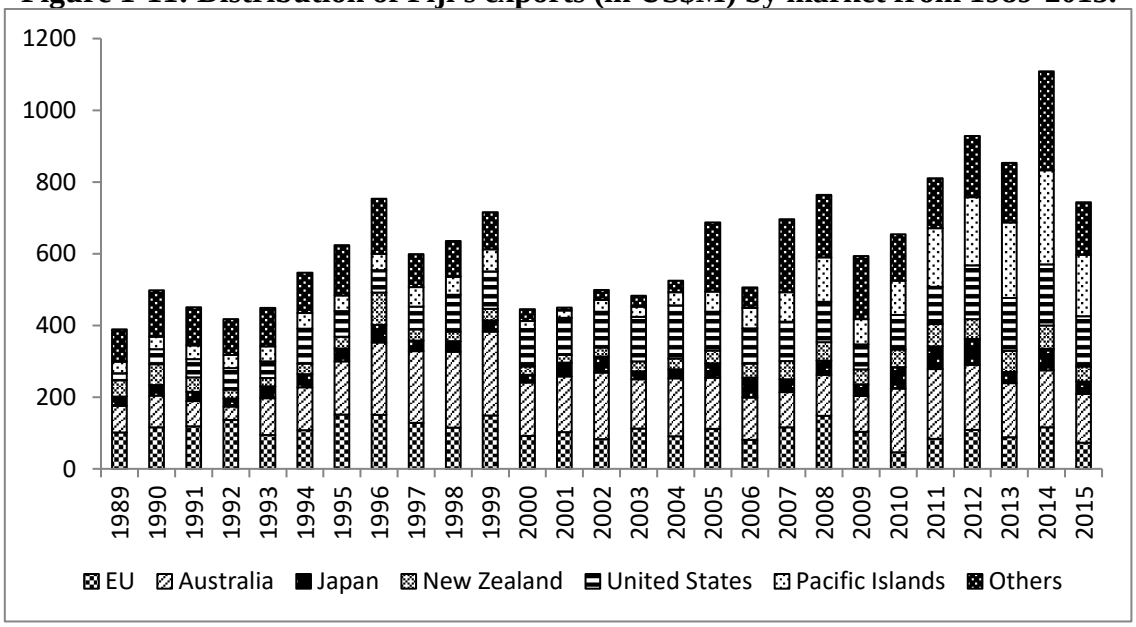
Table 1-7: Value and percentage share of key trading partners in Fiji's exports.

	2000		2005		2010		2015	
	% share	Value in US$M	% share	Value in US$M	% share	Value in US$M	% share	Value in US$M
EU	20.7	92.1	16.2	111.3	7.1	46.3	9.8	73.1
Australia	33.4	148.8	20.8	143.2	27.1	177.1	18.2	135.5
New Zealand	5.2	23.1	5.2	35.7	7.5	49.0	5.6	41.7
United States	23.6	104.8	15.7	108.0	14.7	96.1	18.9	140.3
Japan	4.8	21.2	5.8	40.0	9.2	60.3	4.7	34.7

(Source: Compiled using IMF Direction of Trade database available at www.img.org)

Figure 1-11 illustrates the value of Fiji's exports by market. The impact of the EU sugar reform and its consequences on export earnings from the EU is evident through the significant fall in the EU as an export destination. Fiji's exports to the EU market ranges from a high of US$152M (in 1995) to a low of US$46M (in 2010). In the period 1990-1999, the EU's average market share of Fijian exports was 22.8 percent. This declined slightly to an average share of 18.6 percent in the 2000-2009 period, however, in the last six years (2010-2015), the average market share has fallen sharply to only 10 percent. Australia remains as an important export destination, with a widening of market share evident in the 1993-1999 period. Moreover, Japan and New Zealand comprise a relatively smaller share of Fiji's exports, while the value of exports to the US has fluctuated between US$70M – US$150M post 2000.

Figure 1-11: Distribution of Fiji's exports (in US$M) by market from 1989-2015.

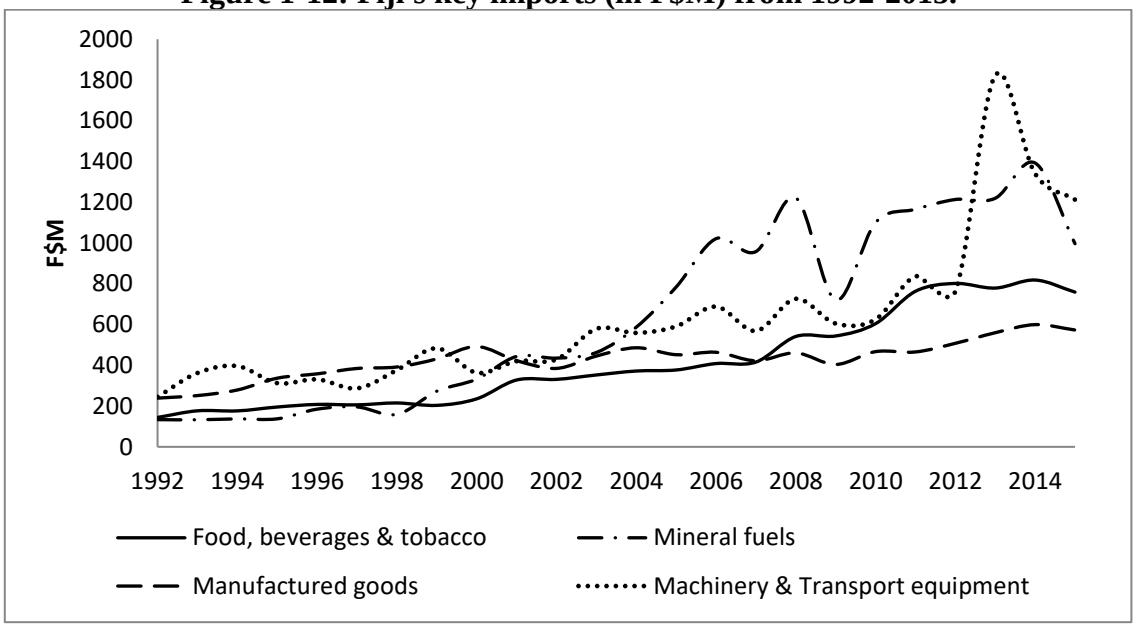


(Source: Compiled using IMF Direction of Trade database available at www.imf.org)

With a narrow production base, Fiji is heavily dependent on imports. Figure 1-12 shows the sharp fluctuations in Fiji's imports, with the trend mainly determined by imports of mineral fuels, machinery and transport equipment, manufactured goods and food, beverages & tobacco. Most of Fiji's imports are sourced from Australia, the US, New Zealand, Japan, Singapore (mainly mineral fuels) and the UK (Rogers, 2003). In a study on the determinants of Fiji's imports, Rogers (2003) revealed that imports are positively

affected by the level of GDP and the real effective exchange rate while tariffs discouraged imports. Figure 1-12 shows that Fiji's key imports have increased from 1992 to 2015. While mineral fuels and machinery & transport equipment dominated imports for most of the years, an increasing trend is also noted for food, beverages & tobacco and manufactured goods.

Figure 1-12: Fiji's key imports (in F$M) from 1992-2015.



(Source: Compiled using data from Reserve Bank of Fiji Quarterly Review, December 2016)

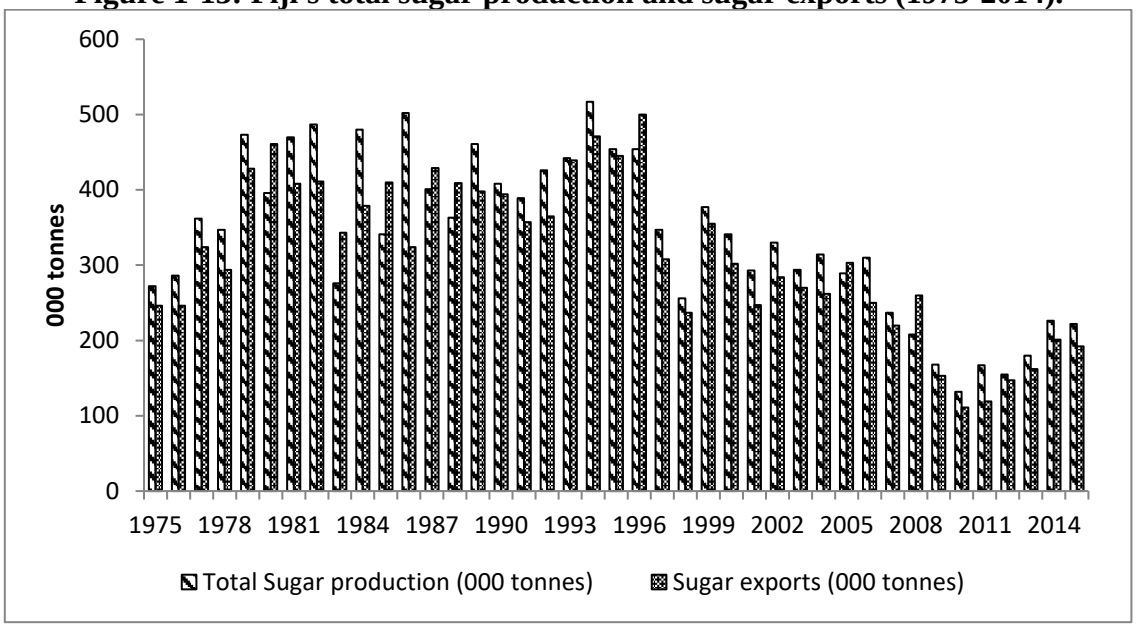
1.2.5.4: Fiji's sugar industry and EU trade dependency

Fiji has a long colonial history with the EU and over the years has enjoyed non-reciprocal preferential treatment under the Cotonou Agreement (successor to the Lome Convention signed in 1975). One of the significant privileges enjoyed by Fiji under this arrangement with the EU is the guaranteed, duty-free market access for its sugar exports. Being a high cost sugar producer (EC, 2016), the Sugar Protocol enabled Fiji to export sugar to the EU without having to compete with other more efficient global suppliers such as Brazil, Thailand and Australia (see Table 1-3 for the quota allocated to Fiji). Moreover, the EU paid prices that were almost three times more than the world market sugar price (see Figure 1-7).

The sugar industry contributes significantly to Fiji's economy. The industry has four cane crushing mills and about 22,000 individuals farming an average 3-4 hectares supply raw

sugar cane to these mills (FSC, 2002). Sugar production in Fiji has however declined over the years. After a peak production in 1994 (See Figure 1-13), sugar production fell to below the 1975 production levels since 2007. Some of the factors that explain this declining trend include land tenure issues, political instability, mill inefficiency and natural disasters (Serrano, 2007).

Figure 1-13: Fiji's total sugar production and sugar exports (1975-2014).



(Source: Compiled using data from Reserve Bank of Fiji Quarterly Review, December 2016)

While sugar was initially Fiji's main export, the foreign exchange earnings from this sector are slowly declining due to both constraints in the domestic economy and the EU sugar reform. The average percentage share of sugar exports in total domestic exports (see Table 1-8) has fallen from around 38 percent in the 1992-1996 period to only 16 percent in the 2012-2015 period, almost equivalent to the percentage share of a more recent export commodity - mineral water.

Nevertheless, despite these declining earnings from sugar, it still remains an important industry in Fiji, amidst the narrow production base and relatively slow diversification of its exports. As shown in Table 1-8, the garment sector has endured a similar fate as the sugar sector, whereby an erosion of preferential arrangements has reduced export earnings drastically. From an average percentage share of 33 percent in the 1997-2001 period,

garment export earnings only represented 9.5 percent of export earnings in the 2012-2015 period. Gold and fish exports do not exhibit any significant developments either.

Table 1-8: Average percentage share of key exports in Fiji's total domestic exports.

Period	Sugar	Garments	Gold	Fish	Mineral water
1992-1996	37.81	22.25	9.82	8.30	
1997-2001	25.89	32.55	8.24	7.24	2.01
2002-2006	24.91	20.05	7.44	9.47	6.40
2007-2011	16.65	9.95	7.11	14.53	11.31
2012-2015	16.07	9.54	9.85	7.75	15.64

(Source: Calculated using data from Reserve Bank of Fiji December Quarterly Review, 2016)

With the EU sugar reforms and the consequent conclusion of the benefits enjoyed under the Sugar Protocol, the challenges to the already struggling sugar industry have increased further. Fiji signed an interim EPA with the EU in 2009 driven largely by its heavy reliance on the EU market for its sugar exports. The government of Fiji implemented the Sugarcane Industry Strategic Action Plan in 2013 that will continue into 2022, with the core objectives to address crop production, harvesting, transport, milling, processing, payment system review and industry restructuring and legislation (Ministry of Finance & National Planning, 2016).

Table 1-9 below shows Fiji's exports to the EU by member country at every five-year interval since 1990.

Table 1-9: Fiji's exports to the EU (by member country) - 1990-2015.

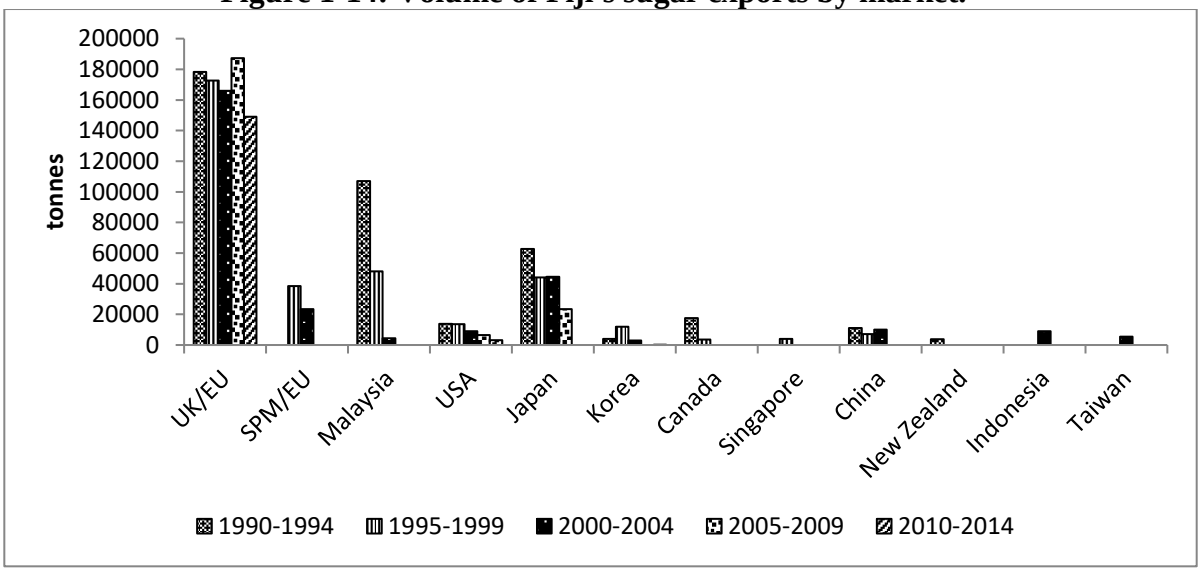
US$M	1990	1995	2000	2005	2010	2015
Austria	..	0.03	0.11	0.13	0.18	0.07
Belgium	..	..	0.03	1.62	0.03	0.08
Finland	..	12.24	0.00	0.00	0.01	..
France	1.00	0.55	0.16	0.10	0.21	0.36
Germany	1.29	2.69	3.07	1.42	1.91	1.70
Greece	..	0.00	0.01	0.04	0.00	0.00
Ireland	..	0.02	0.01	0.01	0.04	0.02
Italy	..	0.40	1.25	0.38	0.14	0.03
Netherlands	..	0.24	0.22	1.20	1.30	3.26
Portugal	..	9.61	6.89	0.00	..	16.09

Romania	..	..	..	0.00	..	12.01
Slovenia	..	..	0.02	0.02	0.01	
Spain	..	0.23	0.19	0.06	0.06	0.02
United Kingdom	113.87	124.87	79.85	106.21	42.27	39.21

(Source: IMF Direction of Trade database available at www.imf.org)

Evidently, Fiji has a greater export relationship with the UK while export earnings from the other EU member countries are comparatively smaller. Fiji's exports to the EU include sugar, palm oil, coffee, coconut and fish with sugar being the main item exported. As illustrated in Figure 1-14, in each of the 5-year period from 1990 to 2014, the bulk of Fiji's sugar was sold to the EU market, mainly the UK. Additionally, sugar was also sold to Portugal under the Special Preferential Market scheme (SPM). Figure 1-14 reveals the heavy dependence of Fiji on the EU market for its sugar exports. Moreover, it also indicates that Fiji has not secured any other international markets for its sugar exports. While Malaysia was an important market in the 1990's, Fiji did not export any sugar to this market after the year 2000. Sugar exports to Japan have also declined over the period under review, with no exports made after 2008.

Figure 1-14: Volume of Fiji's sugar exports by market.



(Source: Compiled using Fiji Sugar Corporation Annual Report (various issues) available at www.fsc.com.fj). Note: SPM is Sugar Protocol Market.

In terms of imports, Fiji mainly buys machinery, transport equipment, manufactured goods, food and beverages from the EU. According to the IMF's direction of trade statistics, Fiji's imports from the EU averaged around US$19.5M in the 1990-1999 period, rising to an

average of US$27.4M in 2000-2009 and a substantial US$138.2M on average in the period 2010-2015. The increase in imports in the 2010-2015 period reflects Fiji's aircraft imports from France in 2013 and 2014 (FIBOS, 2015). Hence, while Fiji's main import partners from the EU are France and Germany, its main export partner from the EU has been the UK - largely due to sugar exports.

1.3: Literature Review

A large and growing body of literature has investigated the economy wide effects of trade liberalisation. Initiation of an EPA resulted in several quantitative, qualitative or mixed method studies over the years, conducted by independent researchers, government and/or other organisation commissioned studies. The quantitative approaches can be broadly categorised into;

- Partial Equilibrium Analysis (PEA),
- Computational General Equilibrium (CGE) analysis.

The partial equilibrium framework is a technique that analyses the effect of a policy on only the market that is directly affected while any economic interactions with related markets are not accounted for; while a CGE method also analyses the effect of a policy but on all inter-related markets (Francois & Reinert, 1997). While both these approaches are used for the study of policy implications, the choice of either depends largely on the objective of the analysis. By its very nature, the PEA approach is limited in scope but more detailed while the CGE approach is more comprehensive. The PEA framework (which is rooted in the Vinerian trade diversion and trade creation theory explained in Figure 1-15) has the capacity to capture comparative static effects at a highly disaggregated product level which provides information on sensitive and specific products of special interest to policy makers (Dodson, 2013). Although the set of factors accounted for in a PEA approach are limited (such as a few prices and policy variables), this narrow focus allows for relatively rapid and transparent analysis of a wide range of policy issues (Francois & Reinert, 1997). The strength of the PEA therefore lies in its focus on sectoral effects and consequent identification of sensitive products. Meanwhile, the CGE approach captures economy wide effects, is dynamic and provides the advantage of analysing the consequences on inter-related markets. Hence, on the one hand while the PEA ignores these interactions between markets and is a comparative static approach, the CGE method on the other hand lacks the market detail that is possible under a PEA but is comprehensive. As this study aims to explore the effects at the detailed sectoral level, the PEA is adopted[13].

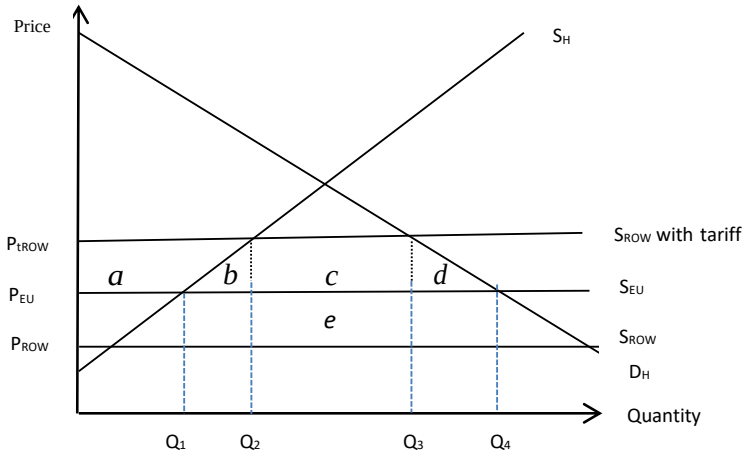
[13] CGE analysis for Fiji is not possible due to data limitations. Moreover, the Global Trade Analysis Project (GTAP) model which is used for conducting similar analysis as in Chapter 1 of this thesis can not be used for the case of Fiji because it does not provide data specifically for Fiji, but aggregated data for all Pacific Island countries.

Such an approach also enables the incorporation of excluded items from the liberalisation process, and hence a comparison of the outcomes under both a full and partial liberalising. As mentioned earlier, the PEA is rooted in the Vinerian trade diversion and creation theory, which is explained next.

1.3.1: Vinerian trade diversion and trade creation theory

Viner in the 1950's provided the lead for the trade diversion and trade creation effects with his customs union theory. Trade diversion is where a trade agreement shifts trade away from a more efficient supplier outside the agreement to a less efficient PTA partner; while trade creation is the additional trade that results after removal of tariffs (Krishna, 2013). This is explained here in Figure 1-15 on the assumption of a small price taking country and perfect competition. The domestic demand and supply are illustrated by DH and SH respectively.

Figure 1-15: Trade diversion and trade creation



Suppose in addition to domestic production, this home country also imports goods from the EU (S_{EU}) and from the rest of the world (ROW-S_{ROW}). To illustrate trade diversion, it is assumed that the EU is the higher cost supplier. A tariff on imports from the ROW and the EU will shift up the respective prices by the magnitude of the tariff. After a PTA is formed with the EU, tariffs are removed from EU imports but maintained on imports from the

ROW. The economy thus trades with the EU at P_{EU} (zero tariff prices) which is much lower than P_{tROW} - the tariff inclusive price of the ROW. Initially, the home country consumed Q_3 of which Q_2 was sourced from domestic suppliers and Q_2Q_3 was imported from the ROW. Following the EU-PTA, imports from the ROW (Q_2Q_3) are now diverted to the EU market. This change in source of imports is termed as trade diversion. Additionally, Q_1Q_2 of domestically produced goods are now replaced by EU imports and there is also an expansion in imports from Q_3 to Q_4. This reflects trade creation. Hence while trade diversion from an efficient to less efficient supplier results in resource loss of area e, trade creation results in gains of area b and d. Consumer surplus expands (by area a+b+c+d), producer surplus shrinks by size a and government loses tariff revenue (c+e). The overall welfare impact is ambiguous depending on the magnitude of trade diversion and trade creation.

1.3.2: Empirical literature

The Vinerian theory discussed in the previous section has guided many empirical investigations of the EU-ACP EPA (Dodson, 2013). Some of these contributions include Milner et al. (2005), Greenway and Milner (2006), Zgovu and Kweka (2007), Thomy et al. (2013), Dodson (2013), Mbithi et al. (2015), Morrissey and Zgovu (2009), Muluvi et al. (2016), and Nwali and Arene (2015).

Milner et al. (2005) conducted a PEA of the EU-EPA effects in the East African Community (EAC) countries. The three countries included in their study are Tanzania, Uganda and Kenya. They assumed perfect competition and perfect substitutability between imports sourced from different trading partners. Their study measured the welfare effects of preferential trading arrangement for the case of a small home country. The lack of comparable disaggregated data for Kenya limited analysis to Tanzania and Uganda. The authors concluded marginal negative welfare effects for Tanzania (-0.5 percent of GDP), and small positive effects (0.05 percent of GDP) for Uganda. This heterogeneous albeit marginal result highlighted the influence of trade pattern on welfare impacts despite other similarities between economies. While the dominance of extra-regional trade diversion reduced welfare for Tanzania, Uganda gained from displacement of Kenyan imports by more efficient EU suppliers.

Greenway and Milner (2006) adopted a similar PEA model constructed on the standard concepts from customs union theory. They however allowed for imperfect substitutability between products to measure welfare implications of an EU-EPA in the Caribbean Community (CARICOM) region[14]. Their work provides a broader perspective by also including possible implications of extending liberalisation to the US and globally. However, the analysis used two-digit disaggregated data which limits its ability to highlight sensitive products beyond this level of aggregation. Regardless, it provides a useful comparison across the three forms of liberalisation. The findings support the virtue of multilateral liberalisation, with gains ranging from 0.3 percent to 0.8 percent of GDP. Restricted liberalisation with only the EU produces net welfare losses ranging from -1.9 percent to -4.5 percent of GDP, while extending reciprocity to the US market results in smaller reductions in net welfare which range from -0.4 percent to -1.1 percent of GDP.

Zgovu and Kweka (2007) applied the Milner et al. (2005) approach on the economies of Malawi and Tanzania and concluded significant welfare losses for both economies, reflecting the dominance of trade diversion over the positive results of trade creation. The sample of countries chosen in their paper draws attention to the intricacy of EU-EPA negotiating settings that some countries are involved in, which further complicates the possible implication assessments. For instance, Malawi and Tanzania both are members of SADC, however, each are negotiating an EU-EPA under a different regional grouping (see Table 1-2). Malawi is also a member of COMESA and is therefore part of the COMESA-EPA negotiating group. Tanzania on the other hand is a member of EAC, however given the inactive involvement of EAC in the EPA negotiations, they are negotiating under the SADC-EPA arrangement. Apart from the complexity arising from these overlapping regional arrangements, the authors also signalled the non-trivial potential impacts of EPA on regional integration initiatives.

Dodson (2013) looked at the impact of the EU-CARIFORUM[15] EPA on Guyana with the application of the PEA approach (Greenway & Milner (2006) technique) on 2008 data. The author concluded a static welfare loss of US$31.01M equivalent to 2.2 percent of Guyana's 2008 GDP. Also guided by a partial equilibrium framework, Muluvi et al. (2016)

[14] CARICOM or the Caribbean Economic Community is a subset of ACP countries. Its current members are Antigua & Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, St Kitts & Nevis, St Lucia, St Vincent, Grenadines, Suriname, Trinidad & Tobago. Due to lack of data for Antigua, Barbuda, Monserrat, Suriname and only 1994 data for Guyana, these countries are not included in the analysis.
[15] Refers to the Caribbean sub-group of the ACP countries.

focused on the trade and welfare implications of the EU-EPA on Kenya. Results showed that though Kenya will lose tariff revenue due to the EPA, they will experience lower consumer prices and hence overall welfare gains.

While the studies discussed above have analysed the impacts on total imports, others have focused on a particular sector only. For example, in a much more recent yet narrower work, Thomy et al. (2013) investigated the effects of the EU-EPA on Botswana's imports of food, beverages and tobacco and found a net welfare benefit. The authors adopted the Milner et al. (2005) approach under a full trade liberalisation assumption. The only development in their empirical approach is the application of sensitivity analysis where the authors varied the degree of substitutability between products from different sources. Results remained robust to this sensitivity analysis. The results of this study are inconsistent with the mostly negative net welfare impact conclusions however, the authors argued that since Botswana is a net importer of food, beverages & tobacco, movement towards free trade opens up access to cheaper alternatives. The findings here signal the need to assess potential impacts at a highly disaggregated sectoral level.

Another narrower approach is Mbithi et al. (2015) who applied a PEA to study the effects of EU-EPA on EAC (Burundi, Kenya, Rwanda, Tanzania and Uganda) manufactured goods imports. Their results indicate that the shift towards elimination of tariffs on EU imports will produce a 9 percent increase in imports of manufactured goods from the EU (particularly products such as iron, steel, vehicles and related parts), result in lower prices for manufactured goods and consequently consumption gains of about 0.03 percent of the EAC regions GDP. The increase in imports is greatest for Kenya, followed by Tanzania, Uganda, Rwanda and finally, Burundi.

Furthermore, Morrissey and Zgovu (2009) estimated the impact of EU-EPA on a sample of 36 ACP countries agricultural imports from the EU. In a partial equilibrium setting, their work concluded that the combined welfare effect (for all 36 countries in the sample) is a loss of 0.03 percent of GDP. However, on average, they found a welfare gain of 0.07 percent of GDP. This indicates that in terms of agricultural imports, the EU-EPA will produce average negligible gains for the ACP countries. More specifically, 61 percent of the countries analysed are estimated to experience a welfare improvement. This includes most of the LDC's (11 of the 13) in their sample.

Nwali and Arene (2015) also focused on the implications of an EU-EPA on agricultural imports for the economy of Nigeria. As pointed out by these authors, Nigeria is a significant economy from the Economic Community of West African States (ECOWAS) region, accounting for almost 60 percent of the ECOWAS region's trade. They estimated a gain of US$35.3 billion due to trade creation, a loss of US$14.9 billion due to trade diversion and total tariff revenue loss of US$16.7 billion.

All of the studies reviewed above echo a common finding i.e. the substantial tariff revenue losses and the subsequent negative welfare impacts. This result is not surprising given that most developing economies have used trade taxes for domestic firm protection and more importantly as a source of government revenue. Therefore, liberalisation of trade will reduce government revenue unless these are successfully replaced by other domestic revenue sources (Baunsgaard & Keen, 2010). This view is also supported in a comprehensive study by Khattry and Rao (2002) who examined if trade liberalisation depressed tax revenue to GDP ratios in developing countries. They investigated this in a panel of 80 developing and industrialised countries using data from 1970-1998 and concluded that low-income and upper-middle income countries experienced a decline in fiscal revenue due to falling trade taxes. Structural characteristics of these economies inhibited domestic reforms and therefore significantly explained this decline. Baunsgaard and Keen (2010) also expressed the same view after their investigation on whether countries had recovered from lost tax revenue due to past episodes of trade liberalisation process. Their findings revealed that while high and middle-income countries showed robust signs of revenue replacement, the same could not be concluded for low income countries.

As is evident from this literature review, it is mainly the African and Caribbean countries that have attracted research interest on the implications of the EU-EPA. Empirical investigations have not illuminated much on the two countries from the Pacific region (Papua New Guinea and Fiji) that are involved in an EU-EPA negotiation. In Morrissey and Zgovu's (2009) sample of ACP countries, only Papua New Guinea is included. As regards country specific analysis like those reviewed in this section, there are no studies on either Papua New Guinea or Fiji, to the best of our knowledge. This study therefore contributes by providing such an analysis of the Fijian economy.

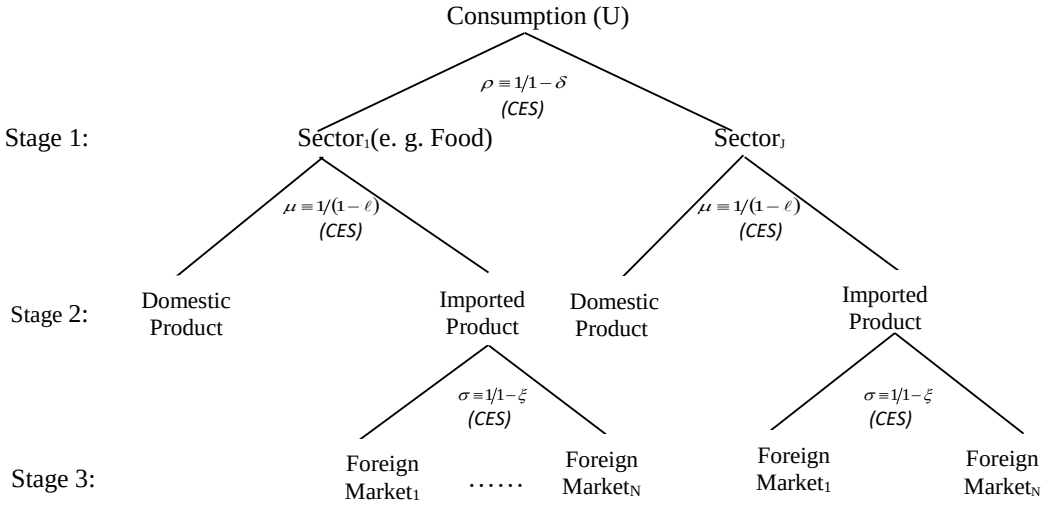
1.4: Research Method & Data

1.4.1: Empirical framework

A PEA framework is developed to address our first research question using the year 2012 as the base period. The model assumes a small open economy that has no influence on world export or import prices[16]. Product differentiation by country of origin is assumed which implies that consumers differentiate among domestically produced and imported goods from different sources.

Demand: On the consumption front, consumers have a three-layer Constant Elasticity of Substitution (CES) utility function. Therefore, the decision-making process for consumers is a three-stage budget optimisation procedure (which we have illustrated using Figure 1-16), where the first stage aggregates over distinct sectors, the decision to consume imported or domestic good occurs in the middle stage, and the subsequent decision to consume product *j* from the many trading partners takes place in the final stage.

Figure 1-16: Nested utility structure for allocation of demand[17].



[16] World market prices for imports are normalized to 1.
[17] The notations used in this chart are explained in the discussion below. Note that the elasticity at each stage is different across each stage and across each sector (by broad product category). See Table 6 in the Appendix for the elasticity values.

The upper level of the nested utility function aggregates over the products of j = 1,…..J distinct sectors such as food, machinery, transportation etc. Total utility (U) is an additive function of the utility (u^j) derived from the representative quantities consumed across distinct sectors. The consumer's utility maximisation problem therefore is:

$$\text{Max } U = \left[\sum_j \left(u^j\right)^{\delta}\right]^{1/\delta} \qquad \text{such that} \qquad \sum_j \pi^j u^j = E \quad \text{where } 0 < \delta < 1 \tag{1}$$

Where $\rho \equiv 1/(1-\delta)$ is the elasticity of substitution in consumption between the distinct sectors. π^j is the price index for u^j (to be specified below), and E[18] gives total expenditure on all goods. Hence expenditure on good j (E_j) is derived[19] by solving the consumer's optimisation problem implied by (1). This results in;

$$E_j = \frac{\left(\pi^j\right)^{\delta/\delta-1}}{\left[\sum_k \left(\pi^k\right)^{\delta/\delta-1}\right]} E \tag{2}$$

Letting $\hat{z}$ denote a proportional change $\left(dz/z\right)$ for any variable z;

$$\hat{E}_j = \hat{E} - \frac{\delta}{1-\delta}\hat{\pi}^j + \left[\sum_k a_k \hat{\pi}^k\right]\frac{\delta}{1-\delta} \tag{3}$$

which implies that

$$\hat{E}_j = \hat{E} - \frac{\delta}{1-\delta}\left[\hat{\pi}^j - \sum_k a_k \hat{\pi}^k\right] \tag{4}$$

where $a_j = \frac{\left(\pi^j\right)^{\delta/\delta-1}}{\left[\sum_k \left(\pi^k\right)^{\delta/\delta-1}\right]}$ is the initial share of good j in total expenditure, $\sum_j a_j = 1$

The utility obtained from consuming the outputs of sector j is disaggregated into domestically produced and imported components in the second layer. For each good, consumers allocate expenditure between the locally produced good *j* (D_j) or an aggregate of imported *j* (M_j). The decision-making process at this stage is;

$$\text{Max } u^j = [\beta_j M_j^{\ell} + (1-\beta_j) D_j^{\ell}]^{1/\ell} \text{ such that } P_j^M M_j + P_j^D D_j = E_j \text{ where } 0 < \ell < 1 \tag{5}$$

[18] Total expenditure (E) is assumed to be constant.
[19] The detailed derivations of all equations presented here are provided in section A.7 of the Appendix.

Where $\mu \equiv 1/(1-\ell)$ is the elasticity of substitution between domestically produced *j* and imported *j*. P_j^M is the price index of the imported varieties of *j* while P_j^D is the price of the domestically produced *j*. The respective demand function for domestic good *j* (D_j) is derived by solving the utility maximisation in (5) and is as follows;

$$D_j = \frac{\left(P_j^D\right)^{1/\ell-1}}{\left[\left(P_j^M\right)^{\ell/\ell-1} + \left(P_j^D\right)^{\ell/\ell-1}\right]} E_j \tag{6}$$

To obtain the change in this demand function, we totally differentiate (6), obtaining;

$$\hat{D}_j = \hat{E}_j + \left(\hat{P_j^D}\right)^{\ell/\ell-1} - \left[\left(P_j^M\right)^{\ell/\ell-1}\hat{} + \left(P_j^D\right)^{\ell/\ell-1}\right] \tag{7}$$

which in turn gives;

$$\hat{D}_j = \hat{E}_j + \frac{\ell}{\ell-1}\hat{P}_j^D - \frac{\ell}{\ell-1}\left[a_j^M \hat{P}_j^M + a_j^D \hat{P}_j^D\right] \tag{8}$$

where a_j^M is the share of imported *j* in total expenditure on good *j* while a_j^D is the share of domestically produced *j* in total expenditure on good *j*. Added together, a_j^M and a_j^D would therefore equal 1. Finally, after some rearranging, the following is obtained;

$$\hat{D}_j = \hat{E}_j - \left\{\frac{\ell - \ell a_j^D}{1-\ell}\right\}\hat{P}_j^D + \left\{\frac{\ell a_j^M}{1-\ell}\right\}\hat{P}_j^M \tag{9}$$

which is further simplified to give;

$$\hat{D}_j = \hat{E}_j - \left\{\frac{\ell a_j^M}{1-\ell}\right\}\left\{\hat{P}_j^D - \hat{P}_j^M\right\}$$

and therefore;

$$\Delta D_j = \left[\hat{E}_j - \left\{\frac{\ell a_j^M}{1-\ell}\right\}\left\{\hat{P}_j^D - \hat{P}_j^M\right\}\right] D_j \tag{10}$$

As implied by (10), the change in demand for domestic product *j* is negatively related to own price relative to the price index of imported substitutes. Therefore, a reduction in price of imported goods through tariff removal is expected to reduce demand for domestically

produced *j*, as consumers switch to the relatively cheaper imports. Equation 10 is used to quantify the switch in consumption from domestically produced *j* to imported *j*.

In the final stage of the three-level utility function, consumers choose among the different varieties of *j* sourced from various partner countries. More specifically, the small country modelled here (Fiji) imports *n* varieties of product *j* from different trading partners where each variety *i* of *j* sells at a given world market price (p_i). As such, consumers maximise:

$$U^M = \left[\sum_{i=0}^{n} c_{ij}^{\xi}\right]^{1/\xi} \qquad \text{such that} \qquad \sum_i p_{ij} c_{ij} = E_j^M \qquad \text{where } 0 < \xi < 1 \qquad (11)$$

Where $\sigma \equiv 1/(1-\xi)$ is the elasticity of substitution between varieties sourced from different countries. E_j^M is the total expenditure by Fiji on imports of product *j*. Each product j has a subset of varieties distinguished by country of origin. For example, under the good "cheese" there are several types of cheese, each of which is distinguished by country of origin. Hence, variety h of cheese sourced from the EU is differentiated from variety h of cheese sourced from China. The variable c_{ij} denotes consumption and p_{ij} is the (consumer) price of variety *i* in Fiji. A tariff on imports implies that the domestic price differs from the world market price. Let $t_{ij} \geq 1$ be the tariff imposed on variety *i* of product *j* imported by Fiji, implying that $p_{ij} = p_i t_{ij}$. From (11) the value of the demand for variety *i* of product *j* $\left(X_{ij}\right)$ in Fiji is derived as;

$$X_{ij} = \frac{\left[p_i t_{ij}\right]^{1-\sigma}}{R_j} E_j^M \qquad (12)$$

where $R_j = \sum_{k=1}^{n} \left[p_k t_{kj}\right]^{1-\sigma}$ is a measure of aggregate consumer prices for imported varieties of *j* in Fiji.

Using (12), the effects of a reduction in tariff on imports of varieties from the EU (i.e. the set of varieties $l \in EU$) is derived.

Suppose that variety *h* is one of those imported from the EU market. Then from (12) and allowing for any induced change in expenditure but assuming no changes in world prices, we have;

$$\hat{X}_{hj} = -[\sigma - 1]\hat{t}_{hj} + \hat{E}_j - \hat{R}_j \quad (13)$$

and $\hat{R}_j = -[\sigma - 1]\sum_{l \in EU} m_{lj}\hat{t}_{lj}$ (14)

where $m_{ij} \equiv \frac{X_{ij}}{E_j}$ denotes the (import) market share of variety i. Incorporating $\hat{R}_j$ and after some rearranging, the change in value of imports of variety *h* of product *j* (ΔX_{hj}) from the EU market is given by;

$$\Delta X_{hj} = \left[-[\sigma - 1]\left[1 - m_{hj}\right]\hat{t}_{hj} + [\sigma - 1]\sum_{\substack{l \in EU \\ l \neq h}} m_{lj}\hat{t}_{lj} + \hat{E}_j\right] X_{hj} \quad (15)$$

Equation 15 implicitly captures the substitution of imports from regional and rest of the world trading partners with the now cheaper EU products[20]. However, to calculate the loss in tariff revenue, this substitution is explicitly estimated (i.e. grouped by region and rest of the world) from the change in the sum of the value of imports from all other sources ($\sum_{i \notin EU} X_{ij}$) using;

$$\Delta \sum_{i \notin EU} X_{ij} = \left\{[\sigma - 1]\sum_{l \in EU} m_{lj}\hat{t}_{lj} + \hat{E}_j\right\}\sum_{i \notin EU} X_{ij} \quad (16)$$

Supply: On the supply side, producers maximise their value of output through sales in the domestic market and the export market, given prices and a resource constraint. Producers' optimisation problem therefore is:

$$\text{Max } P_j^D Q_j^D + P_j^F Q_j^F \qquad \text{such that } K_j = \left[\left(Q_j^D\right)^{\psi} + \left(Q_j^F\right)^{\psi}\right]^{1/\psi} \text{ where } \psi > 1 \quad (17)$$

This formulation allows for resource costs (in terms of foregone output) in transforming output for domestic sales versus exports. K_j is total resources available for domestic production of good j, Q_j^D is supply of *j* for domestic market sales and Q_j^F is supply of *j* for the export market. P_j^D is the domestic price of good *j* and hence $P_j^D Q_j^D$ gives the value of output *j* sold in the domestic market. P_j^F is the export price, and so $P_j^F Q_j^F$ gives the value of exports of product *j*. $\eta \equiv 1/\psi - 1$ reflects the elasticity of transformation between

[20] Equations 15 and 16 reflect the change in imports from each respective market due to the EU-EPA (i.e. when the tariff on EU imports is changed only). As an extension of this analysis, we later explored the effects on imports and consequent tariff revenues when tariff on all imports are changed together with an EU-EPA. The equations used for the EU-EPA plus external tariff reform are reported in Table 1-10 with derivations of these respective equations explained in section A.7 of the Appendix.

producing for domestic market sales and export market. The producers' optimisation problem (17) is solved to obtain the respective supply functions; supply for export market (18) and supply for domestic market (22).

$$Q_j^F = \frac{\left(P_j^F\right)^{1/\psi-1}}{\left[\left(P_j^D\right)^{\psi/\psi-1} + \left(P_j^F\right)^{\psi/\psi-1}\right]^{1/\psi}} K_j \tag{18}$$

Total differentiation of (18) produces equation 19 which measures the change in supply of product *j* for exports $\left(\hat{Q}_j^F\right)$. Hence total differentiation of (18) implies;

$$\hat{Q}_j^F = \left(\hat{P_j^F}\right)^{1/\psi-1} - \left[\left(P_j^D\right)^{\psi/\psi-1} + \left(\hat{P_j^F}\right)^{\psi/\psi-1}\right]^{1/\psi} + \hat{K}_j \tag{19}$$

which gives the respective function;

$$\hat{Q}_j^F = \hat{K}_j - \left[\frac{a_j^D}{\psi-1}\right]\hat{P}_j^D + \left[\frac{1-a_j^F}{\psi-1}\right]\hat{P}_j^F \tag{20}$$

and finally;

$$\Delta Q_j^F = \left[\hat{K}_j + \frac{a_j^D}{\psi-1}\left[\hat{P}_j^F - \hat{P}_j^D\right]\right]Q_j^F \tag{21}$$

Likewise, from the producer optimisation problem in (17), the domestic supply function $\left(Q_j^D\right)$ is derived;

$$Q_j^D = \frac{\left(P_j^D\right)^{1/\psi-1}}{\left[\left(P_j^D\right)^{\psi/\psi-1} + \left(P_j^F\right)^{\psi/\psi-1}\right]^{1/\psi}} K_j \tag{22}$$

Total differentiation of (22) gives equation 23 which estimates the change in supply of product *j* $\left(\hat{Q}_j^D\right)$ for domestic market sales. Hence total differentiation of (22) implies;

$$\hat{Q}_j^D = \left(\hat{P_j^D}\right)^{1/\psi-1} - \left[\left(P_j^D\right)^{\psi/\psi-1} + \left(\hat{P_j^F}\right)^{\psi/\psi-1}\right]^{1/\psi} + \hat{K}_j \tag{23}$$

that produces the following function;

$$\hat{Q}_j^D = \hat{K}_j + \left[\frac{1-a_j^D}{\psi-1}\right]\hat{P}_j^D - \left[\frac{a_j^F}{\psi-1}\right]\hat{P}_j^F \tag{24}$$

where a_j^D is the share of domestic sales in value of total output, and a_j^F is the share of value of exports. Added together, a_j^D and a_j^F would therefore equal one, and so;

$$\Delta Q_j^D = \left[\hat{K}_j + \frac{a_j^F}{\psi-1}\left[\hat{P}_j^D - \hat{P}_j^F\right]\right]Q_j^D \tag{25}$$

The domestic price $\left(P_j^D\right)$ and the consequent change in domestic price $\left(\hat{P}_j^D\right)$ is derived using (9) and (24). In equilibrium, domestic demand is matched by domestic supply; hence equating (9) and (24) allows for $\hat{P}_j^D$ to be solved. The resultant function is;

$$\hat{P}_j^D = \frac{\left[\hat{E}_j + \left(\frac{\ell a_j^M}{1-\ell}\right)\hat{P}_j^M\right]}{\left[\frac{a_j^F}{\psi-1} + \frac{\partial a_j^M}{1-\ell}\right]} \tag{26}$$

Table 1-10 below summarises the main equations and the corresponding indicators that they are used to measure, from the empirical framework discussed above.

Table 1-10: A summary of the equations and key indicators measured.

Key indicator measured	Equation*
Change in imports from the EU market	(15) $\Delta X_{hj} = \left[-[\sigma-1][1-m_{hj}]\hat{t}_{hj} + [\sigma-1]\sum_{\substack{l\in EU \\ l\neq h}} m_{lj}\hat{t}_{lj} + \hat{E}_j\right]X_{hj}$
Substitution of imports from the ROW markets for EU products	(16) $\Delta\sum_{\substack{i\notin EU \\ i\in ROW}} X_{ij} = \{[\sigma-1]\sum_{l\in EU} m_{lj}\hat{t}_{lj} + \hat{E}_j\}\sum_{i\notin EU} X_{ij}$
Substitution of imports from the Regional markets for EU products	(16) $\Delta\sum_{\substack{i\notin EU \\ i\in Reg}} X_{ij} = \{[\sigma-1]\sum_{l\in EU} m_{lj}\hat{t}_{lj} + \hat{E}_j\}\sum_{i\notin EU} X_{ij}$
Tariff revenue loss (from existing EU imports)	Obtained as the product of the existing EU imports (sourced from FIBOS) and the MFN tariff rates (sourced from HS Tariff Schedule for Fiji – Fiji Islands Revenue & Customs Authority (FIRCA))
Tariff revenue loss (from	Obtained as the product of ROW import substitution

ROW substitution)	(calculated using equation 16) and the MFN tariff rates (sourced from HS Tariff Schedule for Fiji – FIRCA)
Tariff revenue loss (from Regional substitution)	Obtained as the product of Regional import substitution (calculated using equation 16) and the MFN tariff rates (sourced from HS Tariff Schedule for Fiji – FIRCA)
Change in demand for domestically produced good	(10) $\Delta D_j = \left[\hat{E}_j - \left\{\frac{\ell a_j^M}{1-\ell}\right\}\left\{\hat{P}_j^D - \hat{P}_j^M\right\}\right]$
Change in domestic supply	(25) $\Delta Q_j^D = \left[\hat{K}_j + \frac{a_j^F}{\psi - 1}\left[\hat{P}_j^D - \hat{P}_j^F\right]\right] Q_j^D$
Change in exports supply	(21) $\Delta Q_j^F = \left[\hat{K}_j + \frac{a_j^D}{\psi - 1}\left[\hat{P}_j^F - \hat{P}_j^D\right]\right] Q_j^F$
Change in price of domestically produced good	(26) $\hat{P}_j^D = \frac{\left[\hat{E}_j + \left(\frac{\ell a_j^M}{1-\ell}\right)\hat{P}_j^M\right]}{\left[\frac{a_j^F}{\psi - 1} + \frac{\ell a_j^M}{1-\ell}\right]}$
Change in demand for imports from the EU with EU-EPA & external tariff reform	(27) $\Delta X_{hj} = \left[-[\sigma-1]\left[1-m_{hj}\right]\hat{t}_{hj} + [\sigma-1]\sum_{\substack{l\in EU \\ l\neq h}} m_{lj}\hat{t}_{lj} + \sum_{k\in ROW} m_{kj}\hat{t}_{kj} + \sum_{g\in Reg} m_{gj}\hat{t}_{gj} + \hat{E}_j\right] X_{hj}$
Change in demand for imports from the ROW with EU-EPA & external tariff reform	(28) $\Delta X_{hj} = \left[-[\sigma-1]\left[1-m_{hj}\right]\hat{t}_{hj} + [\sigma-1]\sum_{\substack{k\in ROW \\ k\neq h}} m_{kj}\hat{t}_{kj} + \sum_{l\in EU} m_{lj}\hat{t}_{lj} + \sum_{g\in Reg} m_{gj}\hat{t}_{gj} + \hat{E}_j\right] X_{hj}$
Change in demand for imports from the region with EU-EPA & external tariff reform	(29) $\Delta X_{hj} = \left[-[\sigma-1]\left[1-m_{hj}\right]\hat{t}_{hj} + [\sigma-1]\sum_{\substack{g\in Reg \\ g\neq h}} m_{gj}\hat{t}_{gj} + \sum_{l\in EU} m_{lj}\hat{t}_{lj} + \sum_{k\in ROW} m_{kj}\hat{t}_{kj} + \hat{E}_j\right] X_{hj}$

Notes: *Refer to the empirical framework explained in section 1.4.1 for details on the components of these equations and section A.7 of the Appendix for the detailed steps in deriving these equations. The equation numbers are presented in brackets. Equation 27-29 are used to analyse the impact of an EU-EPA plus external tariff reform.

1.4.2: Data Requirements

The data to estimate the equations explained in the empirical framework were obtained from various sources. The 2012 data on bilateral imports for Fiji was sourced from the Fiji Islands Bureau of Statistics (FIBOS) through email communication. To analyse the impact at a very detailed level, we used the Harmonised System 6 (HS6) data. The HS is an internationally standardized system of names and codes to classify traded products (by function/form) and is organized into 22 sections and 99 chapters. On average,

approximately 300 items are recorded under each chapter[21]. This bilateral imports data was grouped into three main import sources: the EU, Region and the ROW. The Regional market includes Fiji's neighbouring countries (Papua New Guinea, Cook Islands, Marshall Islands, Nauru, Palau, Solomon Islands, Samoa, Tonga, Tuvalu, Vanuatu), while ROW is every other trading partner of Fiji, excluding the Region and the EU. Furthermore, the model required tariff rates (MFN and preferential tariffs) for each product. To align to the HS6 level of disaggregation, the 2012 HS Tariff Schedule for Fiji sourced from the Fiji Islands Revenue and Customs Authority (FIRCA) was used to obtain the MFN tariff rates imposed on imports from the ROW and the EU. The preferential tariff rates on imports from the Region were obtained from the International Trade Centre's market access map website (www.macmap.org). The data on domestic production is extracted from the Agriculture, Forestry & Fishing Survey (2011) and the Manufacturing Economic Survey (2011) reports for Fiji, both of which were obtained through email communication with FIBOS. For the partial liberalisation scenario simulation, the list of excluded items was obtained from the interim EU-Fiji EPA document, retrieved from the European Commission website (ec.europa.eu). In terms of the behavioural parameters, the empirical framework explained above required the calculation of a set of parameters (δ, ∂, ξ) which in turn need estimates of the selected elasticities. More specifically, the three-layer utility function requires the elasticity of substitution between sectors (ρ:top layer), the elasticity of substitution between domestic and imported goods (μ: middle-tier), and the elasticity of substitution between imports from different countries (σ::final layer). Moreover, on the production front, calculation of the parameter (ψ) requires the elasticity of transformation (η) between supplying the domestic market and export market. Estimation of these parameters is beyond the scope of this study and these elasticity values[22] are taken from the Global Trade Analysis Project (GTAP) which is a global network of researchers and policymakers working on quantitative analysis of international policy and from Devarajan et al. (1999).

[21] The Harmonized System (HS) representation of the 6 digits is as follows: the first two digits is the chapter in which the good falls, the next two represents the group in that chapter, and the last two digits identify more specific description of the good (www.trademap.org).
[22] Table 6 in the Appendix provides these elasticity values.

1.5: Estimated results and discussion

The impacts of the EU-Fiji EPA on our key variables of interest were estimated using the equations explained in section 1.4.1 and the data defined in section 1.4.2. These results are presented from Tables 1-11 to 1-16 under both of our assumptions, i.e. under the assumption of full liberalisation (removal of tariffs on all EU imports) and partial liberalisation (exclusion of 20.3 percent of tariff lines). The import substitution effects and tariff revenue effects were estimated at the disaggregated 6-digit tariff line level (HS6) and then aggregated by broad category[23] for result presentation and discussion. A detailed disaggregated level of discussion of results is provided only for selected vulnerable products[24]. The use of disaggregated imports data facilitated the incorporation of excluded items and in calculation of tariff revenue loss, given that items within an aggregated category are tariffed at different rates. Moreover, such disaggregated analysis also enables identification of sensitive products (such as those that are also domestically produced) and may therefore require greater attention in this liberalisation process. The analysis also required grouping of the bilateral imports data into three broad sets: the EU, ROW and Region. This is to facilitate the application of the different tariff rates by trading partner country (MFN tariff rates for ROW and preferential tariff rates for Region), and to explicitly observe impacts on Fiji's imports relationship with the Region. Tables 1-11 and 1-12 show the impact on imports (9 broad categories and total) grouped by market (i.e. ROW, Region, and EU). The import effects from here are then used to estimate the tariff revenue loss due to the EU-EPA and are summarised in Table 1-14.

Furthermore, we extended our analysis to investigate the consequences of the EU-EPA along with an external tariff reform by Fiji. A reduction of tariffs on EU imports (due to the EU-EPA) while holding the ROW and Regional tariffs fixed will result in substitution of imports (and the consequent tariff revenue losses) from these two latter groups of trading partners with EU products. However, as mentioned in Richardson (1993), a reduction in external protection concurrently will reduce the potential welfare losses arising from the trade diversion that occurs when the tariffs are lowered on one trading partner (or PTA members) only. Hence, along with the EU-EPA, we also reduced tariffs on the ROW and

[23] See Table 7.0 in the Appendix for the aggregated products under each broad category.
[24] The results disaggregated at chapter level (99 chapters in total) are included in the Appendix in Tables 8 (full liberalisation) and 9 (partial liberalisation).

regional imports simultaneously and compared the import substitution effects of the EU PTA only and the EU PTA plus external tariff reforms (see Table 1-13), under both of our scenarios (full and partial liberalisation). The MFN tariff rates are imposed on imports from the ROW while for imports from the Region, preferential tariff rates are applied. As part of our external tariff reform exercise, we removed the preferential tariffs on Regional imports while the ROW MFN tariffs were lowered by the percentage points that would maintain the existing preferential marginal between the ROW MFN tariffs and Regional preferential tariffs. Lastly, the consequences on the domestic variables of interest are presented in Tables 1-15 and 1-16.

1.5.1: Import substitution effects

A reduction of tariffs on EU imports will induce substitution from the ROW and regional trading partners to the EU, shown implicitly in columns d and f of Table 1-11 and explicitly (i.e. by specific market – ROW and Region) in column c of Table 1-12. Column a of Table 1-11 reports the total imports in the base year (2012) while the value and share of imports from the EU in the same year are reflected in column b and c. Comparatively, the EU is not a dominant import supplier across any of the 9 broad categories of goods shown in Table 1-11. The percentage share of the EU in total base year imports in each of the aggregated import categories (see column c of Table 1-11) ranges from a low of 0.1 percent to 9.2 percent. Overall, the EU had only a 2.2 percent share in Fiji's total imports in the base year. Comparing across the 9 aggregated import categories for the EU, only chemical and related products, beverages & tobacco, and machinery & transport equipment have percentage shares in total imports larger than 5 percent (see column c of Table 1-11), while the imports share of all other categories are minimal. Instead, the ROW is a dominant import supplier (see column b of Table 1-12), with the import share of all the 9 aggregated categories above 90 percent. Imports from the neighbouring countries (regional) is marginal, with food & live animals as the main imported item from the regional market (see column b of Table 1-12). Hence, the bulk of Fiji's imports are from the ROW while the EU and the regional market are comparatively less important sources of imports.

Under a full liberalisation scenario of the EU-Fiji EPA, the removal of tariffs on EU products will result in consumers substituting goods from the ROW and Regional markets with the now relatively cheaper EU products. As shown in column c of Table 1-12, the

total estimated substitution from the ROW and regional market is $11.3 million, which is equivalent to 0.3 percent of base year imports. The bulk of this substitution is of the ROW market (shown in column c of Table 1-12), with only a marginal substitution of Regional imports. From the ROW, F$11.3 million of total imports will be substituted with the now cheaper EU products (i.e. an estimated 0.3 percent decline in total ROW imports from the base year). Likewise, F$0.02 million of Regional imports will be displaced by EU products (i.e. a 0.1 percent decline in regional imports from the base year). Of the 9 categories, machinery & transport equipment is the most affected in absolute terms, with an estimated total substitution of F$5.7 million from the ROW and Regional markets to the EU. Machinery & Transport equipment was the second largest import for Fiji in the base year, with 5.3 percent of these imports originating from the EU market. The ROW is a dominant supplier of machinery & transport equipment and while it will remain a dominant import source for machinery & transport equipment post liberalisation, F$5.7 million of the existing machinery & transport equipment imports is stimulated to shift from the ROW and Regional market to the EU market after full liberalisation. The four other import categories that are expected to have substitution effects larger than F$1 million include beverages & tobacco ($1.5 million), food & live animals ($1.3 million), manufactured goods ($1.3 million) and chemicals ($1.1 million). However, when analysed in relative terms, i.e. as a percentage of base year total imports for that specific category, beverages & tobacco has the largest substitution effect (of 4.7 percent). Consequently, the beverages & tobacco imports from the EU after this substitution is estimated to increase by a significant 62.7 percent. On this note, we investigated the specific items in this beverages & tobacco category. The relative importance of the beverages & tobacco category for the Fijian economy are twofold: firstly, it has its fiscal significance in terms of tariff revenue generation and secondly, it is an important domestically produced category. The two broad groups under this category are beverages, spirits, vinegar and tobacco. The significant import substitution (of F$1.48 million) emanates from beverages, spirits and vinegar while F$0.03 million is imports substitution of manufactured tobacco and tobacco products. The main substituted items under beverages, spirits and vinegar include alcoholic beverages (such as beer from malt, wine) and spirits (whisky, rum and gin).

Overall, under full liberalisation the import substitution effect is estimated to increase imports from the EU by 12.7 percent (see column e of Table 1-11) from the base year. The

incorporation of excluded items into our analysis (i.e. a partial liberalisation scenario) reduces this imports substitution effect from F$11.3 million to F$6.9 million (column d and f of Table 1-11). This 39.1 percent decline in the estimated substitution effect is mainly driven by much smaller substitution of products from three categories; namely food & live animals, beverages & tobacco and mineral fuel products. Under full liberalisation, the food & live animal imports from the EU market was estimated to increase by 18.3 percent, reflecting a F$1.3 million substitution from the ROW and regional market. This falls significantly to only a 0.6 percent increase in EU imports (F$0.04 million substitution) in a partial liberalisation setting. This significant difference in the substitution effect under a full and partial liberalisation scenario is because from the food & live animal category, a total of 69.5 percent of items are excluded from this liberalisation process, many of which are produced domestically and/or imported from the region. For beverages & tobacco, which was identified as the most vulnerable (in relative terms) under full liberalisation, the total substitution effect under partial liberalisation declines from F$1.6 million to only F$0.03 million, hence a large reduction in the estimated increase in imports from the EU. In the base year, the EU had a 7.5 percentage share in imports of this category, with an estimated increase of 62.7 percent under a full liberalisation scenario. An exclusion of 91 percent of the items from this category from the liberalisation process has reduced the expected increase in EU imports from 62.7 percent to only 1.3 percent. While items from the mineral fuels and products category initially (under full liberalisation) did not have a significant substitution effect (i.e. only a 3.9 percent increase in EU imports for this category), exclusion of 40 percent of items from this category has reduced its substitution effect from F$0.04 million to only F$0.004 million. The expected increase in imports from the EU for mineral fuel and related products is now only 0.5 percent under partial liberalisation. For the rest of the import categories, there is not much difference in the import substitution effects under the full and partial liberalisation scenarios, given that only a small percentage of items from the respective categories are excluded from this liberalisation process. Notably, machinery & transport equipment continues to dominate (in absolute terms) the import substitution effects under the partial liberalisation scenario as well.

Next, Table 1-13 summarises the impact on imports from each trading partner group (EU, ROW and region) under our assumption of an EU-EPA plus an external tariff reform, under

a full and partial liberalisation scenario. The external tariff reform is defined as changes to tariffs imposed on imports from the ROW and Regional markets (which were held fixed under our EU-EPA analysis) in addition to the removal of tariffs on imports from the EU. We completely removed the tariffs on Regional imports. The MFN tariffs on ROW imports were lowered by the percentage points that would preserve the existing preferential margin between the ROW MFN tariffs and Regional preferential tariffs - i.e. the Region retains its preferential margin with respect to the ROW.

Column (a) (full liberalisation scenario) of Table 1-13 reveals that with an EU-EPA plus external tariff reform, imports from the Region will increase by F$0.13 million (a 0.63 percent increase from base year), compared to a decline of 0.09 percent (column (d) of Table 1-12) under an EU-EPA only. This turnaround is mainly driven by significant growth in food and live animal imports which is the largest imported category from the Regional market. Imports from the ROW is now estimated to fall by only F$9.3 million (column (a) of Table 1-13), compared to a $11.3 million decline under an EU-EPA only (column (c) of Table 1-12). Along the same lines, imports from the EU are now estimated to increase by F$9.2 million, compared to an increase of F$11.3 million under our initial analysis (column (d) of Table 1-11). When considering the partial liberalisation scenario (column (b) of Table 1-13) with an EU-EPA plus external tariff reform, there is a marginal impact on the substitution of imports from the region and ROW to the EU. Total import substitution from the ROW and region is now estimated to be F$6.4 million, a marginal decline from the F$6.8 million substitution estimated under the partial liberalisation scenario of an EU-EPA only. In sum, our findings in this part of the analysis are consistent with the arguments presented in Richardson (1993). The costly trade diversion when only the EU tariffs are removed is lowered when we also change the tariffs on the ROW and regional imports, with the findings more apparent under a full liberalisation scenario whereby all imported items are considered. However, since the tariffs on the ROW imports are reduced by a certain percentage point while the tariff on EU imports are totally removed, there is still trade diversion (from the ROW to the EU) but it is relatively smaller compared to when only the EU imports are liberalised. Moreover, while reducing the magnitude of

discrimination between EU imports and imports from all other countries is favourable from the trade diversion perspective, it would however produce much larger budgetary effects[25].

[25] A removal of tariffs on EU imports and regional imports and reduction of tariffs on ROW imports implies that the tariff revenue losses will now be much larger. The effects on tariff revenue losses are summarised in Table 10 in the Appendix.

Table 1-11: Summary of the impact of EU-EPA on aggregated sectoral imports from the EU in a full and partial liberalisation scenario.

Aggregated import category	(a) Base year total imports (F$)	(b) Base year imports from EU(F$)	(c) Base year % share of EU imports	Scenario 1: Full liberalisation		Scenario 2: Partial liberalisation	
				(d) Change in EU imports due to substitution from ROW & Region (F$)	(e) % Change in EU imports from base year	(f) Change in EU imports due to substitution from ROW & Region (F$)	(g) % Change in EU imports from base year
Food & Live Animals	748,755,257	6,963,151	0.93	1,278,108	18.3	44,025	0.6
Beverages & Tobacco	32,276,246	2,411,014	7.47	1,511,755	62.7	30,615	1.3
Mineral Fuels and Products	1,251,952,402	926,279	0.07	35,672	3.9	4,547	0.5
Animals, Vegetable Oils & Fats	83,363,833	706,579	0.85	104,564	14.8	104,178	14.7
Chemicals & Related Products	231,709,307	21,222,213	9.16	1,085,770	5.1	987,688	4.7
Manufactured Goods	707,897,016	13,334,093	1.88	1,256,931	9.4	1,065,850	8.0
Machinery & Transport	770,231,194	40,435,610	5.25	5,740,624	14.2	4,388,342	10.9
Misc. Manufactured Articles	160,219,352	2,343,354	1.46	291,209	12.4	245,340	10.5
Commodities nec*	47,584,151	842,684	1.77	18,663	2.2	18,032	2.1
Total	**4,033,988,758**	**89,184,977**	**2.21**	**11,323,295**	**12.7**	**6,888,617**	**7.7**

Notes: The year 2012 is used as the base year. For a detailed list of the items under each aggregated import category in this table, refer to Table 7.0 in the Appendix. The full liberalisation scenario captures the aggregated substitution (from existing ROW and regional trading partners) to the EU. The partial liberalisation scenario reflects this substitution after the list of excluded items (20.3 percent of national tariff lines) has been incorporated into the analysis. Base year imports data (column (a) and (b)) is sourced from the FIBOS HS6 Trade Report (2012). The substitution effect (column (d) and (f)) are estimated using equation 15 from our empirical framework. All other percentages reported here are the authors calculations. Regional market includes Fiji's neighbouring countries (Papua New Guinea, Cook Islands, Marshall Islands, Nauru, Palau, Solomon Islands, Samoa, Tonga, Tuvalu, Vanuatu), while ROW is every other trading partner of Fiji, excluding the region and the EU. * not elsewhere classified.

Table 1-12: EU-EPA & impact on imports from the ROW & Region in a full & partial liberalisation scenario.

Aggregated import category	(a) Base year imports in F$		(b) Base year % share of ROW & Regional imports		Scenario 1: Full liberalisation			
					(c) Substitution from ROW and Region to EU (F$)		(d) % Change in imports from ROW & Region	
	ROW	**Region**	**ROW**	**Region**	**ROW**	**Region**	**ROW**	**Region**
Food & Live Animals	728,320,733	13,471,373	97.3	1.8	-1,277,404	-704	-0.18	-0.01
Beverages & Tobacco	29,859,808	5,424	92.5	0.0	-1,511,550	-205	-5.06	-3.78
Mineral Fuels and Products	1,250,999,572	26,551	99.9	0.0	-35,671	-1	0.00	0.00
Animals, Vegetable Oils & Fats	82,630,038	27,216	99.1	0.0	-104,564	-	-0.13	0.00
Chemicals & Related Products	210,111,191	375,903	90.7	0.2	-1,084,598	-1,173	-0.52	-0.31
Manufactured Goods	691,742,471	2,820,452	97.7	0.4	-1,253,301	-3,630	-0.18	-0.13
Machinery & Transport	726,439,454	3,356,130	94.3	0.4	-5,727,735	-12,890	-0.79	-0.38
Misc. Manufactured Articles	157,674,527	201,471	98.4	0.1	-290,940	-269	-0.18	-0.13
Commodities nec	46,348,046	393,421	97.4	0.8	-18,561	-102	-0.04	-0.03
Total	**3,924,125,840**	**20,677,941**	**97.3**	**0.5**	**-11,304,322**	**-18,973**	**-0.29**	**-0.09**
					Scenario 2: Partial liberalisation			
Food & Live Animals	728,320,733	13,471,373	97.3	1.8	-43,547	-478	-0.01	0.00
Beverages & Tobacco	29,859,808	5,424	92.5	0.0	-30,615	-	-0.10	0.00
Mineral Fuels and Products	1,250,999,572	26,551	99.9	0.0	-4,547	-	0.00	0.00
Animals, Vegetable Oils & Fats	82,630,038	27,216	99.1	0.0	-104,178	-	-0.13	0.00

Chemicals & Related Products	210,111,191	375,903	90.7	0.2	-986,754	-934	-0.47	-0.25
Manufactured Goods	691,742,471	2,820,452	97.7	0.4	-1,064,423	-1,427	-0.15	-0.05
Machinery & Transport	726,439,454	3,356,130	94.3	0.4	-4,382,279	-6,063	-0.60	-0.18
Misc. Manufactured Articles	157,674,527	201,471	98.4	0.1	-245,081	-259	-0.16	-0.13
Commodities nec*	46,348,046	393,421	97.4	0.8	-17,930	-102	-0.04	-0.03
Total	**3,924,125,840**	**20,677,941**	**97.3**	**0.5**	**-6,879,354**	**-9,263**	**-0.18**	**-0.04**

Notes: The year 2012 is used as the base year. For a detailed list of the items under each aggregated import category in this table, refer to Table 7 in the Appendix. The full liberalisation scenario captures the explicit substitution from existing ROW and regional trading partners to the EU. The partial liberalisation scenario reflects this substitution after the list of excluded items (20.3 percent of national tariff lines) has been incorporated into the analysis. Base year imports data (column (a)) is sourced from the FIBOS HS6 Trade Report (2012). The substitution effect (column (c)) is estimated using equation 16 from our empirical framework. All other percentages reported here are the authors calculations. Regional market includes Fiji's neighbouring countries (Papua New Guinea, Cook Islands, Marshall Islands, Nauru, Palau, Solomon Islands, Samoa, Tonga, Tuvalu, Vanuatu), while ROW is every other trading partner of Fiji, excluding the region and the EU. * not elsewhere classified.

Table 1-13: Impact on imports with an EU-EPA plus external tariff reform in a full and partial liberalisation scenario[26].

Aggregated import category	**Scenario 1: Full liberalisation**			**Scenario 2: Partial Liberalisation**		
	(a) EU-EPA & External Tariff Reform Effect: Changes in imports by market group (F$)			**(b) EU-EPA & External Tariff Reform Effect: Changes in imports by market group (F$)**		
	Region	**ROW**	**EU**	**Region**	**ROW**	**EU**
Food & Live Animals	178,904	-1,042,248	863,345	-478	-42,277	42,755
Beverages & Tobacco	-100	-601,494	601,594	0	-7,630	7,630
Mineral Fuels and Products	-4	-33,251	33,254	0	-2,241	2,241

[26] Table 1-12 and 1-13 can be compared to view the impacts of EU EPA only (Table 1-12) and EU EPA plus external tariff reform (Table 1-13).

Animals, Vegetable Oils & Fats	0	-104,564	104,564	0	-104,178	104,178
Chemicals & Related Products	6,409	-1,032,445	1,026,036	2,169	-949,685	947,516
Manufactured Goods	-17,701	-1,075,172	1,092,873	4,158	-975,242	971,084
Machinery & Transport	-34,446	-5,195,775	5,230,221	-15,616	-4,102,227	4,117,842
Misc. Manufactured Articles	-1,838	-234,514	236,352	-536	-210,396	210,932
Commodities nec	-93	-14,664	14,757	261	-14,505	14,245
Total	**131,131**	**-9,334,128**	**9,202,997**	**-10,041**	**-6,408,380**	**6,418,421**

Notes: The year 2012 is used as the base year. For a detailed list of the items under each aggregated import category in this table, refer to Table 6 in the Appendix. The full liberalisation scenario captures the explicit substitution from existing ROW and regional trading partners to the EU. The partial liberalisation scenario reflects this substitution after the list of excluded items (20.3 percent of national tariff lines) has been incorporated into the analysis. The substitution effects reported in columns a and b are estimated using equation 27 to 29 from our empirical framework (see Table 1-10). Regional market includes Fiji's neighbouring countries (Papua New Guinea, Cook Islands, Marshall Islands, Nauru, Palau, Solomon Islands, Samoa, Tonga, Tuvalu, Vanuatu), while ROW is every other trading partner of Fiji, excluding the region and the EU. * not elsewhere classified.

In sum, the import substitution results (Tables 1-11 and 1-12) indicate that the proposed EU-Fiji EPA will not significantly change Fiji's existing trade relationship with the ROW and with countries from the Pacific region. While the substitution of imports from the ROW and region will produce a 12.7 percent increase in EU imports from base year under full liberalisation or a 7.7 percent increase under partial liberalisation, the overall percentage declines in imports from the ROW and region (due to import substitution with EU products) are marginal. For the ROW, full liberalisation produces a F$11.3 million substitution of total imports with EU products (which is only a 0.3 percent decline in total ROW imports compared to the base year), while for the Region, F$0.02 million of total imports are displaced with EU products (a 0.1 percent decline in Regional imports from the base year), under the same liberalisation scenario. These substitution effects narrow substantially by 39.1 percent for the ROW (from F$11.3 million to F$6.9 million) and by 51.2 percent for the Region (from F$0.02 million to F$0.01 million) when the list of excluded products are incorporated. Compared to the base year, partial liberalisation substitution effects result in only a 0.18 percent and 0.04 percent declines in total imports from the ROW and Region, respectively.

The ramifications of these findings are twofold. Firstly, the negligible displacement of the ROW and Regional imports with EU products indicate that (depending on the tariff rates) the potential tariff revenue losses may be small as well. Imports from these two markets (ROW and region) earn tariff revenue for the government at the MFN tariff rates (for ROW imports) and preferential tariff rates (for Regional imports). When these are replaced with EU products, the government will likely lose tariff revenue, a major concern of the EU-EPA consequences for many ACP member countries (Milner et al., 2005 and others). These estimated tariff revenue losses are presented in Table 1-14 and discussed next. Secondly, from a regional context, the negligible estimated displacement of regional imports indicates no significant effects on Fiji's trade relationship with its neighbouring Pacific Island countries. The negative consequences of the EU-EPA on the regional integration efforts of the ACP group have been emphasised in the relevant literature (see for example Fontagne et al., 2010; Zgovu & Kweka, 2007; and others). Additionally, the exclusion of a large percentage of items from the food & animal category also augur well for Fiji's regional economic relations, given that food & live animals is a major imported item (with F$13.5 million imports or a 65.1 percent share in total Regional imports in the

base year - see Table 1-12) from the Region. Hence, our findings on the displacement of imports from the region contrasts with conclusions drawn for some other ACP countries, where the EU-EPA is envisaged to have detrimental consequences for regional trade. For example, Zgovu and Kweka (2007) revealed that the EU-EPA will shift significant amount of imports from the SADC as consumers from Tanzania and Malawi swap these regional products with the relatively cheaper EU products. The authors contend that such large regional substitution effects can hinder any regional integration efforts. However, our findings do not indicate any significant displacement of regional imports by Fiji.

Finally, when viewed by the specific imports category, the substitution impact (in absolute terms) on machinery & transport equipment remains high under both the full and partial liberalisation scenarios (F$5.7 million and F$4.4 million, respectively), while relative to base year imports, the significant threats to the beverages & tobacco category under full liberalisation (4.7 percent of base year beverages & tobacco imports) is largely reduced under partial liberalisation to only 0.09 percent of base year beverages & tobacco imports. For machinery & transport equipment, only 3.3 percent of items in this category were excluded from liberalisation. While this may contribute to significant tariff revenue losses from this category, the liberalisation of imports of capital goods (such as machinery) has also been acknowledged in the related literature as growth enhancing (see for example Mazumdar, 2001; Lee, 1995; and others). Fiji does not produce any machinery & transport equipment and liberalisation of this category will enable imports at comparatively lower prices. At the disaggregated level, it was found that the sub-group "vehicles other than railways and tramways" had the largest substitution effect of F$2.1 million, followed by machinery, mechanical appliances and electrical goods (with estimated F$1.5 million substitution). Many of the specific items under these broad categories are relevant for agriculture, manufacturing and/or other development and construction projects. More specifically, some of the major items from these sub-groups included tractors, motor vehicles for transport of people, vehicles for goods transportation, engines & parts, industrial electrical equipment, packaging, sealing, labelling machinery, weighing machinery, bulldozers, graders, road rollers, and machinery parts. As for the beverages & tobacco category, which was highlighted as the most vulnerable in relative terms under full liberalisation, a significant 91 percent of excluded products from this group has reduced the estimated substitution effect under partial liberalisation.

These findings on the Fijian economy are in contrast to the findings on some other ACP countries, where the import substitution from their non-EU ROW and regional markets to the EU market was estimated to be much larger. For instance, Milner et al (2005) estimated a 16% increase in Tanzania's imports and 23% increase in Uganda's imports from the EU after the EU-EPA, largely driven by the manufacturing sector. Sizeable impacts for the CARICOM was also estimated by Greenway & Milner (2006). Their estimated increase in EU imports for the CARICOM countries ranged between 12% (Trinidad) and 16% (Jamaica). On average, regional import substituon for the CARICOM was estimated at 24%, while substitution of imports from the non-EU ROW market to the EU was estimated between 40% and 57%. Furthermore, Zgovu & Kweka (2009) also estimated comparatively larger import substitution effects for Tanzania and Malawi. At the sectoral level, for Malawi they estimated a 30% substitution from non-EU market to the EU in the Fisheries sector, 15% in Mining and Quarying, and 10% in the Manufacturng sector. For Tanzania, they estimated a 52% substitution in the Fisheries sector, 10% in the Mining and Quarying and 13% in the Manufacturing. The differences in the magnitude of the impact of the EU-EPA on imports of the Fijian economy and of these selected other ACP countries are mainly due to their different trade patterns and substitution elasticities. Selected ACP countries have a higher proportion of imports from the EU. Regional imports are also significant for some of the ACP countries, resulting in comparatively larger regional import substitution.

1.5.2: Tariff revenue implications of the EU-Fiji EPA

Next, the import substitution results presented in Tables 1-11 and 1-12 were used to estimate the tariff revenue implications of the EU-Fiji EPA liberalisation process. The results are presented in Table 1-14. The imports from the ROW and the EU are subject to the MFN tariffs while the imports from the Region have a comparatively lower preferential tariff. With the EU-Fiji EPA, removal of tariffs will produce tariff losses from three sources. First, the existing EU imports earn tariff revenue at the MFN tariff rate. The EU-Fiji EPA will remove tariffs on EU products, therefore this will produce tariff losses from the existing EU imports. This impact, in total and by aggregated product level is shown in column a of Table 1-14. Under full liberalisation, a total tariff revenue loss of F$8.1 million is estimated from the existing EU imports. This loss is largely driven by machinery

& transport equipment (F$2.8 million), food & live animals (F$1.8 million), manufactured goods (F$1.3 million) and chemicals (F$1.1 million). With partial liberalisation, this tariff revenue loss halves to only F$4.7 million. Exclusion of products, mainly from the food & live animals, beverages & tobacco and mineral fuel products categories contributed to this decline in the estimated tariff revenue loss arising from the existing EU imports. The tariff loss due to machinery & transport equipment, however, remains significant under the partial liberalisation scenario, given that only 3.3 percent of items under this category are excluded.

Table 1-14: Tariff revenue impact of the EU-Fiji EPA by aggregated import category.

Aggregated import category	Scenario 1: Full liberalisation			
	(a) Loss from existing EU imports (F$)	(b) Loss due to ROW substitution (F$)	(c) Loss due to Regional Substitution (F$)	(d) Total (F$)
Food & Live Animals	-1,847,704	-332,267	-9.6	-2,179,980
Beverages & Tobacco	-724,956	-273,948	-9.8	-998,913
Mineral Fuels and	-46,314	-4,840	0.0	-51,154
Animals, Vegetable Oils & Fats	-101,354	-17,460	0.0	-118,814
Chemicals & Related Products	-1,100,509	-97,565	-76.2	-1,198,150
Manufactured Goods	-1,283,512	-144,624	-270.7	-1,428,406
Machinery & Transport	-2,765,882	-662,450	-247.6	-3,428,580
Misc. Manufactured Articles	-206,563	-56,142	-2.5	-262,707
Commodities nec	-13,576	-3,456	-0.5	-17,032
Total	**-8,090,369**	**-1,592,751**	**-617.0**	**-9,683,737**
	Scenario 2: Partial liberalisation			
Food & Live Animals	-41,770	-8,458	0.0	-50,228
Beverages & Tobacco	-7,729	-2,958	0.0	-10,687
Mineral Fuels and	-4,785	-841	0.0	-5,626
Animals, Vegetable Oils & Fats	-101,354	-18,114	0.0	-119,468
Chemicals & Related Products	-958,174	-81,661	-62.0	-1,039,898
Manufactured Goods	-1,101,123	-107,186	-107.7	-1,208,417
Machinery & Transport	-2,253,083	-383,246	-16.0	-2,636,345
Misc. Manufactured	-186,958	-41,907	-2.2	-228,868

Articles				
Commodities nec	-13,025	-3,321	-0.5	-16,346
Total	**-4,668,002**	**-647,692**	**-188.5**	**-5,315,883**

Notes: The tariff loss from existing EU imports (column a) is calculated as the product of the existing EU imports and the corresponding MFN tariff rate at each HS6 tariff line, and then aggregated at product and category level. The tariff loss from the ROW (column b) is the product of the ROW imports substitution (column c of Table 1-12) and the respective MFN tariff rate at each HS6 tariff line, and then aggregated at product and category level. The tariff loss from region (column c) is calculated as the product of regional imports substitution (column c of Table 1-12) and the corresponding preferential tariff rate at each HS6 tariff line and aggregated by product and category. The MFN tariff rates were obtained from the 2012 HS Tariff Schedule for Fiji available from FIRCA, while the preferential tariff rates were extracted from the ITC website. *nec is not elsewhere classified.

The second source of tariff revenue loss emanates from the substitution of imports from the ROW to the EU market, after liberalisation. These imports, which initially earned tariff revenue at the MFN tariff rates, will no longer produce revenue when substituted with liberalised EU products. As shown in column b of Table 1-14, the estimated loss from this corridor (under full liberalisation) is F$1.6 million. Notably, while significant import substitution of machinery & transport equipment was estimated from the ROW (see Table 1-12), the contribution of this to tariff revenue losses is not significant. However, it is the existing machinery & transport equipment imports from the EU which contributes largely to the estimated tariff revenue losses. Furthermore, when the exempted products are considered, the tariff revenue loss due to ROW imports substitution falls to only F$0.6 million. Finally, the third source of tariff revenue losses is due to substitution from the Regional market to the EU, which otherwise earned tariff revenue at the preferential tariff rates. However, given that both, imports and tariff rates in this market are very low, the consequent impact on tariff revenue loss under both full and partial liberalisation is negligible.

Overall, the estimated tariff revenue loss (with full liberalisation) is estimated at F$9.7 million (equivalent to 0.2 percent of GDP in the base year), with the bulk of this loss emanating from the existing EU imports. Under partial liberalisation, this loss declines to F$5.3 million. Using the base year as the comparison point[27], full liberalisation is estimated to lower tariff revenue by 2.5 percent while partial liberalisation will produce a 1.4 percent decline in tariff revenue. Hence, exclusion of 20.3 percent of the tariff lines in a partial liberalisation scenario has narrowed the estimated tariff revenue loss by 82.2 percent[28], from full liberalisation. Tariffs are an important source of government revenue

[27] In the base year (2012) total tariff revenue was F$384 million, equivalent to 19 percent of total tax revenue (FIBOS, 2016).
[28] Calculated as tariff loss (full) less the tariff loss (partial) divided by tariff loss (partial) and multiplied by 100.

for Fiji. From the period 2000 to 2015, the average share of tariff revenue in total tax income for Fiji was 23.6 percent (RBF, 2017). Figure 1.0 in the Appendix shows the different sources of government tax revenue. Hence, almost a fifth of government taxation revenue is generated from tariffs. Relative to the economy size, in 2015 tariff revenue was equivalent to 7.3 percent of GDP and remained at around this same level in 2016. With the EU-EPA, findings presented in Table 1-14 indicate that concerns of substantial tariff revenue losses from the EU-EPA are not significant for Fiji. Tariff revenue is estimated to shrink (from the base year) by 2.5 percent (under full liberalisation) or 1.4 percent (with partial liberalisation). These findings are in contrast with the conclusions drawn for some other ACP member countries such as Tanzania, Uganda (see Milner et al., 2005; Zgovu & Kweka, 2007) and Malawi (in Zgovu & Kweka, 2007), where results indicated that tariff revenues will almost halve following the EU-EPA. Their result was driven by both, a relatively high share of imports from the EU for these countries, particulary manufactured goods and high tariffs on these goods. Moreover, Fontagne et al. (2010) also identified the Pacific group amongst the top three most protected ACP sub-groups in terms of tariffs imposed on imports from the EU. Nevertheless, though the tariff revenue losses for Fiji are negligible, it will have implications on government's expenditure decisions and may induce cuts in essential sectors such as education and housing if the government is unable to substitute this income loss with other sources.

1.5.3: Impact on domestic production, consumption, prices and exports [29]

Fiji produces a narrow range of agricultural and manufactured products. We investigated the consequences of the EU-Fiji EPA on the domestic demand for the locally produced goods, supply into local and export market, and prices. This list of selected non-sugar agricultural and manufactured products[30] was extracted from Fiji's Agriculture, Fisheries and Forestry Report (2011) and Manufacturing Report (2011) sourced from the FIBOS.

[29]The estimated consequences on exports reflect the overall change only and does not refer to changes in exports to any specific market. The results should be interpreted as the growth in exports supply for each commodity. While noting that the EU will also open its market for Fiji products, the implications on exports presented in Table 1-15 and 1-16 does not represent the changes in Fiji-EU exports. This study only considers the impacts of the EU-Fiji EPA from the Fijian tariff removal perspective.

[30] We only considered the non-sugar agricultural and manufacturing production of items provided in our respective data source. Sugar is not included in this analysis on domestic production. It is a non-import competing exported product, sold to the EU under specific trade arrangements (discussed in sections 1.2.4 and 1.2.5.4). Given the special and significant role of sugar in the overall EU-EPA, this sector warrants comprehensive research on its own. Some of the investigations of the EU-EPA implications on the sugar industry include Rakotoarisoa and Chang (2017), OECD and WTO (2011), Mahadevan and Asafu-Adjaye (2010), Richardson (2012), Serrano (2007).

Impact on Agricultural Goods

Similar to the substitution of imports sourced from the ROW and region with EU products, liberalising EU imports will also prompt consumers to shift from domestically produced goods to cheaper EU imports. Table 1-15 summarises the implications on agricultural goods.

Table 1-15: Agricultural goods - Impact of the EU-EPA on domestic consumption, exports, price and supply.

Product	(a) % of Domestic consumption substituted with EU	(b) % Δ Exports	(c) % Δ Domestic Price	(d) % Δ Domestic Supply
Maize	0.04	0.01	-0.05	-0.05
Rice	1.37	0.23	-1.45	-1.39
Root crops	0.00	0.00	0.00	0.00
Tomatoes	2.11	0.52	-2.63	-2.58
Egg Plant	0.00	0.00	0.00	0.00
Capsicum	1.74	0.01	-1.47	-0.03
Bananas	0.00	0.00	0.00	0.00
Pineapples	1.00	0.24	-1.24	-1.23
Papayas & watermelon	0.27	0.06	-0.32	-0.26
Citrus fruits	1.65	0.22	-1.58	-1.12
Mangoes	0.00	0.00	0.00	0.00
Milk	1.90	0.88	-4.59	-4.47
Eggs	0.55	0.49	-2.65	-2.28
Honey	0.13	0.00	-0.20	-0.20
Poultry	0.03	0.00	-0.06	-0.06

Notes: The results in this table were calculated using equation 10 (for column a), equation 21 (column b), equation 26 (column c) and equation 25 (column d) from our empirical framework. The estimates are presented here in percentage forms with all the respective percentage changes calculated with referral to the base year. The required data for these equations were obtained from various sources (see section 1.4.2 for specific data source).

Overall, our results in Table 1-15 indicate that the implications of the EU-EPA on agricultural production will be small, largely because most of the agricultural products can be defined as "native' to the Fijian economy and are either not in direct competition with the imported varieties or not imported at all. For example, root crops, eggplants, bananas and mangoes have no substitution effect. Moreover, only marginal displacement (of less than 2 percent) is estimated for more common products (such as rice, tomatoes, capsicum, fruits and dairy produce). Column c of Table 1-15 shows the estimated declines in prices

of these agricultural products. Except for milk, tomatoes and eggs, the percentage declines in prices of all other commodities are below 2 percent. A lower price and reduced domestic demand is anticipated to dampen incentives for domestic producers and thus reduce supply into the local market. This decline in supply are estimated to vary between 4 percent and 0 percent (see column d). With the exports market as an alternative, our estimates (column b) show very negligible increase in exports. In sum, the implications on domestically produced agricultural products (as shown in Table 1-15) are not significant. The EU-EPA does not produce a large displacement of domestically produced agricultural products mainly because many of the agricultural products produced in Fiji are not in direct competition with EU products. However, for items like rice, tomatoes, capsicum, citrus fruits, eggs and milk, although the estimated effects in terms of domestic demand and prices are marginal, these products can be viewed as vulnerable agricultural products. This is because the production structure of these items in Fiji are either small to medium scaled enterprises or family operated farms. As argued in Godfrey (1999), smallness disadvantages an economy in terms of exploiting scale economies, and alongside that, remoteness of island economies further dampens commercialisation prospects. On this note, even minor declines in prices or domestic demand can affect the viability of these products and/or necessitate effective strategies for success.

Impact on manufactured goods.

Table 1-16 summarises the EU-EPA implications on Fiji's manufactured products which are broadly categorised into manufactured food products, beverages & tobacco and manufactured products classified chiefly by material. Firstly, for manufactured food products, the displacement of domestically produced goods with imported EU products falls between approximately 8 percent and 1 percent. Food products that can be highlighted as susceptible (see column b of Table 1-16) include macaroni, noodles and similar items (8.4 percent), cocoa, chocolates & confectionary (6.9 percent), rice (4.6 percent), dairy products (3.0 percent), processed fruits & vegetables (2.8 percent), breads, cakes & biscuits (2.5 percent). In terms of changes in domestic price, macaroni & noodles, cocoa, chocolates & confectionary, processed fish, dairy products and rice are estimated to have percentage declines in prices of more than 5.0 percent. While these price declines will benefit consumers, it will reduce production incentives, with the estimated effects on

domestic supply presented in column d of Table 1-16. Hence, supply of manufactured food products such as macaroni, noodles, cocoa, chocolates & confectionery, dairy products, rice and processed fish (all of which are estimated to decrease by more than 5.0 percent) can be categorised as the most vulnerable manufactured food products from the perspective of domestic supply implications of the EU-EPA.

Table 1-16: Manufactured goods: Impact of the EU-EPA on domestic consumption, exports, price and supply.

	(a) Domestic production (F$)	(b) % of Domestic consumption substituted with EU products	(c) % Δ Domestic Price	(d) % Δ Domestic Supply	(e) % Δ Exports
Manufactured Food Products					
Meat production	128,069,416	0.93	-3.90	-3.93	0.78
Processed fish	91,152,468	2.32	-5.60	-5.63	1.09
Processed fruits & vegetables	28,562,843	2.80	-2.70	-2.80	0.47
Veg & animal oils and fats	40,256,284	2.17	-2.91	-2.91	-
Dairy Products	83,755,046	3.02	-5.58	-5.59	1.10
Rice milling	31,514,287	4.64	-5.46	-5.46	-
Flour & other grain milling	88,809,127	1.74	-1.73	-1.74	0.34
Bread, cakes, biscuits	49,613,365	2.53	-2.53	-2.54	-
Cocoa, chocolates, and other confectionary	45,285,104	6.94	-6.25	-6.94	0.56
Macaroni, noodles & similar items	4,785,214	8.44	-8.44	-8.45	-
Beverages & Tobacco					
Alcohol & tobacco	148,851,458	14.03	-10.21	-10.21	-
Soft drink	63,521,472	1.23	-0.68	-0.88	0.15
Mineral water	113,528,462	1.46	-0.92	-1.09	0.01
Manufactured Products classified by material					
Wearing apparel	158,826,015	2.99	-7.94	-8.42	1.11
Footwear and leather products	27,219,807	1.81	-5.23	-5.29	0.99
Wood & wood products	118,983,030	0.99	-2.35	-2.46	0.35
Paper & paper products	72,515,957	4.73	-5.50	-5.79	0.81
Chemical and allied products	27,321,067	2.91	-3.33	-3.35	0.64
Paints,varnishes,printing ink	29,235,241	4.92	-7.28	-7.28	-
Soaps, detergents, cleaning	52,025,324	4.52	-7.06	-7.08	1.39

preparations					
Rubber products	9,263,514	7.11	-7.96	-7.96	-
Plastic products	28,278,715	7.00	-7.82	-7.84	1.54
Glass & glass products	695,628	8.16	-8.34	-8.34	-
Cement, lime, plaster	30,323,843	4.28	-5.79	-5.79	-
Articles of concrete, cement, plaster	42,516,814	1.66	-2.74	-2.74	-
Furniture	85,677,372	1.22	-3.03	-3.09	0.54

Notes: The results in this table were calculated using equation 10 (for column b), equation 26 (column c), equation 25 (column d) and equation 21 (column e) from our empirical framework. The estimates are presented here in percentage forms with all the respective percentage changes calculated with referral to the base year. The required data for these equations were obtained from various sources (see section 1.4.2 for specific data source).

For beverages and tobacco products, the most affected category is alcohol and tobacco (the bulk of which is largely sold in the domestic market), while the effects on soft drink and mineral water are minimal. Approximately 14 percent of domestic alcohol & tobacco demand is estimated to be substituted with cheaper EU products. In our analysis on imports (see Table 1-11), beverages and tobacco was also highlighted as the most vulnerable category (in relative terms) under full liberalisation. Hence, if this sector is fully liberalised, our results indicate that it will have significant consequences on both, displacement of imports from the ROW and region, and on displacement of domestic production.

In terms of manufactured products classified chiefly by material, results reveal possible threats to glass, rubber, plastic, paper products, paints, varnishes, printing ink, soap and cleaning preparations. The manufacturing sector expanded into production of these items largely supported by the Governments' various investment incentives, which eventuated as part of its efforts to diversify the production base (Chandra, 2002). While the percentage substitution of these locally produced goods with EU imports are not significant (approximately between 5 and 8 percent), influx of cheaper EU products can heighten competition in these relatively young industries, which mainly produce for the local market. Moreover, results also reveal possible threats to garment production. The domestic supply of wearing apparel is estimated to decline by 8.4 percent (see column d of Table 16). Garments were once an important industry in Fiji. Secured preferential market access and tax-free zones drove production in this sector in the 1990s, however the cessation of these incentives prompted several large garment producers to relocate in more efficient countries (Narayan & Prasad, 2003). Consequently, after rising to around 27 percent of total exports in the late 1990s, the significance of the garment sector has now decreased to only 5.0

percent of exports in 2016 (RBF, 2017). On a positive note, the dampening domestic market indicators can prompt expansion into exports market instead, (estimated percentage increases of which are presented in column e of Table 1-16). However, the ease with which this opportunity can be exploited is subject to its own set of impediments. Restrictive bio-security measures by trading partners, quality concerns, competition from other low-cost producers will affect entry and/or expansion in export markets (McGregor, 2007).

From the results presented in Tables 1-15 and 1-16, the potential effects of the EU-EPA on key agricultural and manufactured products can be consolidated as follows. For agricultural products, while the EU-EPA will not affect the demand for domestically produced native goods, it will have marginal impacts on products such as rice, tomatoes, capsicum, citrus fruits and milk. Production of most of agricultural products in Fiji can be characterised as either small to medium scaled producers or family operated farms. On this note, even minor price decreases or market share losses can affect viability of these producers. As such, based on results in Table 1-15, rice, tomatoes, capsicum, citrus fruits and milk are highlighted as vulnerable agricultural products. For manufactured goods, Table 1-16 highlights potential threats of the EU-EPA to selected segments of the manufacturing activity. In particular, infant industries such as glass, rubber, plastic and paper product manufacturers are estimated to face increased competition from EU imports.

The analysis on the domestic production, consumption, export supply and prices presented in Tables 1-15 and 1-16 assumed a full liberalisation scenario. When considering partial liberalisation, there will be no consequences on agricultural production since all of the items in Table 1-15 are excluded from this liberalisation process. However, for the manufactured goods, the availability of the production data (presented in Table 1-16) only in aggregated form precludes the incorporation of the specific excluded items.

1.6: Concluding remarks

Chapter 1 of this thesis provides an assessment of the static impact of the EU-Fiji EPA on a set of indicators for the Fijian economy. In particular, the investigation focused on how imports from all other markets would respond when the tariff on EU imports are removed due to the EU-EPA. These results were then used to estimate the potential tariff revenue losses. Additionally, the analysis looked at the consequences for selected domestically produced agricultural and manufactured goods. We considered a full liberalisation scenario where all imported items were included in the investigation and then a partial liberalisation scenario with only 80 percent of imports incorporated into the analysis. According to the interim EU-EPA report, 20 percent of imported items can be excluded from this liberalisation process. Our partial equilibrium method of analysis and the use of detailed HS6 level of disaggregated imports data has allowed our analysis to reflect the exclusion of these sensitive sectors.

While maintaining that our partial equilibrium analysis is not a comprehensive assessment of the consequences of the EU-Fiji EPA, some interesting findings do emerge from our results. Firstly, we found that the imports substitution and tariff revenue impacts differ considerably under our two scenarios. The exclusion of 20 percent of tariff lines from this liberalisation process has limited the potential losses. The total imports substitution from the ROW and Regional market to the EU decreases from F$11.3 million under a full liberalisation setting to F$6.9 million under partial liberalisation. Consequently, the tariff revenue loss shrinks from an estimated F$9.7 million under full liberalisation to F$5.3 million under partial liberalisation. These findings indicate that the provision of an exclusion list has enabled Fiji to exclude vulnerable commodities and this has cushioned the consequences.

Secondly, in contrast to the arguments of significant potential tariff revenue losses due to the EU-EPA in the existing literature, our findings show that the tariff revenue consequences for Fiji are much smaller compared to the considerable losses concluded for a few other ACP countries. Overall, the estimated tariff revenue loss (under full liberalisation) is equivalent to 0.2 percent of base year GDP. From the base year, full liberalisation is estimated to lower tariff revenue by 2.5 percent which shrinks to only a 1.4 percent decline under partial liberalisation. The relatively smaller tariff revenue loss is not

surprising given that the EU is not a major source of imports for Fiji. Hence, while concerns of considerable tariff revenue losses due to the EU-EPA is not applicable to Fiji, data indicates that a fifth of the Fijian Government's revenue is from import duties. As highlighted in Brenton et al (2007), a key challenge for low income countries is to maintain tax revenues as tariffs are reduced. On this note, with the EU-EPA and with any future import liberalisation initiatives (especially with major trading partners), Fiji will have to focus on improvement in efficiency of tax collection, alternative tax income or cutback government expenditure.

Furthermore, another concern of the EU-EPA in the existing literature is the threats to regional integration efforts due to potential regional trade diversion. However, given that the Region is not a significant source of Fiji's imports, we found that the EU-EPA does not produce any significant displacement of Fiji's imports from the Region. Trade diversion from the Regional market is estimated at F$0.02 million (full liberalisation) which declines to F$0.01 million under partial liberalisation. Finally, in terms of domestic production, results indicated that the impacts on agricultural production are negligible. However, the estimated negative effects on selected infant manufactured products may threaten the viability of these sectors. In sum, the fiscal losses and potential costs on domestic production analysed in this study partly define the financial needs for the Fijian government as it adjusts to the consequences of the EU-EPA.

Given that we have adopted the partial equilibrium approach for our analysis, it is important to highlight the drawbacks of this method, particularly in terms of interpreting our results. Since a partial equilibrium method ignores the wider economy effects, we do not construe our results as the full consequences of the EU-EPA. Clearly, the EU-EPA will have wider positive and negative economic effects. On the one hand, the liberalisation of imports will heighten competition for some domestic producers, resulting in closure of production plants and thus unemployment. On the other hand, lower demand from the domestic market implies export expansion opportunities. Arguably, the availability of cheaper inputs due to import liberalisation will also lower costs of production and thus improve production. Moreover, there are also a number of dynamic effects of the EPA's. These include potential for higher domestic and foreign investment, economies of scale, the spill-over effects of enhanced credibility of trade policy reforms, exposure to global production networks, access to cheaper EU products and the EU market for exports.

Moreover, reforms to EU sugar prices will also have comprehensive macroeconomic effects on Fiji. Yet another area that would need to be considered is the implications of the EU's development assistance provided to the ACP member countries to assist them to adjust to the EPA. Hence, results from this study should not be considered as overall welfare implications of the EU-Fiji EPA but should instead be viewed as a detailed sectoral level partial equilibrium analysis on selected economic indicators for the Fijian economy. As future work, given the availability of data, empricial investigation on the economy wide effects with the use of CGE techniques, both static and dynamic, would complement these sectoral findings. Moreover, the application of GTAP's model to investigate the same impacts as in chapter 1 would provide interesting comparisions. Additionally, while there is some research on the implications of EU's sugar price cut on Fiji's exports, investigation of this change on related markets such as land and labor would provide a more comprehensive analysis. Moreover, a recent development in the EU is the United Kingdom's decision to exit from the EU, which is scheduled to formalise in early 2019. As shown in Table 1-9, the UK is a major export destination (mainly for sugar) for Fiji. The impact on Fiji will thus largely depend on whether the UK will continue with the preferential agreements (on a bilateral basis) that existed between Fiji and the EU. The implications of this transition on Fiji and thus its exisiting relationship with the EU can be addressed in future research.

Chapter 2

The effect of Preferential Trade Agreements on Foreign Direct Investment: empirical evidence from the African Caribbean Pacific group

2.1: Introduction

The second chapter of this dissertation focuses on two notable developments in international economics – Foreign Direct Investment (FDI) [31] and Preferential Trade Agreements (PTAs)[32]. The objective of this study is to extend the debate on PTAs beyond trade effects with particular focus on the ACP group. The motivation to explore effects beyond trade arises from two distinctive developments of this trade policy. The first development is the dramatic increase in the number and geographical spread of PTAs despite the dramatic fall in the average Most Favored Nation (MFN) tariff rates. When a PTA is formed member countries attain a competitive edge over non-PTA members and the preferential margin is determined by the difference between the MFN tariff rate (imposed on non-PTA trade partners) and the preferential tariff rate (imposed on PTA members). However, a decline in the MFN tariff rate reduces this preferential margin because non-PTA members are also faced with much lower tariffs and in line with this the growth of PTAs should slow. Instead, the latest data from the WTO indicates that PTAs are gaining unprecedented popularity as a trade policy option across the globe. The number and geographical spread of PTAs has increased dramatically over the years. According to the World Trade Organisation (WTO), the total number of PTAs reached over 300 towards the end of 2013 with a noticeable acceleration from 1990 onwards. Alongside this, the average

[31] The World Bank defines FDI as investment made to acquire lasting interest in enterprises operating outside of the economy of the investor. The purpose of this investment is to gain an effective voice in the management of the enterprise. The IMF suggests a threshold of 10 percent of equity ownership to qualify as a foreign direct investor. The components of FDI are equity capital, re-invested earnings and intracompany loans (between parent and affiliates).

[32] A PTA is defined as a trade pact that provides preferential treatment (such as lower tariff) on bilateral trade among member countries, while autonomy in trade policy on non-members is maintained.

number of PTAs that each country participates in has increased from just 2 in 1990 to 12 in 2010. The African Caribbean Pacific[33] (ACP) group has not lagged behind in this race for global integration. Cumulative to 2010, the group totalled 85 PTAs (WTO, 2011). Secondly, PTAs have also extended their coverage beyond trade to include deep integration provisions. These include for example specific provisions covering foreign investment, labor, services, competition policy, intellectual property rights, dispute settlements and standards. Consequently, this wider coverage of PTAs indicates potential impacts beyond trade, one of which includes the effects on FDI.

Since PTAs were conventionally designed to address trade flows there exists an extensive empirical literature on the effects of PTAs on trade (see for example Kohl & Trojanowska, 2015; Foster, Poeschl, & Stehrer, 2011; Hur, Joseph, & Park, 2010; Chen & Joshi, 2010; Baier & Bergstrand, 2009; Carrere, 2006; amongst others). However, the non-trade or "deep integration" provisions have not received much investigation. This changing landscape of PTAs indicates that the predominant drivers of these agreements extend well beyond trade objectives alone and thus motivate this study to explore the effects on FDI.

Together with the lack of investigation on the PTA-FDI nexus, there is also a dearth of empirical work with exclusive focus on the ACP group. This group of states, which has experienced approximately 30 percent average increase in population in each of the past five decades (see Table 2-3) also comprises a large part of the world's least developed countries. Of the 49 Least Developed Countries, 40 are from the ACP group with 33 in Africa, 1 from the Caribbean and 5 from the Pacific (United Nations Conference for Trade and Development [UNCTAD], 2011). Given the significant development constraints and challenges faced by this group, FDI provides an important development opportunity (Naude & Krugell, 2007; Bankole & Adewuyi, 2013; amongst others) and is often cited as a fundamental non-trade driver for PTA membership (Buthe & Milner, 2014). This is not surprising given the importance of FDI and the growing competition among countries to attract this longer term capital inflow. Given low income levels and domestic savings, the ACP groups heavy reliance on funds from abroad is well recognised. While foreign Official Development Assistance (ODA) addresses part of this deficiency, it has declined over the years following austerity measures in America and Europe after the 2008/2009

[33] This group comprises of 79 states from Africa, Caribbean and the Pacific with the majority of states being African, followed by Caribbean and then the Pacific. See Table 11 in the Appendix for the list of all ACP countries.

crisis (Amendolagine, Boly, Coniglio, Prota, & Seric, 2013). This has prompted efforts for a more stable and long-term inflow in the form of FDI (Asiedu, 2002), the positive effects of which are widely acclaimed in the literature. FDI provides a means for creating direct, stable and long-lasting links between economies and with the right policy environment, it can serve as an important catalyst of local enterprise development (Organisation for Economic Cooperation and Development [OECD], 2002). It enables host countries to achieve investment levels beyond their own domestic saving and is an important means of transferring modern technology and innovation from developed to developing countries (Kohpaiboon, 2003; Mina, 2007; Sichei & Kinyondo, 2012; Ethier & Markusen, 1996). It can create employment, enhance productivity and managerial skills (Mina, 2007; Asiedu, 2004), increase competition, raise dynamic efficiency and add to gross capital formation (Gastanaga et al., 1998). Yeyati, Stein and Daude (2004) provides a more balanced view and highlights that for the widely proclaimed benefits to be realized the foreign affiliates need to establish strong forward and backward linkages with domestic firms, engage in exports to offset the pressure on the Balance of Payments due to input imports, and domestic firms need to build the capacity to absorb all positive spill overs. Amendolagine et al. (2013), Markusen and Venables (1999) and Ping and Saggi (2007) also emphasise the importance of backward linkages for positive spill overs of FDI to materialise.

Despite these growth enhancing effects of FDI, the ACP group's record in attracting foreign investors is rather poor. Worldwide FDI flows have surged from about US$13 billion in 1970 to a significant US$1467 billion in 2013 (UNCTAD, 2014). The developing countries attracted more than half of this global FDI flow, with an average share of around 54 percent over ten years (2005-2014). By contrast, the ACP group's average global FDI share was a subdued 3 percent over this same period. There are various explanations on the factors behind this low FDI directed towards the ACP group, particularly in the African countries. These include for example, few opportunities offered by Africa for multinational corporations (Nunnenkamp, 2002), lack of development in their competitive factors (Pigato, 2001), low progress in trade and investment liberalisation, poor infrastructure development, weak institutional quality (Asiedu, 2002), poor macroeconomic stability and governance (Bankole & Adewuyi, 2013) and the existence of an 'Africa perception'[34] *(*Jenkins & Thomas, 2002; Asiedu, 2002*).* Nevertheless, as emphasised in Asiedu and Gyimah-

[34] Jenkins and Thomas (2002) explain the Africa perception as the view that instability is endemic in the region. Likewise, Asiedu (2002) highlighted the common perception of Africa as region strife with corruption, instability and poor governance.

Brempong (2008) and by various other scholars, FDI constitutes an important source of foreign capital for this group, amidst low income levels, declining foreign aid and low domestic savings. As a corollary to this, international organisations such as the IMF and the World Bank have been active in advising policy makers to pursue market liberalisation and other reforms to attract more FDI (Tuman & Emmert, 2004).

PTAs provide various channels through which their effects on FDI can be realised. Medvedev (2011) groups the transmission of PTAs to FDI into direct and indirect channels. The presence of investment provisions provides a direct channel, whereas trade and other provisions such as competition policy, standards and dispute settlement are grouped as indirect channels. The international institutionalisation of policy reforms through PTAs increases the creditability of government commitments by locking-in reforms, therefore reducing the investment risks of a host nation. Likewise, Buthe and Milner (2014) link trade agreements to FDI on the argument that such agreements act as a reassurance mechanism for foreign investors. They theorize that because subtle changes in domestic economic policies increases uncertainty and business risks, commitment made through international trade agreements increase credibility and make reversal of policies more costly. The FDI-trade nexus is yet another indirect channel whereby PTAs increase trade and consequently augments a host nation's openness to the global economy. Moreover, greater regional integration effects of PTAs create larger markets that increase opportunities for economies of scale and export platform FDI. As mentioned in Godfred, Bokpin and Michael (2015), formation of groups and trading blocs provide larger markets for market seeking FDI and also pushes countries to adopt democratic governments and acceptable trade behaviours - all of which enhances the attractiveness of a destination for FDI.

While various scholars like Baltagi, Egger and Pfaffermayr (2007), Aggarwal (2008) and Blomstrom and Kokko (1997) have extended the literature on PTA impacts by exploring its effects on FDI in a number of regional agreements, the coverage of the ACP states is limited. It is noticeable that most of the studies that do exist on individual ACP countries and/or sub-regional groups (such as Bankole & Adewuyi, 2013; Godfred et al., 2015; Naude & Krugell, 2007; Asiedu, 2002; Asiedu & Gyimah-Brempong, 2008) have explored the traditional determinants of FDI but research that explains if trade agreements matter for FDI is still in its infancy. Moreover, existing studies along this line have mainly focused on

countries from the African continent, while the Caribbean and Pacific region have received relatively less attention. Hence, this paper contributes by adding to the relatively small literature on FDI in the ACP group. It does this by focusing on the role of PTAs in attracting FDI. The empirical analysis utilises panel data that captures bilateral FDI from 34 OECD countries into 45 ACP countries over the period 2000-2012. This bilateral specification allows controlling for country pair variables such as a PTA between an OECD and ACP country, distance, time difference, and Bilateral Investment Treaty (BIT) along with other important explanatory variables (as identified in the literature) for foreign investment activity. Furthermore, we include surrounding market potential as a determinant of FDI in our model. While the host market size is explained in the literature as an important determinant of FDI, integrated surrounding markets also enhance the scope for further expansion and ultimately economies of scale opportunities that are otherwise limited in segmented markets (Blomstrom & Kokko, 1997). We also investigate whether PTAs have the same implications for FDI in each of the three subregions. Additionally, we also consider the interactions between BITs and PTAs and explore the role of these two policies in more detail.

The rest of this chapter is organised as follows; after an introduction in section 2.1, in section 2.2 we provide key stylized facts on PTAs, FDI activity and an economic overview of the ACP group. In particular, this synopsis of key economic indicators highlights the significance of FDI for a group of states plagued with subdued economic performance amidst various challenges. Section 2.3 reviews the related theoretical and empirical literature that explain the determinants of FDI. Section 2.4 explains the empirical model and the results are discussed in section 2.5. Finally, section 2.6 concludes this chapter.

2.2: Key stylized facts: PTAs, FDI and economic activity in the ACP group

2.2.1: An overview of PTAs and the ACP group

The use of PTAs is now a prominent feature of international trade policy. Almost every nation, except for Mongolia is signatory to at least one PTA (WTO, 2011). Moreover, according to the WTO, the average number of PTAs that each country participated in has increased from just 2 in 1990 to 12 in 2010. This indicates intensification and greater network per PTA. These agreements are no longer confined within specific geographic regions or income groups. The prevalence of regional and cross-regional PTAs and the formation of such agreements between countries of different income levels are illustrated in Table 2-1. Data shows that PTAs are mainly cross-regional (68 percent) with more of them being formed between developing countries (64 percent).

Table 2-1: PTAs by regional type[35] (cumulative to 2010).

	Total	Percentage (of total)
Intra-regional	146	32
Cross-regional	307	68
Developed-Developed	26	6
Developed-Developing	139	31
Developing-Developing	288	64

(Source: WTO Report, 2011)

Moreover, the content of PTAs has also changed considerably over time. While initially PTAs focused on tariff reduction on imports, the contents have now deepend to include additional provisions such as foreign investment, labor issues, dispute settlement mechanisms etc. Hofman et al (2017) analysed the contents of around 279 PTAs and revealed the presence of legally enforceable regulations in some policy areas in more than 50% of these PTAs, which fall within the WTOs current mandate. These provisions include customs regulations, anti-dumping, sanitary standards, etc. Additionally, these PTAs also include provisions outside the WTO mandate such as investment, environmental laws, nuclear safety etc. As highlighted in Hofman et al (2017), since the MFN tariffs are

[35] Includes both reciprocal and non-reciprocal PTAs.

already low between developed countries, North-North PTAs are comparatively deeper (average number of provisions-22), compared to PTAs among developing countries (average number of provisions-13). For North-South PTAs, the average number of provisions is 20.

The ACP group has not lagged behind in this worldwide surge of PTAs. Either individually or as part of their sub-regional groups, they have formed trade agreements with other countries. According to the WTO (2011), the African region dominates the group in terms of signed PTAs, with a total of 55 PTAs cumulative to 2010, of which 24 are intra-regional and 31 are cross-regional. Around 78 percent of these PTAs are with developing countries. Covering the same time period, the Caribbean group of countries accumulated 19 PTAs (mainly cross-regional), of which 16 are with developing countries while the Pacific Islands totalled 11 PTAs. However, while active in forming trade partnerships to integrate into the global economy, FDI in this group remains subdued.

2.2.2: Global FDI flows and the ACP states performance

Global FDI flows have increased over time and the UNCTAD projects this growth to continue. A 9 percent growth was realised in 2013, and developing countries shared more than half (approximately 54 percent) of this global flow. Table 2-2 shows the unequal geographical distribution of FDI for the years 2011-2013. The EU and North American countries buoyed the developed economies FDI activity, while East and South East Asia (notably China) strengthened the developing nation's global FDI share. China maintained its position as the world's second largest recipient of global FDI. Amidst this upbeat picture of global FDI flows and the remarkable share of developing economies, the ACP group's stake remained low. Countries from this group have never been a major recipient of FDI and hence lag behind other regions. In 2013, Africa attracted only 4 percent of global FDI, the Caribbean 0.9 percent and the Pacific region just 0.2 percent. Combined, the ACP group attracted only 5 percent of world FDI. Despite the surge in FDI flows worldwide, this group struggles to attract FDI. Of the developing countries FDI inflows in 2013, the ACP group accounted for only 9 percent (7.3, 1.6 and 0.4 percent respectively).

Table 2-2: Global Geographical Distribution of FDI inflows (2011-2013).

(billions of USD)	**2011**	**2012**	**2013**
World Total	1700	1330	1452
o/w Developing Economies	725	729	778
(% share in global FDI flows)			
Developing Economies	42.6	54.8	53.6
Africa	2.8	4.1	3.9
Asia	25.3	31.2	29.4
Latin America & Caribbean	14.3	19.2	20.1
o/w Caribbean	0.7	1.1	0.9
Pacific Islands	0.1	0.2	0.2
(% share of developing countries FDI inflows)			
Africa	6.6	7.5	7.3
Asia	59.4	56.9	54.8
Latin America & Caribbean	33.7	35.1	37.5
o/w Caribbean	1.7	2.0	1.6
Pacific Islands	0.3	0.4	0.4

(Source: Calculated using data from UNCTAD World Investment Report, 2014)

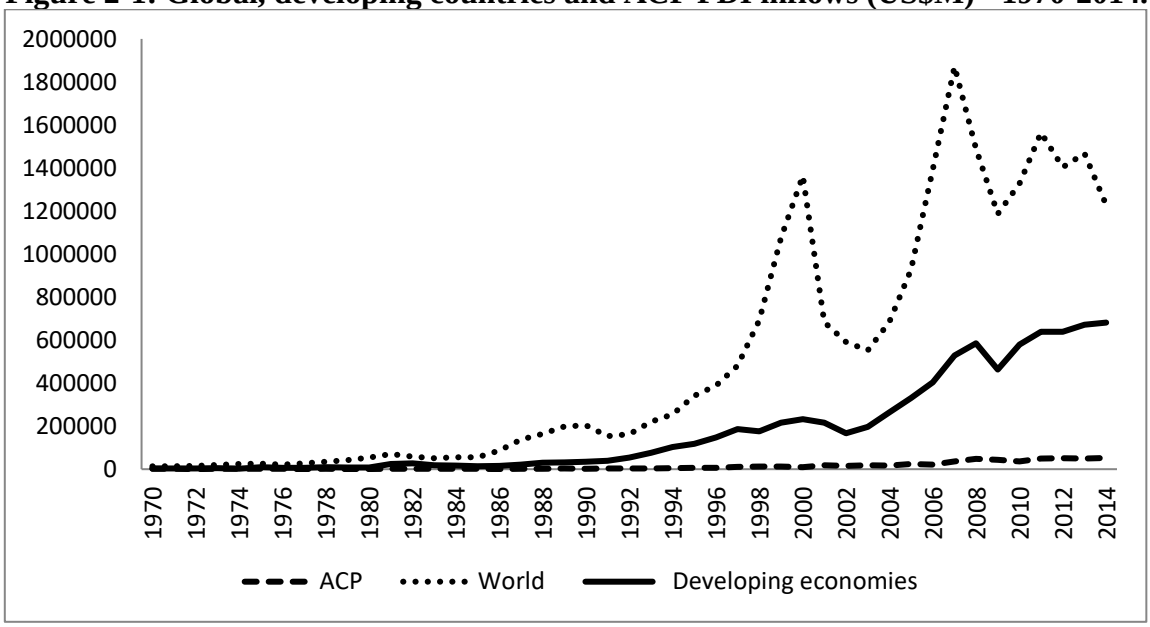
This comparatively weak FDI performance of the ACP group is not a recent phenomenon. Plagued by various economic, political and social constraints, the group has struggled over the years to attract a larger share of this global capital flow.

As is observable in Figure 2-1 shown next, global FDI inflows increased dramatically particularly from the 1990s, before declining in 2001. The flows then made a turnaround in 2004, and after reaching a peak in 2007, it declined again between 2008 and 2009. While another series of fluctuation in global FDI inflows occurred in the 2010-2014 period, the developing countries remained upbeat during these years. The ACP group's FDI activity however is largely in contrast to this lustrous global and developing country performance.

When it comes to FDI in the ACP countries, particularly in the African continent, the common perception is that it is largely attracted by natural resource endowments. While this remains true for some countries, the predominant drivers of FDI in the African group have over the years shifted from resource-industries into consumer-oriented sectors. The extractive industries share has been dwarfed by growing investment into manufacturing (agro-processing, textiles, building materials, electronics), and services (telecommunications, finance, business services, hotels, restaurants). For example, cumulative from 2009-2014, 44 percent of FDI projects were in the services sector, 32 percent in manufacturing and 24 percent in the primary sector (UNCTAD, 2014). The FDI

inflows vary within the African sub-region, with Northern and West Africa attracting comparatively more FDI than Central, Southern and East African countries. In a regional comparison of African FDI, Anyanwu and Yameogo (2015) revealed that North Africa's average share (2005-2014) of African FDI was 35 percent. This was followed by West Africa (26 percent), East Africa (17 percent), Southern Africa (14 percent) and Central Africa (8 percent). The main extra-regional investor into the African countries is Europe, with investments spread across primary, manufacturing and services sectors, followed by North America and Japan.

Figure 2-1: Global, developing countries and ACP FDI inflows (US$M) - 1970-2014.



(Source: Compiled using data from UNCTADstat available at unctadstat.unctad.org)

In the Caribbean group of countries, while the primary sector remains important, there are also significant investment inflows into manufacturing and services. Countries endowed with natural resources (such as gold, oil and gas) attract relatively higher FDI inflows. Additionally, sectors such as telecommunications, electricity, manufacturing and business financial services have also expanded with foreign investment. The main sources of FDI are the same as in the African countries.

For the Pacific Island countries, all three sectors (primary, manufacturing and services) are equally important for FDI. The main parent countries into these group of islands are the US, EU, and Australia. Mining, quarrying and fisheries (specifically in Papua New Guinea & Fiji) are the main source of attraction in the primary sector. Garment and food

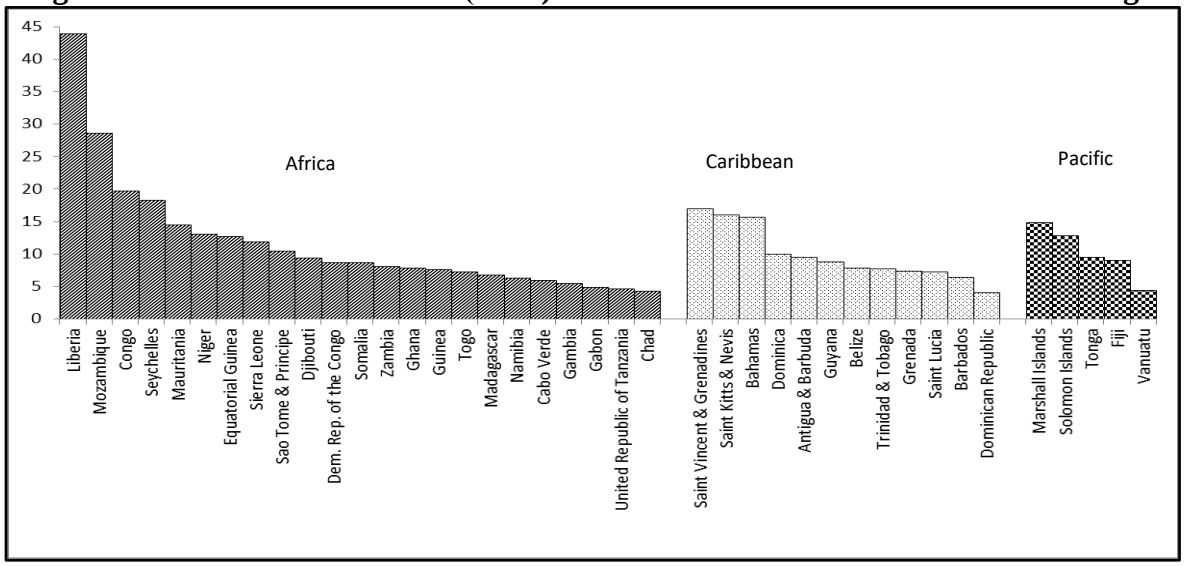
processing sectors are major FDI attractors in the manufacturing sector while tourism, construction and business services dominate the services sector.

The importance of FDI to the ACP group has increased over time and in terms of individual countries the share of FDI to GDP varies within and across the three major groups. For instance, as shown in Figure 2-2, the 2010-2014 average FDI to GDP ratio for Liberia and Mozambique is quite high (45 and 29 percent, respectively) compared to other ACP countries that range between 20 and 4 percent.

In the Caribbean, relatively high FDI to GDP ratios are observed for Saint Vincent & Grenadines, Saint Kitts & Nevis and the Bahamas, closely followed by the Marshall and Solomon Islands from the Pacific group.

FDI is an important form of capital inflow for all developing countries, and the importance is amplified for the ACP group given their underdeveloped capital markets. Alongside this, unpredictability of foreign aid flows and volatility of short-term inflows rank FDI as an important source of capital (Asiedu, 2002; Onyeiwu, 2004). However, the capacity of a nation to attract and benefit from FDI hinges on many factors, some of which include national policies, international relations, investment infrastructure and political and economic stability. According to the African Economic Outlook (2016) lack of effective regional integration also has a role, due to market fragmentation and lack of economies of scale opportunities.

Figure 2-2: FDI's share of GDP (in %) for selected ACP states - 2010-2014 average.



(Source: Compiled using data from UNCTADstat available at unctadstat.unctad.org)

2.2.3: Economic indicators -ACP states

The ACP states lacklustre performance in terms of key economic indicators reflect the inherent challenges faced by this group some of which, as identified by the UNCTAD (2013) include high economic vulnerability, low income levels, sea/land lockedness, isolation from main markets, weak institutional, regulatory and productive structures. Furthermore, an increasing population (shown in Table 2-3) continues to weigh heavily on the ACP governments to provide jobs, education, health and other services. The group hosted 14 percent of the global population in 2014 compared to 8 percent in the 1960s. For each of the ten-year periods shown in Table 2-3, the ACP population grew by almost 30 percent. The group has maintained this trend with a 9.7 percent growth over the more recent five years (2010-2014). While the African continent is the most populous, followed by the Caribbean and then the Pacific, the growth over 2010-2014 shows a notable increase in the Pacific region population (8.2 percent).

Table 2-3: Total population of ACP states.

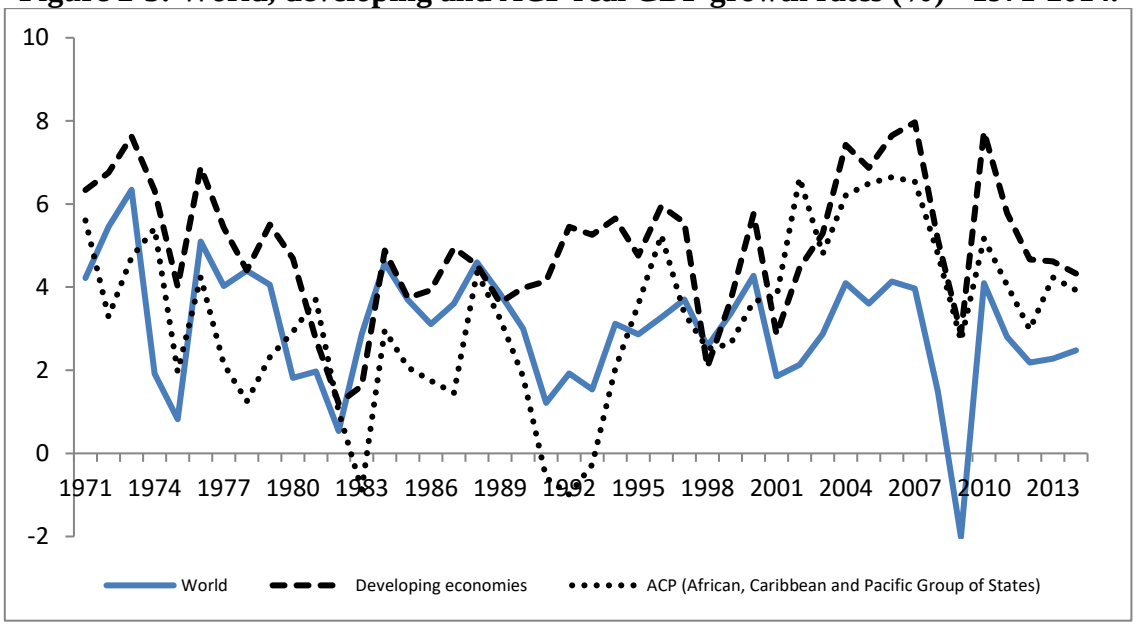
	1960	1970	1980	1990	2000	2010	2014
				In Thousands			
World	301834	368248	443963	530966	612662	6929725	726578
Developing	206285	262181	329317	408812	485402	5603433	591963
ACP	249713	318913	416394	547490	711411	923710	101365
Africa	213105	272462	358548	475833	551332	717271	746963
Caribbean	18494	22814	26814	30822	34694	38111	39433
Pacific	2787	3520	4541	5714	7179	8904	9631
				% Growth			
ACP		27.7	30.6	31.5	29.9	29.8	9.7
Africa		27.9	31.6	32.7	15.9	30.1	4.1
Caribbean		23.4	17.5	14.9	12.6	9.8	3.5
Pacific		26.3	29.0	25.8	25.6	24.0	8.2
				% share of world			
ACP	8.3	8.7	9.4	10.3	11.6	13.3	14.0
				% share of ACP			
Africa	85.3	85.4	86.1	86.9	77.5	77.7	73.7
Caribbean	7.4	7.2	6.4	5.6	4.9	4.1	3.9
Pacific	1.1	1.1	1.1	1.0	1.0	1.0	1.0

(Source: Compiled using data from UNCTADstat available at unctadstat.unctad.org). Note: ACP group totals do not add up to the ACP total because of missing data for some individual countries.

In terms of economic growth, the ACP group's performance is characterised by wide fluctuations, evident from Figure 2-3. The group recorded negative growth rates four times

since 1980 (-0.87 percent in 1983, -0.59 percent in 1991, -0.99 percent in 1992, and -0.27 percent in 1993). After continued growth from 1994 to 1996, slowdowns were experienced again in 1997 and 1998. Compared to 1998 growth picked up in 2014 from 2.5 percent to 3.9 percent respectively, underpinned mainly by rising investment in natural resources and infrastructure, and strong household spending (IMF World Economic Outlook, 2015). However, the sharp growth fluctuations, disparity among countries within the ACP group and dependence on commodity prices continue to contribute to the group's economic fragility (UNCTAD, 2013).

Figure 2-3: World, developing and ACP real GDP growth rates (%) - 1971-2014.



(Source: Compiled using data from UNCTADstat available at unctadstat.unctad.org)

A growing population (see Table 2-3) and low economic performance (Figure 2-3) has produced weak purchasing power in the ACP states. Table 2-4 shows that the group's per capita real income fell from US$1106 in 1975 to US$1043 in 1985, a 6 percent decline over the decade. It weakened further until the 2000s, from where it has shown sluggish improvements. Comparatively, the per capita income of the ACP countries falls far behind that of developing economies, being less than half of the developing countries average per capita income in 2014.

Table 2-4: World and ACP states annual real GDP per capita from 1975-2014.

USD (2005 constant prices)	1975	1980	1985	1990	1995	2000	2005	2010	2014
World	4622	5114	5350	5844	6017	6676	7248	7650	8042

Developing Economies	986	1150	1188	1309	1529	1771	2141	2707	3100
ACP	1106	1096	1043	1031	936	979	1130	1279	1356

(Source: Compiled using data from UNCTADstat available at unctadstat.unctad.org)

On the external front, Table 2-5 shows the exports and imports performance of the ACP group. The average value of exports for the ACP group has increased over the averaged periods and when disaggregated by main regions, a similar increasing pattern holds for Africa and the Pacific, while the Caribbean experienced a decline in 1991-2000. The Pacific region is comparatively more dependent on exports, evident by the high exports to GDP ratios ranging from 31 percent to 44 percent. As in other economic indicators, the group's performance in terms of global exports is sluggish, averaging between 1.8 percent and 4.4 percent over the reviewed years. While the developing countries had a 43.8 percent share of global exports in the 2010-2014 period, the ACP group's share was just 2.5 percent. The group's dependency on imports is also evident from their high imports to GDP ratios.

Table 2-5: Exports and Imports (average) from 1970-2014.

	1970-	**1981-1990**	**1991-2000**	**2001-2010**	**2010-2014**
			Exports (in current US$M)		
World	958470	2384863	4927756	11016642	18016904
Developing economies	243469	595127	1399342	4100527	7895697
ACP	42602	70985	89671	243182	456703
Africa	31673	52658	73633	210792	400803
Caribbean	8992	14743	11368	23950	35259
Pacific	836	1622	2926	4602	7864
			% Share of their GDP		
ACP	17.6	17.1	19.8	24.9	25.6
Africa	15.6	15.1	20.6	26.5	27.7
Caribbean	34.0	28.5	16.2	17.6	18.9
Pacific	31.4	33.7	39.5	44.2	37.1
			% share of world exports		
ACP	4.4	3.0	1.8	2.2	2.5
Developing countries	25.4	25.0	28.4	37.2	43.8
			Imports (in current US$M)		
World	986353	2458685	5033493	11227401	18079096
Developing economies	214272	576532	1413763	3749160	7402376
ACP	40282	74386	95904	240853	460354
Africa	28490	51735	71411	186831	365493
Caribbean	10407	19125	19179	40705	59812

Pacific	1036	2022	2755	4740	8905
		% Share of their GDP			
ACP	16.6	17.9	21.1	24.7	25.8
Africa	14.0	14.9	19.9	23.5	25.3
Caribbean	39.3	36.9	27.4	30.0	32.1
Pacific	38.9	42.0	37.2	45.5	42.1
		% share of world imports			
ACP	4.1	3.0	1.9	2.1	2.5
Developing countries	21.7	23.4	28.1	33.4	40.9

(Source: Compiled using data from UNCTADstat available at unctadstat.unctad.org)

2.3: Literature Review

2.3.1: Theoretical literature

On the theoretical end, two prominent frameworks on the determinants of FDI are the works of Dunning (1977, 1980, 1998, 2000 and 2001), Markusen (1984, 1998 and 2002) and Markusen, Venables, Konan, & Zhang (1996). Dunning is credited in the literature for his theory of FDI determinants known popularly as the "eclectic paradigm". The compatibility of the Dunning framework with any theory of comparative advantage and its applicability to either micro or macro level of analysis has added to the flexibility and the popularity of this theory (Gastanga, Nugent, & Pashamova, 1998). This framework is founded on the concept that firms invest abroad to exploit three advantages; Ownership (O), Location (L), and Internalisation (I). Hence, Dunning's framework is also referred to as the OLI framework. The ownership specific advantages arise due to property rights, management expertise and other intangible assets (brand name, patent etc.) of a firm that gives it a competitive advantage despite being foreign. The locational advantages are host country attributes such as resource endowment, cheap factors of production and large market size. These locational factors attract FDI. Internalization advantages arise when the costs of licensing out activity through product licensing, capital lending or technical assistance more than offsets the costs of engaging in production abroad itself. The OLI framework therefore provides firm specific motivations for FDI (ownership and internalization) and host-country specific motivations (location). The existing empirical literature has largely drawn on the implications of this framework in explaining the determinants of FDI, with market size claimed as the single most important factor (Chakrabarti, 2001). Additionally, Navaretti and Venables (2013) added to the location-motivated FDI by emphasizing the role of industrial policy for FDI. In particular, while the authors maintained the importance of other traditional determinants of FDI, they provided empirical evidence of the impact of industrial policy (such as state aid and corporate taxation) on foreign firms' location decisions. In a broader analysis on the importance of location, Porter (1994) highlighted a number of attributes (some of which includes labor, technology, infrastructure, market, and local suppliers) that influences the competitive advantage and thus attractiveness of a host nation in terms of attracting global firms. Furthermore, in later explanations of the knowledge-capital model, Markusen (2002, 2013)

emphasized that the sources of locational advantages vary for horizontal and vertical firms - with high trade costs and large market size more important for horizontal firms while low trade costs and factor price differences being important for vertical multinationals.

Markusen (1984) developed the knowledge-capital model, based on a world of two factors (skilled and unskilled labor), two goods and two countries. This approach is grounded on three assumptions. Firstly, the services of knowledge-based assets (which includes headquarter services such as research & development, marketing, management) are fragmented from production and can be easily supplied to separately located production plants. Secondly, knowledge-based assets are skilled labor intensive relative to production which is unskilled labor intensive. These first two assumptions imply vertical FDI, locating activities based on relative factor requirements and relative factor endowments. The vertical Multi-National Enterprises (MNE) export output back to the home country. The third defining assumption of the knowledge-capital model is the joint-input characteristic. Knowledge-based services are used simultaneously by separately located production facilities. This third assumption indicates horizontal FDI, with affiliate firms replicating production in multiple geographical locations for sales in that respective market.

While the traditional theoretical works on FDI explicitly explained either vertical FDI (fragmented production process motivated by factor price differences) or horizontal FDI (replication of identical production process in another country), the more recent literature (for example Ekholm et al., 2007; Helpman, Melitz, & Yeaple, 2004; Raff, 2004; Yeaple, 2003; Grossman, Helpman, & Szeidl, 2006; Markusen, 2013; and others) has accentuated that the modes of supply of multinational firms are much more complex than the simple horizontal or vertical forms of FDI. For example, Grossman et al. (2006) pointed out that while such a clear distinction between vertical or horizontal FDI is probable in a hypothetical two-country and two-production activity scenario, the presence of more countries and more stages of production is inconsistent with such distinctive categorisation of FDI. Rather, multinational companies follow complex integration strategies which are defined in Yeaple (2003) as the presence of both horizontally and vertically integrated foreign firms. Consequently, in line with complicated multinational strategies and international investment motivations, scholars (including Yeaple, 2003; Grossman et al., 2006; and Ekholm, 2007) have extended the traditional FDI theories into three-country frameworks. Some examples of complex integration strategies of multinational firms

include (i) firms located in some countries to save on transport costs associated with the alternative of exporting and located in other countries to benefit from factor price differences (Yeaple, 2003), (ii) firms performing intermediate stages of production in one country to save on production costs and subsequent stages in several plants to conserve on transport costs (Grossman et al., 2006), (iii) or export-platform FDI where firms produce goods in a foreign subsidiary and sell the output in either both the host country and other markets and/or primarily in third-country markets (Ekholm et al., 2007; Grossman et al., 2006; Bergstrand & Egger, 2007). Markusen (2013) provided further evidence on the shift from multinationals exporting back to home country to exporting to third countries using sales data on US manufacturing affiliates. Their analysis revealed that while local sales accounted for 60 percent of all sales, most of the exports did not go back to the parent US but instead to third countries.

2.3.2: Review of empirical literature

From the empirical perspective, many studies have been carried out to determine the importance of various locational factors implied in the above theoretical frameworks in attracting FDI. The results mainly support market size, relatively lower resource costs, lower business risks and resource availability as important determinants of FDI location. However, empirical research that includes PTA effects on FDI is limited. The existing literature on the PTA-FDI relation can be grouped into case-study type that focused exclusively on large well-known trade arrangements (e.g. NAFTA, MERCOSUR)[36], and the more recent cross-country regressions.

Results from case-study type research (ex post analysis) generally support an increase in FDI inflows following PTA formation. Blomstrom and Kokko (1997) conducted a comprehensive analysis of three regional agreements (CUSFTA, NAFTA, & MERCOSUR[37]). Though their approach is a comparative analysis based on FDI flows *pre* and *post* regional agreements, it provides useful insights. They concluded a relatively modest increase in the inflow of FDI into Canada following the formation of CUSFTA, noting that trade and investment between Canada and the US was already considerable prior to the regional agreement. For the case of NAFTA, Mexico experienced an increase

[36] Refer to Table 12 in the Appendix for details of these agreements.
[37] CUSFTA is Canada US Free Trade Agreement, NAFTA is the North American Free Trade Agreement formed by the US, Canada and Mexico, MERCOSUR is a southern common market and the member states are Argentina, Brazil, Paraguay, Uruguay.

in FDI inflows, while Argentina and Brazil were the largest beneficiaries for the case of MERCOSUR. Based on a similar pre and post comparison approach, Lim (2001) noted that FDI inflows more than doubled over the four years post-PTA for Portugal and Spain (EU integration), Brazil (MERCOSUR) and Mexico (NAFTA), while Argentina experienced a 70 percent increase.

In a panel data regression framework, Feils and Rahman (2008) examined the effect of NAFTA on individual member countries and the entire region's FDI inflows and found that NAFTA had a significant effect on regional FDI inflows. However, for individual country-effects based on time-series regression the US and Canada were the main beneficiaries. Another similar study in support of a positive effect of NAFTA on US FDI into Mexico is Naranjo (2002), who highlighted that the impact persisted only during the first two to three years post-PTA. Likewise, Buckley, Clegg, Forsans, and Reilly (2000) concluded a positive impact of NAFTA and CUSFTA on Canada's FDI inflows from the US. Pain (1997) quantified the impact of the EU Internal Market Program on intra-EU FDI from UK firms in a panel setting. The author concluded that the European integration had significantly increased intra-EU FDI from UK firms, along with some weak evidence of declines in US-bound FDI. Though the studies discussed here provide useful insights on PTA-FDI nexus, they also caution that the effect is not automatic and solely PTA driven but also depends on concurrent policy reforms of host countries and specific agreement provisions. Since they do not control for other contemporaneous events, the effects of macroeconomic stabilisation and changes in FDI related policies undertaken around the same time cannot be disentangled. More importantly, empirical generalisations from such findings are severely limited since PTA contexts differ from each other.

Cross-country analysis mostly using gravity model techniques that control for other factors noted above also provide support for the positive PTA-FDI link. Cardamone and Scoppola (2012) investigated the impact of EU trade agreements on the investment of EU firms in third countries (173 host countries) over the period 1995-2005. They developed an empirical model based on Markusen's knowledge-capital theory to assess the impact of both trade and deep integration provisions on EU's outward FDI. Cardamone and Scoppola (2012) is a comprehensive study as it includes all third countries and all PTAs signed by the EU during the study period. Their study is distinct from others in that it estimated the elasticity of FDI to trade protection and focused explicitly on the deep integration

provisions, though via a dummy variable. They concluded that there was a negative impact of EU tariffs while the host country tariff effect differed across groups of partner countries. The deep integration provisions positively affected EU FDI. While the two distinctive features of their paper mentioned above weigh positively on its contributions, the focus specifically on EU FDI outflows and EU trade provisions limits its empirical generalisations.

Medvedev (2011) investigated the effect of PTAs on net FDI inflows using a panel of 153 countries from 1980-2004 and found that PTA membership is associated with increased FDI inflows. A significant aspect of Medvedev's work is that it is the most comprehensive study on PTA-FDI relation because it included all PTAs in its framework. In addition, it focused on and provided a description of the possible channels through which PTAs affect FDI. However, the drawback lies in the selection of net FDI inflows as the dependent variable. This precludes the estimation of bilateral flows and consequently the variables of interest in such a context. For example, whether host countries with PTAs with third countries provide more lucrative FDI location cannot be modelled in a non-bilateral model. Three further limitations of Medvedev (2011) are that firstly, endogeneity between GDP and FDI was addressed by subtracting FDI from GDP. This does not address the two-way causality between FDI and GDP given the potential multiplier effect of the former on the latter variable. Secondly, the calculation of common market size is arguable. Medvedev introduced two variables to capture potential PTA effects; GDP sum of PTA members and average distance between host and all PTA members. While both these variables are significant (at 1 percent level), and have the expected signs, the inclusion of all members in common market despite their geographical location is debatable. Moreover, it also assigned uniform weight to geographically scattered markets. Thirdly, Medvedev treated all PTAs homogenously, and so ignored the inherent variability of specific provisions across different PTAs.

Yeyati et al. (2004) focused on the regional integration channel of trade agreements and investigated the effect of the Free Trade Agreement of the Americas (FTAA) on Latin American countries. The study adopted an augmented gravity model approach using a dataset that covered bilateral FDI flows from 20 OECD countries into 60 host nations from 1982-1999. To capture regional integration, the paper used dummy if same Regional Integration Agreement (RIA) membership existed, summed the GDP of RIA members for

extended market host, and likewise for extended market source. They concluded all these variables were significant in explaining FDI. Along the same vein but with particular focus on the market size effect of Regional Trade Agreements (RTA), Jaumotte (2004) yielded a significantly positive effect of RTA-induced market size on FDI inflows. It covered a sample of 71 developing countries from 1980-1999 and mainly included South-South RTAs. Through an extension to the empirical model the paper also highlighted the need for less attractive host nations to par up with other countries in the region in terms of their labor skills and financial stability in order to benefit equally. Likewise, but with a specific focus on the informational effects of trade agreements, Buthe and Milner (2008) found that trade agreements increased flows of FDI into 122 developing countries. Their main argument was that international commitments to policy reforms are more credible than domestic policy reforms and this increases a host country's ability to attract FDI. In a later empirical investigation, Buthe and Milner (2014) scrutinized the specific features of PTAs and concluded that PTAs that are in force have greater effect than PTAs signed only. Moreover, they also emphasised that comparatively, PTAs with investment clauses and/or dispute settlement mechanisms attracted more FDI.

Two studies that diverge from all other papers reviewed earlier are Adams, Dee, Gali, and Macguire (2003) and Dee and Gali (2005). These papers took a microscopic view of the actual contents of all 18 PTAs in their sample and explicitly modelled (using gravity model) the effects of trade provisions and non-trade provisions on trade (on 116 countries from 1970 to 1997) and FDI inflows (on 77 countries from 1988-1997) through development of a Member Liberalisation Index (MLI) designed to capture the breadth and depth aspect of PTAs. However, the subjective weight based on authors' evaluation of the extent of liberalisation of each provision is a limitation. It also fails to address possible endogeneity in the empirical model. Still, this paper acknowledged the difference in breadth and depth among different PTA's, an aspect largely ignored in approaches using binary dummy variables to measure PTA effects.

As for relevant studies concentrating on the ACP group, the bulk of the work has focused on African countries, some from the perspective of single countries or economic sub-groups. However, and as is also pointed out in Bankole and Adewayi (2013), the role of PTAs in the FDI context has not gained much attention as yet. Most empirical work has focused on the effects of traditional host country characteristics such as market size,

resources and investment environment. These works include Bankole and Adewayi (2013), Godfred et al. (2015), Naude and Krugell (2007), Asiedu (2002), Asiedu (2006) amongst others. Bankole and Adewuyi (2013) provided support to the role of BITs in attracting FDI, but found no such role for PTAs, in a sample of 16 West African countries. Godfred et al. (2015) investigated the impact of natural resources (with other control variables) on FDI in Africa and revealed that the different measures of natural resources differ in their impacts and concluded a positive relationship between natural resources and FDI.

Naude and Krugell (2007) identified government consumption, inflation rate, investment, governance and literacy as important determinants of FDI in Africa, while Asiedu (2002) highlighted market size, natural resources, infrastructure, low inflation, legal system and investment framework as crucial in attracting FDI. From a human resource perspective, Wood, Mazouz, Yin, and Cheah (2014) concluded that cheap labor mattered and that strong worker rights did not deter FDI choices into Africa. In a sample of Sub-Saharan African (SSA) countries, Bartels, Napolitan, and Tissi (2014) affirmed political-economic stability of host countries and the availability of location specific advantages of resources and factor inputs as crucial for attracting FDI. Asiedu (2006) also concentrated on a sample of SSA countries and revealed the importance of large local market, infrastructure, and an efficient investment framework for FDI and also highlighted the relevance of regional economic cooperation for enhancing foreign investment.

From a micro-economic perspective, Kinda (2013) used firm-level data for 30 SSA countries and held that infrastructure, human capital and institutions are crucial in attracting FDI. As a further breakdown, Kinda (2013) provided empirical evidence that horizontal FDI is encouraged by higher trade regulations. This form of FDI was also found to be more affected by financial and human resource constraints whereas vertical FDI was more responsive to infrastructure and institutional constraints.

In the Caribbean setting Kolstad and Villanger (2008) who claimed to be the first to examine FDI inflows to this group concluded that unlike Africa, the Caribbean is more preferred by foreign investors. With the use of interaction terms, they concluded that FDI inflows were particularly sensitive and positively related to political stability whereas less stringent regulations encouraged more FDI. They linked the latter finding to the presence of important tax havens in the Caribbean for foreign investors. On a narrower scale, Tuman and Emmert (2004) studied the determinants of US FDI into Latin American and

Caribbean countries and found that more open economies with higher growth and higher human capital attracted US FDI while membership of a trade agreement had no effect. In terms of stability, they measured political stability using revolution deaths and riots and concluded negative and significant effects of these on US FDI. Additionally, their positive and significant coefficient for the human rights abuse variable provides substance to the class analytical theorist's assertion that political regimes with restrictive labor unions attract multinational activity.

Gani and Clemes (2015) assessed the factors attracting FDI into a panel of 9 Pacific Island countries, with particular emphasis on the business environment. The various measures of business environment (cost of doing business, legal rights, and the time required in resolving insolvency and building a warehouse) were concluded as important for FDI.

In the next section we draw on this review to select our variables and to anticipate the likely outcomes. While most of the variables that explain FDI elsewhere also explain FDI in the ACP countries, there are interesting differences as we shall see. It also turns out that there are differences across the African, Caribbean and Pacific subgroups.

2.4: Econometric specification and data

This study adopts an augmented gravity model approach. Tinbergen (1962) is credited in the literature for the first empirical exploration of the gravity specification. The initial intuitive gravity model (analogous to Newton's law of gravity) stated that trade flows are increasing in the size of the countries involved and decreasing in the geographical distance between them. The size is approximated by GDP or population. Moreover, as highlighted in Andersen and van Wincoop (2003), it is important to include not only the trade resistance between a pair of countries, but the barriers to trade that each country faces with all its trading partners, termed as the multilateral resistance. Multilateral resistance has been incoprated into gravity models with the use of country fixed effects (see Andersen van Wincoop, 2016; Adam & Cobham 2007, and others).[38] While the main criticism of the gravity model was its lack of theoretical grounding, scholars such as Anderson and van Wincoop (2003), Baier and Bergstrand (2001), Feenstra, Markusen, and Rose (2001), Deardorff (1998), and Evenett and Keller (1998) addressed this weakness by providing a theoretical foundation. They derived the model as a reduced form from a general equilibrium model of international trade in goods. While traditionally used in modelling bilateral trade, the model has more recently been augmented to study FDI (see for example Loungani, Mody, & Razin, 2002; Yeyati et al., 2004; Blonigen, Davies, Waddell, & Naughton, 2007; and Stein & Daude, 2007). The gravity equation works almost as well for bilateral FDI as for bilateral trade (Bergstrand & Egger, 2007). The model specification is as follows:

$$FDI_{ijt} = \beta_0 + \beta_1 ACPGDP_{jt} + \beta_2 OECDGDP_{it} + \beta_3 TO_{jt} + \beta_4 IR_{jt} + \beta_5 NRR_{jt} + \beta_6 LF_{jt} + \beta_7 SMP_{jt} + \beta_8 NPTA_{jt} + \beta_9 Dist_{ij} + \beta_{10} OH_{ij} + \beta_{11} BIT_{ijt} + \beta_{12} DTT_{ijt} + \beta_{13} PTA_{ijt} + \alpha_i + \alpha_j + \alpha_t + \varepsilon_{ijt} \quad (1)$$

Equation 1 contains variables that reflect characteristics of host country j. These include market size (ACPGDPjt); trade openness (TOjt); investment risk (IRjt); resource abundance, captured by natural resource rent (NRRjt); human resource availability, captured by the labor force (LFjt); surrounding market potential (SMPjt); and the number of PTAs of which

[38] See Baldwin & Taglioni (2006) and Baier & Bergstrand (2009) who provide additional estimation techniques.

the host country is a member (NPTAjt). Also included is the parent country GDP (OECDGDPit) and bilateral dummies denoting international treaties such as a BIT, a PTA or a DTT. Additionally, we also control for the bilateral distance (Distij) and time difference in the form of 'overlap in office hours' (OHij) between each country pair. α_i is unobserved specific effects in parent country i, α_j is unobserved specific effects in host country j while ε_{ijt} is the stochastic error term. Each of these explanatory variables used in our model and their expected relation to FDI are summarised in Table 2-6.

The sample consists of panel data from 2000-2012. The FDI data are sourced from the International Direct Investment statistics of the OECD. This database provides FDI between OECD member countries and the rest of the world. For our purpose, the transaction between OECD members and the ACP countries was extracted. For the explanatory variables, data for 5 of the 13 variables was sourced from the World Bank, namely from its World Development Indicators (WDI) and Wealth of Nations databases[39]. Other sources used include the WTO, Heritage Foundation, CEPII, International Trade Centre (ITC) and the timeanddate web link.

The dependent variable is the outward FDI stock (ln FDI_{ijt}) from the parent country *i* into the host country *j* in year *t*. The 34 Organisation for Economic Cooperation and Development (OECD) countries are the parent countries (from where FDI originates) and countries in the ACP group are the hosts of this FDI. Altogether, there are 305 country pairs in our sample[40]. The bilateral stock of FDI from parent country to host country is selected as the dependent variable mainly due to data considerations. It facilitates more country pairs to be included in the sample due to data availability, compared to FDI flows which have more missing data. There is no consensus in the literature on the appropriateness of either however, both flows and stock data has been widely used in empirical studies. The FDI stocks have the advantage of being a closer proxy to the level of activity of foreign firms in the host country, compared to FDI flows (Stein & Daude, 2007). As a further support, FDI flows are more susceptible to single events such as mergers and acquisitions.

To identify the determinants of inward FDI, several explanatory variables suggested by the theoretical and empirical literature are adopted. The traditional determinants of FDI (such

[39] Table 13 in the Appendix provides variable description and data source
[40] See Tables 14, 15 and 16 in the Appendix for the respective country pairs and number of partners for ACP and OECD countries.

as market-access factors, labor costs, infrastructure, human capital, investment risks) have been extensively studied. In addition, the UNCTAD's categorisation of FDI determinants (see Table 17 in Appendix) sourced from the World Investment Report (2011) is also used in developing these explanatory variables. As highlighted by Yeyati et al. (2004), it is challenging to assess the impact of trade agreements on FDI mainly due to the possibility of many channels through which a PTA could affect the location of FDI and the different predominant drivers (motivations) of FDI. For example, while horizontal FDI could be driven by high tariffs, a PTA would erode the motive for this type of FDI. At the same time, vertical FDI motivated by relatively lower resource cost would be encouraged by PTAs. Hence, different impacts could be realised depending on the underlying motives of FDI, however these different and complex forms of FDI – namely, horizontal, vertical, export platform, and fragmented vertical cannot be discerned from FDI data. Also, the importance of the many determinants of FDI may differ across different sectors (primary, industrial and services), but this can only be understood from highly disaggregated data, availability of which is very limited. With this backdrop, this research deviates from examining the sectoral distribution, motives or form of FDI. It adopts a macroeconomic perspective with particular focus on the channels through which PTA-FDI are connected.

The size of source and host economies, as captured by their GDPs, are the main explanatory variables of a gravity model. Market size has, by far, been the single most widely accepted variable as a significant determinant of FDI flows (Chakrabarti, 2001). The host market size indicates the level of demand in the host country. A larger market provides opportunities for economies of scale and is more attractive for market seeking FDI, as opposed to a smaller economy (Medvedev, 2011; Adams et al., 2003; Yeyati, Stein, & Daude, 2002; Jaumotte, 2004; Blomstrom & Kokko, 1997; Mina, 2007; Kang & Lee, 2007). This is mainly because the plant-specific fixed cost is spread over a larger output as the market size increases, and thus FDI will likely supersede the alternative (exports) mode of serving foreign markets. Host economy GDP is expected to have a positive relation to FDI inflows. On the other end, parent country economy size (given by GDP) may reflect its ability to invest abroad, although this is a weaker link. This variable is thus expected to

have a positive relation with FDI. These data (Purchasing Power Parity (PPP) adjusted GDP) are sourced from the WDI database of the World Bank.

The degree of a country's openness to international trade is deemed relevant in FDI location decisions because most investment projects are directed towards the tradeable sector (Chakrabarti, 2001). Trade openness can affect FDI in multiple ways. Lower import barriers (more open economies) may discourage FDI by dampening the tariff-jumping motivation and eroding the competitive advantage over other foreign producers (analogous to benefits enjoyed by domestic producers through protected trade). However, it may stimulate vertical FDI by facilitating the imports of inputs and machinery. Lower export barriers tend to stimulate vertical FDI by facilitating the re-export of processed goods, and other non-tariff jumping horizontal FDI by expanding the effective market size, leading to improved business climate and expectations of better long-term economic growth. Openness data, estimated by the total trade to GDP ratio is sourced from the WDI. Thus, while trade openness may encourage FDI inflows, it could also reduce tariff hopping motivated FDI. The expected sign on this variable is therefore ambiguous.

Human resources are documented in the literature as fundamental in attracting FDI. Other things equal, the availability of labor is expected to significantly boost the locational advantage of the host country, and the coefficient of this variable (host labor force) is therefore expected to be positive. While we expect the availability of labor to have a positive relationship with FDI, we also note that this relation does not capture the influence of differences in labor productivity, government interventions in the labor market and the strength and influence of labor unions (Noorbuksh et al., 1999). This data is sourced from the WDI.

Several countries from the ACP group are resource-rich countries. Countries well-endowed with natural resources would attract more resource seeking FDI (Mina, 2007). Sichei and Kinyondo (2012) revealed that the ten leading recipients of FDI inflows (2009) in Africa have large petroleum and mineral reserves. The natural resource rent (as a percentage of GDP) sourced from the Wealth of Nations database of the World Bank is used to approximate for resource endowment. This variable is expected to be positively related to FDI.

Investment risk reflects additional cost of doing business in a foreign location. Poor legal protection, corruption and institutions diminish FDI activity (Blonigen et al., 2007), and create an unfavourable business climate (Sichei & Kinyondo, 2012). The clarity of a country's laws, the extent and honesty of its law enforcement, the efficiency of the bureaucracy and the absence of corruption reduce transaction costs (Gastanaga et al., 1998) and would therefore encourage more FDI inflows. Most studies have used some form of an index to capture investment risk. This study uses the economic freedom index sourced from the Heritage Foundation database. A host economy with a lower value of this index reflects greater costs or uncertainty and would discourage FDI. Hence a positive sign is expected for this variable.

A PTA between parent and host country is indicative of more liberal approach towards each other. With the use of a dummy, the specification controls for whether a PTA is in place between the parent and host country. The coefficient of this variable is ambiguous since it captures a combination of tariff jumping and vertical integration FDI motives. The data on PTA is sourced from the WTO. Additionally, we also control for the existence of a Bilateral Investment Treaty (BIT) and Double Taxation Treaty (DTT), sourced from the UNCTAD. The preambles of the large volume of BITs formed worldwide are to protect and promote foreign investors[41]. BITs could help attract FDI by serving as a commitment device (Hallward-Driemeier, 2003) however, empirical findings on the same is mixed (Sauvant & Sach, 2009). This result is not surprising given that a BIT could even be formed in consequence of FDI or be a political outcome. While Gallagher and Birch (2006), UNCTAD (2009), and Tobin and Rose-Ackerman (2003) found no evidence of a BIT-FDI relation in their studies, Neumayer and Spess (2005) and Egger and Pfaffermayr (2004) have provided empirical support that a BIT stimulates FDI. A BIT may encourage more FDI through its commitment effect where when a parent and host enter into a BIT, the parent is provided assurance on the host's commitments to the agreed provisions. Buthe & Milner (2008) referred to this as credibility of a host country's policies, withdrawal from which is more costly when entered into through an international treaty such as a BIT. In their political perspective of a BIT, these authors argued that a BIT between the investors' home and the FDI host country (i.e. a parent-host BIT) reduces transaction costs because they remove the need for individual investors to negotiate the same provisions individually

[41] Motivated by the concurrent and rapid growth in the use of PTAs and BITs for stimulating FDI, we extend our empirical analysis in several ways to further investigate the role of these international treaties in attracting FDI (see section 2.5).

with host governments. Hence, in line with the investor-protection objective of a BIT, a positive correlation with FDI is expected. Moreover, as argued in Murthy and Bhasin (2015), redesign of tax systems can increase the international competitiveness of countries in terms of attracting investment. The popularity of DTT has grown over time (Parikh, Pankaj, & Spahr, 2011) with its positive association with FDI inflows concluded by Barthel, Busse, & Neumayer (2009), Blonigen and Davies (2004), Murthy and Bhasin (2013) and others. The DTT data is sourced from the UNCTAD and is included in the estimation as a dummy variable. A positive sign is expected for this variable.

Distance is the second pillar of the gravity model. Distance may encourage FDI as an alternative to exports due to higher transportation costs, but it may also reduce FDI prospects due to the increasing psychic costs of distance, involving familiarity with laws, institutions and culture. As such, the expected sign on this variable is ambiguous. The data is sourced from CEPII (a French research centre in international economics, which produces studies, research, databases and analyses on the world economy and its evolution).

While the importance of geographical distance is well captured in empirical models of FDI; little attention has been paid to the economic effects of time zone differences. Time zone differences would matter more for activities that are intensive in information and require frequent interaction and so is highly relevant for the case of FDI. Stein and Daude (2007) are acknowledged as the first researchers to include time difference as a determinant of FDI. They concluded a negative and significant effect of time difference on FDI location. While geographical distance measures one form of the cost of doing business (mainly transport cost), the non-pecuniary transaction costs related to the need for frequent interaction between parties (parent and affiliate in the case of FDI) is ignored. New communication technology has reduced the financial cost of distant interaction, but they cannot overcome the problem of time difference. Difference in time matters even given today's easy and low cost communications for the obvious reason that people at night usually prefer to sleep (Stein & Daude, 2007; Head, Mayer, & Ries, 2009). Head et al. (2009) refers to this as the synchronization effect. They further add that wide time differences however also provide opportunities for a company to operate over a 24-hour business day (continuity effect) and promote trade in services. As the synchronization effect and the continuity effect oppose each other, this makes the link between this variable and FDI ambiguous. In order to differentiate these effects, we include as our measure of time difference, the number of

office hours (assumed to be from 9am to 5pm) that overlap between host and source country. This data is sourced from www.timeanddate.com. A positive sign then indicates that the synchronization effect dominates, a negative sign that it is the continuity effect that prevails.

Additional variables introduced in the specification are surrounding market potential[42] and host overall involvement in PTAs. A PTA promotes greater regional integration. This creates possibilities of an extended market and thus provides firms with scope for further expansion and ultimately economies of scale. Such opportunities are otherwise limited in segmented markets (Blomstrom & Kokko, 1997). This interdependency amongst markets was raised by Harris (1954) when he explained industrial clustering in the US. As a corollary to this, empirical studies such as Head and Mayer (2003), Medvedev (2011), Blonigen et al. (2007) and Redding and Venables (2004) found that countries with higher surrounding market potential attracted more FDI. Similar results were concluded by Kang and Lee (2007), with surrounding provinces of a particular province in China defined as the extended market. These papers emphasised the importance of nearby markets in bilateral specifications of FDI. Our approach to calculating the surrounding market potential is adopted from Blonigen et al. (2007), with a slight modification. Their method defined surrounding market potential broadly as the sum of inverse-distance weighted GDPs of all other countries in their sample. The exclusion of host nation in this calculation allows for the identification of export-platform FDI. Medvedev (2011) also summed all PTA member countries as surrounding markets. This study refrains from including all ACP members into the calculation and instead defines inverse-distance weighted GDP of countries within a sub-regional grouping as the surrounding market. Data on GDP is sourced from the WDI while CEPII data on distance are adopted. In line with empirical findings mentioned above, this variable is expected to have a positive relation to FDI.

Moreover, a country can be a signatory to a number of PTAs. This growth in the number of PTAs signal growing commitment by countries to more liberal economic policies. Buthe and Milner (2008) argued that such international institutionalisation of commitments has an information effect. International commitments are more visible, and non-compliance can be easily detected and thus be costly. Buthe and Milner (2008) used cumulative PTAs as an explanatory variable in their FDI model and found a significant and positive coefficient

[42] Table 18 in the Appendix provides details on how this variable was calculated.

for this variable. They argued that policy reforms documented at international level increases credibility, relative to domestic policies which are easily reversible. We follow their lead and include cumulative PTAs (sourced from the WTO) as a signalling variable. But given that it signals increased openness to trade, its implications for FDI are ambiguous for the same reasons as the openness measure.

Table 2-6: Explanatory variables and their expected signs.

Dependent variable: log (bilateral FDI)	
Explanatory variable	**Expected sign**
ACP GDP*	+
OECD GDP*	+
Trade Openness	+/-
Labor force*	+
Natural Resource Rent*	+
Investment Risk*	+
PTA	+/-
BIT	+
DTT	+
Distance*	+/-
Time Difference	+
Surrounding Market Potential*	+
PTA volume	+/-

Note: * indicates variables transformed by logs

2.5: Empirical analysis, results and discussion

Table 2-7 presents the summary statistics of all non-dummy variables used in our estimation.

Table 2-7: Summary statistics.

Variable (in values)	Mean	Standard Deviation	Maximum	Minimum
FDI (US$M)*	695.4	3263.6	59603	-1459.8[43]
ACP GDP (PPP, $M)*	50558	123174	893276	451
OECD GDP (PPP, $M)*	141841	2750589	15878110	9448
Trade Openness (%)	79.6	37.8	351.1	21
Investment Risk *	55.3	9.3	77.0	21.4
Natural Resource Rent (% of GDP)*	15.2	19.7	100.4	0
Labor force (millions)*	6.24	9.25	53	0.04
Number of PTAs	2.5	0.85	5	0
SMP* (PPP,$M)*	134017	149147	941768	3991
Distance*	7559	3140	17615	1482
Overlap in Office hours	5.0	2.8	8.0	0

*Variables transformed into logs for all estimation. ACP GDP, trade openness, investment risk, natural resource rent, labor force, surrounding market potential, number of PTAs are host country specific variables and averaged over the host countries and not as country pair variables. Similar treatment applies to OECD GDP while distance, overlap in office hours and FDI are averaged as country pair variables.

Results show great variability in bilateral FDI stock, evident from the high standard deviation as well as the large difference between the maximum and minimum values of this variable. This is in line with the data presented in Table 2-2 that reflects the vast variation in the geographical distribution of FDI in the ACP group. Similar results hold for ACP GDP and other economic variables such as trade openness and surrounding market potential, reinforcing the fact that this group hosts economies of varying income levels. In terms of resource endowments, the average natural resource rent is 15.2 (as a percent of GDP) and also varies significantly, ranging from 0 and 100.4 percent. Incidentally, the highest value of natural resource rent is from Equatorial Guinea for the year 2000. As revealed by the OECD (2002) and the IMF (2015), rapid development in the oil and timber sector contributed to Equatorial Guineas era of economic boom from the year 2000, turning it into SSA's wealthiest nation in terms of per capita GDP. In terms of geographical

[43] There are also a small number of negative values for FDI stocks. The OECD writes that these can arise since the "changes in FDI positions are affected by the accumulated flows and hence may also result in negative values, but mainly for other capital (e.g. when the loans from the direct investment enterprise to the parent exceed the loans – or even the original capital – given by the parent to the direct investment enterprise. It could be the case where conduits or treasury companies are involved)

disparity, the average bilateral distance between the parent and the host country is 7559 km with the largest bilateral distance being between Italy and Tonga. Meanwhile, while the average office hours overlap between the parent and host is 5, 19 of the host ACP countries have a maximum 8 hours of office hours overlap with their partner OECD investor country.

An issue that arises with the use of macroeconomics time series data is that of stationarity. There are different unit root tests for panel data some examples of which are Levin, Lin and Chu (2002), Breitung (2000), Im, Pesaran and Shin (2003), and Hadri (2000). The Im-Pesaran-Shin (IPS) test is used for this study which, unlike the other panel unit root tests, allows the autocorrelation coefficient to vary across cross-sections. It calculates a standardised t-bar test statistic based on the averaged augmented Dickey Fuller statistics for panels (Im et al., 2003). The results are summarised in Table 2-8. The IPS tests the null hypothesis of each series in a panel containing a unit root against the alternative that allows for some (but not all) of the individual series to have unit roots (Baltagi, 2008).

Table 2-8: Panel unit root test results – Im, Pesaran and Shin (IPS).

Variable	Statistic	Variable	Statistic
FDI[1*]	-3.3949***	Natural Resource Rent*	-1.7604**
ACP GDP*	-0.6478	Trade Openness	-1.9361***
OECD GDP*	-1.3735	Investment Risk*	-3.3833***
Labor Force*	-2.8143***	SMP*	-0.0789

Significance levels: *10 percent **5 percent ***1 percent. [1]includes constant and trend. Automatic lag selection based on Schwarz Information Criterion.*Variables transformed into logs.

As depicted in Table 2-8, the null hypothesis of a unit root is rejected for all variables except for ACP GDP, OECD GDP and surrounding market potential. With the dependent variable (log FDI) as a stationary process, the inclusion of these three non-stationary variables does not raise concerns of spurious correlation[44]. Moreover, two of these non-stationary variables are also cointegrated[45], and the residuals from the Feasible Generalised Least Squares (FGLS) estimation of equation 1 (model 1) are stationary (see Table 21 in the Appendix).

[44] We re-estimated our base model after a first-differenced transformation of the three non-stationary variables. See Table 19 in the Appendix for the results.

[45] Moreover, we also find the presence of cointegration between two of the non-stationary variables which further rules out any concerns of spurious regression. A panel cointegration test (Pedroni, 1999) revealed the presence of panel cointegration between two of the non-stationary variables (ACP GDP and surrounding market potential). Since these are host country variables they were treated as host variables and not as country pair variables. The sample included 45 cross-sections with data from 2000 to 2012. OECD GDP is origin country specific variable and hence was not included in the cointegration test. See Table 20 in the Appendix for the cointegration test results.

Pooled OLS and test for fixed effects

A natural starting point in a panel regression is pooled OLS which regresses the dependent variable on an intercept and the set of explanatory variables using both the cross-sectional and time variation in the data (Cameron & Trivedi, 2010). Pooled OLS is likely to result in inconsistent estimates as it ignores country specific heterogeneity (Egger, 2002), however, it is often used as a benchmark. The ACP states consist of a rather heterogeneous group of countries, adding to concerns of unmeasured country-specific characteristics that are not captured by the explanatory variables in our model. When these individual effects are relevant, pooled OLS (which ignores these fixed effects) yields biased and inconsistent estimates (Baltagi, 2008). In line with this, country fixed effects are introduced into our model by including a dummy variable for each host (ACP) and parent (OECD) country . Table 2-9 presents the pooled OLS (in column 1) and the Fixed effects (also known as the Least Squares Dummy Variable (LSDV) regression) results (in column 2) estimated with robust standard errors. The F test on the significance of country fixed effects rejected the null hypothesis of no significant difference across countries ($F = 27.92$, $p=0.00$) at the 5 percent level of significance, indicating that pooled OLS is not appropriate.

Fixed Effects (FEM) and/or Random Effects Model (REM).

The unobserved country specific factors can be incorporated into the estimation through a FEM or REM. The main difference between these two techniques is their treatment of the unobserved country-specific factors. In a FEM model, these unobserved characteristics are subsumed in the intercept and hence each country has a different intercept, while in a REM they are considered as part of the error term (Baltagi, 2008). The time invariant individual specific effects are allowed to be correlated with the regressors in a FEM whereas in a REM they are treated as purely random (Cameron & Trivedi, 2010). The Hausman specification test ($\chi^2 = 65.41$, $p =0.00$) rejects the null hypothesis that REM provides consistent estimates and hence, the FEM is selected[46]. Additionally, as noted in Baltagi (2008), the FEM is an appropriate specification when the focus is on a specific set of countries making inference conditional on these observed countries. There are different ways through which a FEM can be estimated. These include within-transformation,

[46] Year effects are jointly insignificant ($F=1.15$, $p=0.32$) at the 5% level of significance, hence a one way Fixed Effects Model is estimated.

between-effects or LSDV approach. Equation 1 includes time invariant variables such as distance and time difference. Since the transformation procedure in the first two of the FEM regression strategies mentioned earlier would remove these time invariant variables, the Dummy Variable regression is applied in this study.

The Ordinary Least Squares (OLS) estimation of our Fixed Effects model (equation 1) presented in column 2 of Table 2-9 explains 67.83 percent of the variation in the dependent variable. As per the results in Table 2-9, we obtain significant positive coefficients for the variables origin GDP, natural resource rent, and labor force. Investment risk, surrounding market potential, overlap in office hours, distance and DTT are also significant (at various significance levels-see Table 2-9) with signs in line with our expectations. Ambiguous relationships were expected for trade openness, the number of PTAs and the PTA dummy variable. While trade openness and the number of PTAs are negatively signed, the coefficient of PTA is positive. However, all these three variables are insignificant. Furthermore, the signs on the coefficients for host country GDP and BIT are insignificant and contradictory to our expectations.

Table 2-9: Pooled OLS and OLS estimation of Fixed Effects model.

Dependent variable: log(bilateral FDI)

Explanatory variable	**Column 1 (Pooled OLS)**	**Column 2 (Fixed Effects)**
ACP GDP[1]	1.015***	-0.171
	(0.051)	(0.439)
OECD GDP[1]	0.850***	1.867**
	(0.040)	(0.858)
Trade Openness	0.017*****	-0.004
	(0.002)	(0.004)
Investment Risk[1]	0.693***	1.802**
	(0.282)	(0.737)
Natural Resource Rent[1]	-0.207***	0.197*
	(0.036)	(0.111)
Labor Force[1]	-0.417***	1.991**
	(0.060)	(0.826)
SMP[1]	0.061*	0.555*
	(0.048)	(0.319)
Distance[1]	-0.481***	-0.517**
	(0.135)	(0.232)
Overlap in office hours	0.217***	0.118***
	(0.025)	(0.036)

BIT	-0.067	-0.045
	(0.106)	(0.102)
DTT	1.312***	1.352***
	(0.095)	(0.103)
PTA	-0.300***	0.098
	(0.114)	(0.157)
NPTA	-0.168	-0.140
	(0.058)	(0.101)
Constant	-14.248***	-56.140***
	(1.840)	(10.525)
N	2158	2158
R^2	0.44	0.67
F	123.37	86.79

Significance levels: *10% **5% ***1%. [1]Control variables that are expressed in natural logarithms. Note: Country dummy results are not reported here due to space constraints.

Empirical tests on the residuals from the OLS estimation of our fixed effects model revealed the presence of heteroscedasticity and autocorrelation. These are often of concern in panel data due to inclusion of both time and cross-country information. Heteroscedasticity - where the variance of the disturbance term is not constant (Gujarati, 2003) is a violation of an important assumption of classical linear regression. While the heteroscedastic error terms do not affect the unbiased and consistency property of OLS estimates, it is no longer efficient (Wooldridge, 2002; Baltagi, 2008). The Breusch Pagan test results for heteroscedasticity (χ^2 = 113.5, p =0.00) rejected the null hypothesis of homoscedasticity at the 5 percent level of significance.

Moreover, the Woodridge test for autocorrelation indicated the presence of serially correlated residuals (F (1,262) = 58.5, p=0.00). Autocorrelation is defined in Gujarati (2003) as the disturbance term of any one observation being influenced by the disturbance term of another observation. The effect of serially correlated errors is similar to the consequences of heteroscedastic residuals - the OLS estimates are still unbiased and consistent but no longer efficient (Wooldridge, 2002). The null hypothesis of no autocorrelation in the OLS estimation of equation 1 was rejected at the 5 percent level of significance.

Furthermore, in line with the concerns in the existing literature on probable endogeneity (through two way causality) between the dependent and independent variables in an FDI

model, we tested for such possibilities for the variables ACP GDP and trade openness[47]. While a huge volume of literature has investigated and concluded the significant effects of variables such as market size and trade openness on inward FDI, the main criticism directed towards these studies is their ignorance of reverse causality. This criticism mainly holds for market size which is measured using GDP. For example, it is argued that host economies with a larger market provide expansion and more profitable opportunities for foreign firms (market size hypothesis). However, FDI also provides various positive externalities that contribute to faster economic growth (FDI led growth hypothesis). There is empirical support for both these hypotheses. For example, Schneider and Frey (1985), Billington (1999), Medvedev (2011), Adams et al. (2003), Yeyati et al. (2002), Jaumotte (2004), and Blomstrom and Kokko (1997) have provided evidence of the former hypothesis, while Kohpaiboon (2003), Mina (2007), Sichei and Kinyondo (2012), Gastanaga et al. (1998), Yeyati et al. (2004), and Batten and Vo (2009) have contributed to the literature on the latter hypothesis. As such, models with interdependency between the control variables and the dependent variable violate the fundamental assumption of no relation between the error term and the explanatory variables. Consequently, OLS estimation would produce inconsistent estimates.

A common problem in testing endogeneity is the identification of valid instruments for the endogenous variables. A valid instrument should be highly correlated with the endogenous explanatory variable but not with the error term (Cameron & Trivedi, 2010). In light of these constraints, we used a one period lag of the suspected endogenous variables as an instrument to test for possible endogeneity using Durbin-Wu-Hausman test. Table 22 in the Appendix summarises the results. The null hypothesis of exogenous variables was not rejected for host GDP and trade openness. Hence results indicate that endogeneity may not be an issue in our sample[48].

Based on these findings, equation 1 is estimated using the feasible generalised least squares (FGLS) estimator[49]. The FGLS approach allows us to simultaneously account for the

[47] Other variables that may give rise to endogeneity problems are PTA and BIT. Due to the difficulty in obtaining valid instruments for these variables and the inappropriateness of using their lagged forms, we do not test their exogeneity in this study. As a further support, Aisbett (2007) mentioned that since BITs are exogenous ex post (i.e. once a BIT is formed, it cannot become more or less in place for at least 10 years), endogeneity can be addressed by controlling for the adoption of BITs by including host and source country dummies, possible with a bilateral dataset. Additionally, correcting for autocorrelation will also reduce the bias due to BIT endogeneity (Aisbett, 2007). These issues are taken into account in our model.

[48] As a further check we assumed endogeneity and estimated a fixed effects model using instrumental variable regression. See Table 23 in the Appendix for comparison of estimates.

[49] Hence, our estimation strategy is similar to Medvedev (2011) who also found heteroscedastic and auto-correlated residuals in his estimation and resorted to FGLS estimator of his Fixed Effects model.

presence of heteroscedasticity and autocorrelation [50] (Medvedev, 2011). Table 2-10 presents the FGLS estimates of equation 1 under three alternative versions. In model 1 (base model) we do not distinguish the PTA variable by the specific region whereas in models 2 and 3, the PTA and BIT variables are disaggregated into African, Caribbean or Pacific regions. Hence while model 1 estimates the average effect of a PTA and BIT on inward FDI, models 2 and 3 explain the effects of an African, Caribbean or Pacific PTA and BIT, respectively[51].

Table 2-10: FGLS estimation - base model and decomposition of PTA & BIT by region.

Dependent variable Log (FDI)			
Regressors	**Model (1)**	**Model (2)**	**Model (3)**
ACP GDP [1]	0.391**	0.252**	0.397**
	(0.154)	(0.108)	(0.153)
OECD GDP [1]	0.159	0.059	0.197
	(0.276)	(0.278)	(0.277)
Trade Openness	-0.004***	-0.004***	-0.004***
	(0.001)	(0.001)	(0.001)
Investment Risk [1]	0.872***	1.056***	0.856***
	(0.192)	(0.164)	(0.193)
Natural Resource Rent [1]	0.024	0.043**	0.019
	(0.022)	(0.021)	(0.022)
Labor Force [1]	0.591	0.962***	0.670*
	(0.365)	(0.331)	(0.356)
SMP [1]	1.223***	1.170***	1.158***
	(0.168)	(0.158)	(0.167)
Distance [1]	-1.105***	-1.148***	-1.247***
	(0.241)	(0.270)	(0.260)
Overlap in office hours	0.028	0.076**	0.017
	(0.037)	(0.037)	(0.039)
BIT	-0.031	-0.042	
	(0.065)	(0.068)	
DTT	1.129***	1.173***	1.096***
	(0.092)	(0.103)	(0.091)
PTA	-0.141		-0.131
	(0.139)		(0.138)

[50] Alternatively, clustering standard errrors at country pair level will also address the problem of heteroscedasticity and autocorrelation (Cameron & Trivedi, 2010)..

[51] This disaggregation of the PTA and BIT variables and the decomposition of the sample into specific regions is done on concerns that aggregation of a heterogenous group of countries may mask results. As mentioned in Garrett (2003), the use of aggregated data assumes the relationship is homogeneous across individuals, and since the statistical significance of a coefficient is positively related to the coefficient size and negatively to its standard error, it is likely that the significance of coefficients from an aggregated regression and disaggregated regression will differ.

NPTA	-0.086***	-0.050	-0.049
	(0.026)	(0.031)	(0.030)
PTA-African		-0.538***	
		(0.149)	
PTA-Caribbean		1.015***	
		(0.261)	
PTA-Pacific		0.034	
		(0.521)	
BIT-African			-0.019
			(0.103)
BIT-Caribbean			0.232
			(0.223)
Constant	-23.939***	-27.128***	-23.509***
	(5.07)	(4.642)	(5.102)

Significance levels: *10% **5% ***1%. [1] Control variables that are expressed in natural logarithms. The standard errors are in brackets.

Starting from model 1, results show that the host economy size[52] has a positive and significant effect on FDI, consistent with the consensus in the existing literature that market size is the single most widely accepted significant determinant of FDI. Additionally, the size of the surrounding market also has a significant and positive impact on FDI. These results indicate that apart from the local market, the surrounding market potential is important for foreign investors. These findings are consistent with the existing literature, where market size has been noted as an important determinant of FDI.

Host countries who are members of more PTAs tend to receive less FDI, other things equal, which is consistent with the result on openness. The coefficient of trade openness - which was expected to be either positive or negative – is negative and significant. Hence, our results provide evidence of tariff-hopping motivated FDI whereby in response to greater trade openness, FDI is substituted with trade. In terms of investment risk, we obtain a significant and positively signed coefficient which is in line with the existing literature and our expectation that an economy that is riskier (a lower index) will attract less foreign investment. With regards to the variables capturing the importance of geographical distance and time difference, the coefficient of geographical distance is negative and significant while the overlap in office hours variable is not significant in model 1. It was expected that distance may either encourage FDI as an alternative to exports or discourage FDI due to the increasing psychic costs of distance, involving unfamiliarity with laws,

[52] Given the possibility of a lagged effect of GDP (host or parent) on current FDI, we included a one-year lag of these variables and re-estimated our base model. As shown in Table 24 in the Appendix, the coefficients of both ACP GDP and OECD GDP are insignificant.

institutions and culture. The negatively signed coefficient of distance provides evidence of the latter. Turning to the effects of international treaties, surprisingly the coefficients of BIT and PTA are insignificant, while the presence of a DTT has a significant and positive effect in our model. For the BIT variable, two possible reasons for no relationship between FDI and BIT in our sample may be due to firstly, inadequate and/or weak protection standards provided in these BITs and therefore failure to promote much FDI. For example, in a comparison of the efficacy of BITs, Salacuse and Sullivan (2005) concluded that the US BITs (which provide the strongest investor protection) were more effective in attracting FDI compared to BITs concluded by other OECD countries with relatively weaker provisions. As a further support, Banga (2003) and Coupe, Orlova, and Skiba (2009) found that BITs with developed countries had a significant impact on FDI but could not conclude the same for BITs with developing countries, while Hallward-Driemer (2003), UNCTAD (2009), Gallagher and Birch (2006), and Tobin and Rose-Ackerman (2003) found no evidence of a BIT-FDI relation in their studies. Falvey and Foster-McGregor (2017) found that the significant impact of BITs is in establishing new bilateral FDI links rather than expanding existing relationships. Secondly, as highlighted in UNCTAD (2011), BITs may lose relevance if large foreign investors are able to secure favorable investment treatment through direct liaison with host governments. In such cases, only smaller and/or less influential investors may focus on BITs in their investment decisions. Also, the investment-promoting impact of BITs depend on its efficiency compared to a variety of alternatives such as financial mechanisms, alternative dispute settlement procedures and political risk insurance (Aisbett, 2007). The explanations provided here for the irrelevance of BIT in our results are to be treated only as possibilities since we do not review the BIT contents or the intensity of foreign company and host government collaboration in securing investment interests. However, given that BITs are one of the most widely used agreement for protecting and influencing FDI (see Salacuse & Sullivan, 2005; Banga, 2003; Aisbett, 2007; Neumayer & Spess, 2005, Guzman, 1998), we extended our empirical analysis on the impact of BITs on FDI under a set of different specifications in models 11 to 16, presented later.

Furthermore, model 1 results show that the presence of a PTA between the parent and the host country has no relationship with bilateral FDI. This finding is consistent with the ambiguity in our expectations on this variable. Trade can be a complement or substitute for

FDI, depending on the motivation behind the FDI, and it is not implausible that a sample of countries as diverse as the ACP group embraces examples of both cases. Moreover, as with our reasoning for the insignificant BIT variable, the strength of the provisions[53] in the PTAs may impact on its role as a stimulus for FDI. Additionally, a possible reason for the insignificant coefficients of BIT and PTA variables could be that aggregate results possibly mask any relationship that may exist at sub-regional level.

Turning to host country involvement in PTAs, the coefficient of cumulative PTAs is significantly negative, consistent with our result on trade openness. This negative association could be explained as follows - as the ACP countries become more open and liberal through signing PTAs, the ease of engaging in trade more than offsets the informational and credibility enhancing channel of PTA-FDI relation. As a corollary to this, trade to the ACP countries is preferred over FDI. Finally, in terms of resource endowments, the variables natural resource rent and labor force are both insignificant. Source country GDP is also not significant.

Model 2 investigated if aggregation of a sample of heterogeneous countries masks any regional PTA-FDI relationship. The PTA variable is categorised by the specific region: African, Caribbean and the Pacific. When compared to model 1, except for natural resource rent, labor force, overlap in office hours and number of PTAs, the coefficient signs and significance of all other control variables remain intact in model 2. The coefficients of natural resource rent and labor force are now significant and positive, adding support to the relevance of resource endowments in attracting FDI. Moreover, the overlap in office hours is also significant and positive, indicating the dominance of the synchronization effect whereby a smaller overlap in office hours discourages FDI due to the non-pecuniary transaction costs related to the need for frequent interaction between the parent and affiliate. Notably, such a need for frequent interaction would likely be more intense with unfamiliar foreign locations. Disaggregation of the PTA variable into the three broad regions reveals that the effect of PTAs is different across each of these sub-groups. For the African group, the PTA variable is negative and significant. This indicates that as African countries engage in more PTAs and open up their markets, partner countries decide to trade rather than to invest. The FDI enhancing effect of PTAs either directly or through greater

[53] We later extend the analysis by categorizing the PTAs into those that contain investment specific provisions and those that do not (see Table 2-12).

credibility and informational-effect channel appears to be rather weak or ineffective for the African countries. One of the reasons for this could be the dominance of an 'Africa perception' - which Jenkins & Thomas (2002) and Asiedu (2002) explain as the common perception of Africa as a region strife with corruption, instability and poor governance. A significant and positive coefficient for investment risk in models 1, 2 and 4, 8, 12 (which are specifically for African countries) indicates the importance of stability in foreign investor's decisions. For the Caribbean countries, PTAs significantly encourage FDI, lending support that PTAs attract more FDI. However, there is no evidence of any PTA-FDI relation for the Pacific region. A similar disaggregation of the BIT variable by sub-region[54] (model 3) does not change our initial conclusion (in model 1) of the irrelevance of BITs for FDI.

Table 2-11: FGLS estimation results - decomposition of sample into specific regions.

Dependent variable Log (FDI)			
Regressors	Model (4): Africa	Model (5): Caribbean	Model (6): Pacific
ACP GDP $_{-1}$	0.588***	-0.612	1.704
	(0.168)	(0.526)	(1.744)
OECD GDP $_{-1}$	1.232***	0.273	3.061**
	(0.068)	(0.372)	(1.527)
Trade Openness $_{-1}$	-0.004***	-0.010***	0.007
	(0.001)	(0.004)	(0.006)
Investment Risk $_{-1}$	0.881***	1.990***	-1.872
	(0.216)	(0.757)	(1.519)
Natural Resource Rent $_{-1}$	-0.052	0.072*	-0.531
	(0.040)	(0.040)	(0.337)
Labor force $_{-1}$	-0.277	1.103	2.285
	(0.492)	(1.042)	(2.356)
SMP $_{-1}$	1.216***	1.386***	-1.325
	(0.196)	(0.524)	(1.351)
Distance $_{-1}$	-0.989***	-0.496	-15.066***
	(0.309)	(0.927)	(1.794)
Overlap in office hours	0.138***	0.589***	2.034***
	(0.053)	(0.224)	(0.261)
NPTA	0.054	-0.041	-0.085
	(0.051)	(0.082)	(0.140)
BIT	0.024	0.342*	
	(0.076)	(0.190)	
DTT	0.939***	1.911***	-12.978
	(0.112)	(0.280)	(11.485)

[54] In Model 3 it is only possible to estimate the impact of BIT for the African and Caribbean group due to insufficient observations for the Pacific group. In the Pacific group, only one country (PNG) is signatory to a BIT.

PTA	-0.301* (0.176)	0.400 (0.430)	-19.214* (11.532)
Constant	-24.911*** (6.115)	-28.331** (14.809)	67.620** (34.009)
N	1619	438	92

Significance levels: *10% **5% ***1%. [1]Control variables that are expressed in natural logarithms. The standard errors are in brackets.

Models 4, 5 and 6 reported in Table 2-11 are a decomposition of our sample by specific region (Africa, Caribbean and Pacific). Here, we continue to investigate if there are any regional trends masked by aggregation of a heterogeneous group of countries. However, we remain cautious about our results because of reduction in sample size, particularly in models 5 and 6.

Model 4 is a sub-sample of African countries which has 1619 observations on 212 country pairs. Interestingly, compared to the base model (model 1), parent country GDP now has a significant positive coefficient, implying that increases in parent country GDP is positively linked to FDI into the African countries. The PTA dummy is negative and significant, consistent with the findings on the African PTA dummy in model 2. Moreover, the coefficient of overlap in office hours is significant and positive, which indicates that simultaneous parent-host communication is important for foreign investors in Africa. The number of PTAs is not significant. For all other control variables, despite marginal changes in coefficient size, the signs and significance are consistent with model 1. Overall, it seems that multinational firms from large economies may invest more in Africa, and that these investments are encouraged by a larger office hours overlap between host and source. A PTA between host and source discourages FDI.

In contrast, the Caribbean sub-sample (model 5 with 438 observations on 57 country pairs) results show greater differences when compared to the base model. Three of the control variables (host GDP, distance, and the number of PTAs) that were significant in model 1 are now insignificant at all conventional significance levels. For these Caribbean countries FDI is unaffected by their individual market sizes, distance, labor force size and willingness to grant preferential access, both bilaterally and in general. However, FDI is attracted by their surrounding market potential, availability of natural resources and overlapping office hours, all of which are significant and positive. Furthermore, BIT is now significant and shows a positive relationship with FDI.

Finally, while the regression for the Pacific sub-group (92 observations on 18 country pairs) indicates a negative and significant role of PTA in attracting FDI, it provides no significant relationship for most of the control variables. Results show that multinational firms from large OECD countries also like to invest in the Pacific but are discouraged by greater distance and a small overlap in office hours. Admittedly, the Pacific subsample is relatively small, and we remain cautious on the results from model 6.

Next, motivated by this mixed bag of results for both the BIT and PTA variables, the analysis focused much more closely on the PTA and BIT variable. We distinguished between trade agreements that had foreign investment provisions and dispute settlement mechanisms (PTA+IP) and those that do not (PTA-IP). As mentioned earlier, the presence of such provisions in a PTA may matter in terms of affecting FDI. We investigated for such effects in models 7 to 10 (see Table 2-12). Buthe and Milner (2014) claimed that investment provisions provide greater reassurance to foreign investors and should produce more investment. Additionally, dispute settlement mechanisms may also boost investor confidence by raising the cost of reneging from commitments (Buthe & Milner, 2014; Adams et al., 2003). While the specific investment provisions in each PTA may differ in terms of the degree of commitment to foreign investment and the possible disparity in terms of the dispute settlement procedures and mechanisms in each PTA, overall, it is expected that PTA's that have investment and dispute settlement mechanisms in place should attract more FDI.

In model 7, this is investigated for the whole ACP group and results are consistent with the base model implications on aggregated PTA - neither PTA's with provisions nor without provisions impact foreign investment. In models 8 to 10, we restrict the sample to specific regions (Africa, Caribbean, Pacific) to see if the results are driven by specific sub-groups.

Results show that for the African sub-sample (model 8), only PTAs with provision is significant but still negatively signed. Perhaps the FDI encouraged by investment provisions in a PTA is intended to facilitate trade and acts as a substitute for other FDI. Both coefficients are insignificant for the Caribbean (model 9) and the Pacific groups (model 10).

Table 2-12: FGLS estimation results - decomposition of PTA variable by provision.

Dependent variable Log (FDI)				
Regressors	**Model (7) ACP**	**Model (8) Africa**	**Model (9) Caribbean**	**Model (10) Pacific**
ACP GDP [1]	0.432***	0.654***	-0.662	-0.216
	(0.156)	(0.176)	(0.440)	(2.399)
OECD GDP [1]	0.019	1.222***	-0.986	4.672**
	(0.279)	(0.071)	(0.810)	(1.957)
Trade Openness	-0.004***	-0.004***	-0.007***	0.003
	(0.001)	(0.001)	(0.003)	(0.009)
Investment Risk [1]	0.886***	0.833***	0.882	-1.464
	(0.194)	(0.219)	(0.608)	(1.959)
Natural Resource Rent [1]	0.023	-0.053	0.031	-0.368
	(0.022)	(0.040)	(0.044)	(0.448)
Labor force [1]	0.537	-0.399	4.512***	4.190
	(0.366)	(0.498)	(0.781)	(3.491)
SMP [1]	1.194***	1.220***	0.623*	-2.095
	(0.169)	(0.198)	(0.353)	(1.707)
NPTA	-0.055*	0.061	-0.081	-0.121
	(0.030)	(0.050)	(0.070)	(0.183)
Distance [1]	-1.137***	-0.909***	-0.560	-9.296***
	(0.249)	(0.312)	(1.001)	(2.345)
Overlap in office hours	0.027	0.125**	0.862**	0.851***
	(0.038)	(0.057)	(0.341)	(0.235)
BIT	-0.035	0.036	0.309*	
	(0.066)	(0.076)	(0.171)	
DTT	1.097***	0.964***	1.413***	-13.644
	(0.093)	(0.116)	(0.423)	(16.863)
PTA+IP	-0.077	-0.716**	0.077	-19.692
	(0.186)	(0.291)	(0.662)	(16.898)
PTA-IP	-0.160	-0.259	1.067	0.113
	(0.149)	(0.188)	(1.029)	(5.408)
Constant	-21.810***	-24.254***	-36.163**	-4.752
	(5.199)	(6.203)	(16.314)	(46.326)

Significance levels: *10% **5% ***1%. [1] Control variables that are expressed in natural logarithms. The standard errors are in brackets.

As mentioned earlier, given the popularity of BITs for attracting investment and the existing mixed empirical findings on their effects both here and in the literature, we further investigated the impact of BITs under alternative specifications. Since there are few BITs in effect in the Pacific group and because the results in Table 2-12 show significant differences in the effects of BITs between the African and Caribbean groups, we confined attention to these two groups and considered them separately. The results are presented in Tables 2-13 (for Africa) and 2-14 (for the Caribbean group).

Starting with the African sample, the signs and significance of the estimated coefficients on the control variables in Table 2-13 are consistent with our findings for Africa in Tables 2-11 and 2-12. However, there are some differences in the results for the Caribbean sample (see Table 2-14) when compared with our findings for the Caribbean group in Tables 2-11 and 2-12. Investment risk and natural resource rent are now insignificant, the coefficient of labor force is positive and significant and source GDP is negative and significant. Moreover, the number of PTAs now has a significant negative effect on FDI, again implying that Caribbean countries which are members of more PTAs tend to receive less FDI, other things equal, and is consistent with the result on openness.

Next, in terms of the further investigations on BITs and PTAs, we first focused on the interactions between these two variables. Specifically, we interacted our BIT variable separately with PTA-IP and PTA+IP and included both PTA variables and these interactions in the regressions in Tables 2-13 (Africa) and 2-14 (Caribbean). We aimed to investigate if BITs mattered when PTAs had no investment specific provisions and how such provisions in a PTA relate to a BIT. Are the two substitutes or do they target different types of FDI? BITs are not the only international treaties that provide foreign investor protection. In the absence of a multilateral protection of investment similar in scope to the WTO protections provided to trade in goods and services, BITs and investment provisions through trade agreements fill this policy void (Swenson, 2009; Bondietti, 2008). The coverage of PTAs has now extended to include investment clauses. With the NAFTA as the first trade agreement to provide BIT like investment provisions, the number of PTAs incorporating investment provisions has grown since then and occupies an important place in the regulation of international investment (Bondietti, 2008).

None of these variables, including the interactions are found to be significant in the Caribbean group (see Table 2-14). However, in Africa (Table 2-13), we now see that the effect of a PTA on FDI depends on whether there is also a bilateral BIT in place and whether the PTA itself includes investment provisions. A PTA with investment provisions, with or without a BIT, reduces FDI. However, a PTA without investment provisions increases FDI if a bilateral BIT is also in place. In a region where trade and FDI appear to be substitutes, it seems that the investment provisions in a PTA are designed to facilitate trade-enhancing FDI at the expense of FDI more generally.

Table 2-13: FGLS estimation results - further analysis of the impact of BIT and PTA.

Regressors	Africa		
	Model (11)	Model (12)	Model (13)
ACP GDP [1]	0.716***	0.631***	0.551***
	(0.178)	(0.183)	(0.188)
OECD GDP [1]	1.150***	1.147***	1.137***
	(0.083)	(0.081)	(0.081)
Trade Openness	-0.004***	-0.004***	-0.004***
	(0.001)	(0.001)	(0.001)
Investment Risk [1]	0.757***	0.802***	0.830***
	(0.218)	(0.218)	(0.221)
Natural Resource Rent [1]	-0.054	-0.063	-0.061
	(0.041)	(0.042)	(0.042)
Labor force [1]	-0.464	-0.471	-0.498
	(0.500)	(0.495)	(0.495)
SMP [1]	1.242***	1.029***	1.127***
	(0.203)	(0.215)	(0.224)
Distance [1]	-0.776***	-0.793***	-0.766***
	(0.273)	(0.279)	(0.279)
Overlap in office hours	0.107*	0.107*	0.104*
	(0.061)	(0.061)	(0.062)
DTT	0.911***	0.941***	0.961***
	(0.121)	(0.122)	(0.122)
PTA+IP	-0.802**	-0.770**	-0.817**
	(0.333)	(0.326)	(0.328)
PTA-IP	-0.663***	-0.638***	-0.645***
	(0.195)	(0.191)	(0.191)
NPTA	0.016	-0.003	0.002
	(0.051)	(0.053)	(0.054)
BIT	-0.208	-0.235	-0.253*
	(0.152)	(0.150)	(0.150)
NBIT		0.020**	
		(0.009)	
BIT*PTA+IP	0.241	0.308	0.343
	(0.279)	(0.276)	(0.276)
BIT*PTA-IP	0.805***	0.773***	0.782***
	(0.170)	(0.171)	(0.171)
N of OECD BITs			0.042**
			(0.020)
N of non-OECD BITs			0.012
			(0.011)
BIT* NRR	-0.038	-0.023	-0.021
	(0.035)	(0.035)	(0.035)
Constant	-23.858***	-20.028***	-20.238***
	(6.163)	(6.200)	(6.211)

Significance levels: *10% **5% ***1%. [1] Control variables that are expressed in natural logarithms. The standard errors are in brackets.

Table 2-14: FGLS estimation results - further analysis of the impact of BIT and PTA.

Dependent variable Log (FDI)			
Regressors	**Model (14)**	**Caribbean Model (15)**	**Model (16)**
ACP GDP [1]	-0.278	-0.382	-0.769
	(0.463)	(0.491)	(0.564)
OECD GDP [1]	-2.197***	-2.615***	-2.162***
	(0.834)	(0.771)	(0.807)
Trade Openness	-0.007***	-0.006***	-0.005***
	(0.002)	(0.001)	(0.002)
Investment Risk [1]	-0.301	-0.323	-0.383
	(0.757)	(0.731)	(0.715)
Natural Resource Rent [1]	0.018	0.025	0.004
	(0.057)	(0.056)	(0.058)
Labor force [1]	3.596***	3.468***	3.579***
	(0.726)	(0.700)	(0.767)
SMP [1]	1.171***	1.257***	1.140***
	(0.390)	(0.387)	(0.396)
Distance [1]	-1.211	-1.164	-0.767
	(1.312)	(1.300)	(1.317)
Overlap in office hours	1.210***	1.388***	1.326***
	(0.377)	(0.365)	(0.388)
DTT	1.808***	1.741***	1.381***
	(0.494)	(0.496)	(0.478)
PTA+IP	0.367	0.428	0.502
	(0.519)	(0.522)	(0.501)
PTA-IP	1.663	1.658	1.056
	(1.107)	(1.121)	(1.143)
NPTA	-0.173**	-0.191**	-0.206***
	(0.073)	(0.074)	(0.076)
BIT	-0.250	-0.346	0.180
	(0.900)	(0.922)	(0.947)
NBIT		0.019	
		(0.030)	
BIT*PTA+IP	0.598	0.674	0.050
	(0.917)	(0.940)	(0.962)
BIT*PTA-IP	0.166	0.100	-0.425
	(1.160)	(1.190)	(1.234)
N of OECD BITs			0.098*
			(0.058)
N of non-OECD BITs			0.012
			(0.011)
BIT* NRR	-0.038	-0.023	-0.021
	(0.035)	(0.035)	(0.035)
Constant	-23.858***	-20.028***	-20.238***
	(6.163)	(6.200)	(6.211)

Significance levels: *10% **5% ***1%. [1] Control variables that are expressed in natural logarithms. The standard errors are in brackets.

Further on, we investigated for any signalling effects of a BIT. To this point we have considered a dummy variable indicating whether or not a BIT covered each bilateral FDI relationship. However, the transmission of a BIT into FDI is also claimed in the existing literature to operate through its signalling and commitment effects that affect other FDI relationships. Specifically, when a host country signs a BIT with one source country, it signals its intentions to protect foreign investment in general (Neumayer & Spess 2005, Tobin & Rose Ackerman 2006). In model 12 (Table 2-13), we included the total number of BITs signed by a host country for our African sample. The results suggest that an increase in the volume of BITs concluded by the African countries does have a positive relation with FDI. Hence, our results support the signalling effect of BITs in African countries. In contrast, the Caribbean sample results (model 15 in Table 2-14) show no significant relationship between the total number of BITs and FDI.

Motivated by this, in model 13 (Table 2-13) and model 16 (Table 2-14), we differentiated between BITs concluded with OECD and non-OECD countries. Given that the parent countries included in our sample are all OECD countries, this specification allowed us to examine if this signalling effect is confined to BITS with OECD countries or applies more generally. Our results revealed that BITs concluded with OECD countries stimulated more FDI while the non-OECD BITs have no impact. This applies to both the African and Caribbean countries. Hence, our results provide support to the signalling effect of BITs to some extent, whereby an increase in the number of BITs with OECD countries provides greater confidence to OECD investors.

Finally, we explored if BITs mattered in the natural resources sector. Several authors have linked the risk of expropriation to the natural resources sector, indicating that BITs may play an important role accordingly. For instance, Aisbett (2007) claimed that one of the key ways through which a BIT is anticipated to stimulate FDI is through reduction of expropriation risk which tends to be greatest in natural resource extractive industries. On a similar note, Poulsen (2010) also agreed that natural resource investors may take more notice of BITs given their vulnerability to discriminatory or even predatory government interference, while according to Tobin and Busch (2010) wealthy countries want BITs as an institutional check against uncompensated expropriation. Furthermore, in an investigation of the sectoral pattern of expropriation of FDI from 1993 to 2006, Hajzler (2012) revealed that most expropriation acts emanated from the resource-based sectors (mainly in mining

and petroleum) and high resource output prices increased the likelihood of such acts. Yet, different views emerged in Swenson (2009), Yackee (2009), Tobin and Rose-Ackerman (2003) and Hajzler (2014) who highlighted that a BIT may not matter or even discourage resource-based investment. According to Swenson (2009) the natural resource investors have less flexibility in FDI decisions. They are constrained to locate in countries that have the natural resources regardless of whether a BIT exists.

Yackee (2009) drew attention to the prevalence of sophisticated investment contracts which he claimed are more common in the natural resources and infrastructure concession sectors since they provide more deal-specific provisions than the ambiguous one-size-fits all BIT provisions. Thus, on the one hand, if investors in the natural resources sector (which would undoubtedly be large influential investors) are able to protect their interests through individual contracts, BITs would have little or no relevance to their investment decisions. BITs may even discourage them from investing if it deters or constraints them to abide by the stringent provisions. On the other hand, host countries well-endowed with natural resources may also have strong bargaining positions and thus refrain from signing BITs (Tobin & Rose Ackerman, 2003). Likewise, using a sample of 38 developing and emerging economies, Hajzler (2014) explained that a likely reason why the average share of resource-FDI in total FDI was higher in expropriating countries than in non-expropriating countries could be due to the capacity and incentive for host governments to offer attractive deals to foreign investors. On this note, a BIT may lose relevance in the natural resources sector if the host and parent country find alternative solutions to protect their interests and/or refrain from such stringent treaties altogether. To investigate whether BIT matters in the natural resources sector, we introduced an interaction term of the BIT (with parent) and natural resources variable (BIT*NRR) in all of the regressions in Table 2-13 for Africa and Table 2-14 for the Caribbean. We obtained a negative but insignificant coefficient for the BIT*NRR interaction term in both the African and the Caribbean samples and hence we can offer no support for the general notion that BITs stimulate FDI in resource-rich ACP countries.

2.6: Conclusion

This study examined the determinants of FDI into the ACP countries, with a particular focus on the role of PTAs. A notable development in the global economy is the surge in the number and scope of PTAs. The research interest on PTAs has very closely tracked their evolution over time. Goods trade had a central role in PTAs formed in the early years (also known as the first wave of PTAs formed in the 1950's-1970's) and this attracted research interest on their trade effects. With the second-wave of PTAs (1980's to 1990's), while merchandise trade remained important, the attention shifted onto the role of PTAs in multilateral liberalisation. The more recent PTAs (third-wave) have extended into non-trade provisions and hence effects on motivations beyond trade are pragmatic. One of the likely non-trade impacts emphasized in the existing literature is the consequences on FDI. FDI is broadly claimed as important for economic growth, particularly for capital scarce countries such as the ACP group since it enables them to bridge their domestic savings-investment gap. However, while global FDI flows notably accelerated from the 1990s, the relative share of the ACP group remained low. Hence, attempts to attract more FDI have always remained at the forefront of domestic policy as well as international organisations' reform proposals. As highlighted in Blonigen (2005), the most fundamental question about FDI is why a firm would choose a foreign location rather than opting for exporting or licensing arrangements. In short, an understanding of the factors that underpin the ability of a country to attract FDI is important. The existing literature has largely investigated the determinants of FDI using various samples of countries, but the ACP group has received relatively little attention. This study thus extended our understanding on the factors that affect the FDI attractiveness of the ACP group. In addition to estimating the relation in a bilateral framework, it included additional determinants of FDI along with the common variables identified in the theoretical and empirical literature to be important for FDI. These include PTAs, a measure of surrounding market potential, and the office hours overlap between source and host.

While we do not claim our results to be conclusive, our empirical investigations do reveal some interesting findings. In model 1 we estimated the average effect of each explanatory variable for the whole ACP group and then regionalised the PTA and BIT variables in models 2 and 3, respectively. Furthermore, in models 4, 5 and 6, we decomposed the ACP

sample by specific region, namely the African, Caribbean and the Pacific to further investigate any regional patterns masked by aggregation of a heterogenous group of countries. Consistent with the existing literature, our empirical investigations support the importance of domestic market size and surrounding market potential in attracting foreign investors, for the ACP overall and the African and Caribbean subsamples. The implications from these findings are twofold. Firstly, it indicates a prevalence of market-seeking FDI into the ACP group. It provides evidence that FDI into the ACP is not all about natural resources only but market size and consumers matter too. Secondly, results support the importance of regional integration and market enlargement for the otherwise fragmented group of countries in our sample. Additionally, as expected, FDI into the ACP group is sensitive to investment risks, which is in line with the existing literature. The negative FDI-trade openness nexus indicates that the more the ACP countries engage in trade, the less FDI they attract, a possible reflection of trade and FDI acting as substitutes. The finding on the number of PTAs reinforces this claim whereby a negative coefficient on this variable may also be due to trade-FDI acting as substitutes rather than complements. In terms of geographical distance and office hours overlap, our results indicate that both these variables are relevant for FDI activity in the ACP group. Greater bilateral distance and smaller office hours overlap reduce FDI. This indicates that it is important for foreign investors to firstly, understand the laws, culture and environment of the host ACP countries and secondly to frequently communicate with their foreign affiliates. The presence of a DTT has a significant and positive impact on FDI in the ACP and each of its three subregions. While no significant relationship between PTA and FDI was found in model 1, categorising the PTA variable by respective region in model 2 uncovered the variability in the PTA-FDI nexus across these three regions. Results revealed a negative and significant African PTA-FDI relation, a positive and significant Caribbean PTA-FDI relation and no such relation for the Pacific PTA variable. The PTA variable remained negative and significant for the African subsample, providing evidence of trade-FDI substitution.

A decomposition of the ACP group into its regional subsamples (models 4, 5 and 6) revealed differences in the patterns of significant explanatory variables. While the small sample sizes for the Caribbean and Pacific subgroups, particularly the latter, suggest caution in drawing inferences, it does suggest that foreign investors in the different regions may have quite different motivations. We can offer no support here for any notion that the

ACP may benefit from developing a common approach towards and common policies for attracting FDI.

As noted, PTAs provide various channels through which their effects on FDI can be realised, one of which is the presence of investment provisions. We decomposed the PTA variable into PTAs with investment and dispute settlement measures and PTAs without such provisions and estimated for the ACP overall and separately for each of the three subregions. We found no consistent evidence that bilateral PTAs, with or without investment provisions, encouraged FDI. On the contrary, we found that PTAs of both types discouraged FDI in Africa. Perhaps these investment provisions are designed to attract small investments of a trade facilitating type which are insufficient in volume to offset the trade-substituting FDI that the PTA displaces. But resolving this awaits the availability of more disaggregated FDI data.

Similar to the growth in PTAs, the popularity of BITs has also grown because policy makers in developing countries believe that signing them will increase FDI (Neumayer & Spess, 2005). The existing empirical evidence on the same is mixed, however. A strong support for the role of BIT is found in Buthe and Milner (2009), Egger and Pfaffermayr (2004), and Neumayer and Spess (2005). Others such as Hallward-Driemer (2003), Aisbett (2007), Tobin and Rose Ackerman (2003) do not find positive and significant effects. We included a dummy variable to capture the presence or absence of a BIT between the source and host country in our regressions. Consistent with the majority of studies in the literature, this variable turned out to be largely insignificant. We found no evidence that a BIT between the source and host country encouraged FDI in the full ACP sample or the African sub-sample, but there was positive and significant effect in the Caribbean. Furthermore, in line with the claims in the literature of possible signalling effects of a BIT, we included the total number of BITs signed by the host country in our subregional regressions. We also investigated if this signalling is confined to BITs with OECD countries or applies more generally. Results revealed a possible signalling role for BITs, but specifically BITs signed with OECD countries. BITs signed with non-OECD countries had no significant effect on FDI from OECD sources.

We further explored the interactions between BITs and PTAs (with and without investment provisions). In the Caribbean a PTA of either type has no significant effect on FDI, regardless of whether a BIT is in place. In Africa, however, we found that a bilateral PTA

with investment provisions, with or without a BIT, reduces FDI; and a bilateral PTA without investment provisions does the same, unless a BIT is in place in which case FDI increases. This reinforces the view that the investment provisions in a BIT and a PTA are somehow aimed at different types of investments. We used a similar interaction between BITs and a host's natural resource rent earnings. We do not find any evidence that BITs play a greater role in the natural resources sector.

In sum, while our findings do indicate that some of the common factors claimed in the existing literature to affect the FDI attractiveness of a country are also important for the ACP group, they do outline some peculiarities and contrasting relations for other FDI determinants. This falls in line with Asiedu (2002) who highlighted the uniqueness of the African countries by providing evidence that factors that mattered for non-African countries in attracting FDI either did not matter or had different impacts in a sample of Sub-Saharan African countries. Many of the ACP countries do not have complete data on most of the variables employed in our empirical framework. Availability of a more complete dataset would enable more country pairs to be included in the investigation and facilitate a revised estimation in the future. Also, since the dependent variable (FDI) is included in the model in log form, zero or negative FDI stocks are automatically excluded from our analysis. This gives rise to concerns about sample selection bias where sample is not drawn randomly from the population but is restricted to positive and non-zero observations. As future research, alternative gravity model estimation techniques that address this sample selection bias (such as those recommended by Helpman et al (2008)) can be used to improve the results from this chapter. Moreover, this investigation can also be extended by categorising the ACP countries by income group. While our study has explored the relationship by different groupings (African, Caribbean, Pacific) and included GDP as an indicator of income, it would be interesting to see if there are any differences in the results when categorised by different income groups. Also, the findings on the role of natural resources can be further complemented by categorising countries by endowment of different natural resources and natural resource and non-natural resource countries. While the country panel FDI flows can not be classified as natural resource FDI or non-natural resource FDI, country specific studies along these lines can be considered. FDI decisions between a country pair can also be affected by the relative costs of locating FDI in a third country. Future research can consider the flow of FDI between a parent and a group of host

coutnries, instead of a bilateral FDI relation. The formation of PTAs between a group of countries provides a choice to FDI parent countries in terms of location. Hence, while a PTA may exist between two countries, the parent country may decide to locate in any one of the PTA member countries (the relatively more FDI attractive country) and export tariff-free to all members of that PTA. Such export platform FDI behaviour affects bilateral FDI flows. Moreover, a very recent paper (Hofman et al; 2017)[55] provides an analysis on the contents of PTAs. In particular, this paper has developed a database which provides information on the deep provisions in PTAs. This information can be used in future research to construct indexes of PTAs depth and investigate the nexus of these provisions to FDI.

[55] This paper was available after this thesis was submitted for external examination.

Chapter 3

The role of Preferential Trade Agreements in cross-border worker mobility

3.1: Introduction

While global economic integration has intensified over the years, this process has not evolved evenly across the three dimensions of globalisation: trade, international capital flows and migration (Mayda, 2008). The reduction of barriers to trade and capital flows has continued to attract the attention of policy makers, both at the national and international levels. International institutions such as the World Trade Organisation (WTO) and International Monetary Fund (IMF) and individual country governments have actively pursued more liberal policies to facilitate the movement of these factors of production. By contrast, labor mobility[56] - though an ongoing phenomenon - remains restricted despite the strong economic rationale for such liberalisation. For example, from a global perspective, several empirical investigations have concluded potential gains from labor mobility. The World Bank (2006) estimated a global gain of 0.6 percent of world GDP through higher labor mobility. Other researchers who also arrived at positive global impacts include Docquier, Machado, and Sekkat (2015), Walmsley, Louise, and Winters (2002), Moses and Letnes (2004), Hamilton and Whalley (1984), and Borjas (1999). Despite this empirical evidence on the global gains from labor migration and the fact that it is often considered a factor of development and growth for developing and less developed countries (International Organisation for Migration [IOM], 2008), the movement of people (including temporary workers) across borders remain highly controlled.

This relatively slow progress in international labor mobility can be partly attributed to the fact that the extent to which labor can be mobilised across borders depend on factors

[56] In international services trade, labor mobility is defined as the temporary movement of natural persons (or Mode 4) which the WTO defines as the supply of a service by a service supplier of one member through the presence of natural persons in the territory of another member (Melo & Regolo, 2009).

beyond the control of trade policy frameworks. Migration has economic, social and political implications and therefore overlaps interests of several institutions such as labor unions, immigration & border security, industries and non-government organisations. Moreover, the diverging views on labor migration - for example between an economist, politician and socialist or between countries at different stages of development – have influenced individual countries migration policies as well as derailed efforts for a coherent global framework to manage this process. The friction (or social tensions) between the natives and immigrants has the potential to influence a society's attitude towards immigration and consequently shape the political perspective as well (Gaston & Nelson, 2013; Bearce & Hart, 2017). Above all these mixed perspectives on freer labor mobility, a nation's border security and immigration laws - sovereign to each country, have always had and will continue to have primacy on migration issues. Thus, the multifaceted nature of migration perhaps explains the reluctance of countries to adopt more liberal policies on labor mobility compared to the flow of goods, services and capital. The potential risks from migration and the current global tensions explain the tight migration policies emerging in various countries. An influx of foreign workers poses threats to domestic workers both in terms of job availability and wages which may result in resistance from labor unions. Rising terrorism, international drug and human trafficking have tightened border controls along with tougher immigration policies worldwide. Further, as cited in Dowlah (2014) governments' concerns of potential welfare burden of immigrants may also lead to tighter policies. From the labor-exporting countries' perspective, concerns of brain drain, consequent loss in tax revenues and productivity losses are among the leading downsides of emigration (Poot & Strutt, 2010).

Whilst the above concerns apply to permanent migration, various scholars have deliberated on the potential gains and even offsets to these disadvantages, possible from temporary migration. Some of the key prospective positive effects (argued in Poot & Strutt, 2010; Saez, 2013; Dowlah, 2014; and Felbermayr, Jung, & Toubal, 2009) are the spill-overs of knowledge and technology transfer from return migration, remittances inflows, greater investment into education underpinned by motivations to work abroad, and creation of trade and investment networks with host countries. The empirical evidence of and motivations for temporary labor mobility due to these effects are inconclusive in the migration literature. Nevertheless, the significance of remittances inflows, services trade

and demographic pressures has contributed to the demand for policies to enhance labor mobility. Remittances, defined as money or goods sent to the home country from migrants abroad constitutes an important source of foreign exchange reserves for many nations. Compared to other flows such as overseas development aid and short-term investment, remittances exhibit greater stability. While several factors determine these remittances, a key element is the growth in migration. In a joint report by the OECD, ILO and the World Bank (2015), it was revealed that more than half of the world's migrants live in the G20 countries and remittances to and from these G20 countries account for almost 80 percent of global remittances flows. Services trade is also an important source of foreign exchange. Services often comprise a very significant part of a country's economy (Poot & Strutt, 2010) and liberalising labor movement can boost services exports.

With regards to demographic pressures – an aging population, low birth rates and relatively higher wages in labor-importing countries, combined with contemporaneous unemployment, rising population, poverty and growth uncertainties in labor-export nations indicate prospects of economic gains at both ends. The pull and push factors for labor mobility indicate convergence in the economic needs of labor-importing and labor-exporting countries. According to Poot and Strutt (2010), the basic economic perspective for migration is simple - it enables human resources to locate to where they are most productive. Moreover, as mentioned earlier, several studies (World Bank, 2006; Walmsley et al., 2002; Moses & Letnes, 2004; Hamilton & Whalley, 1984; and Borjas, 1999) have estimated gains from migration at the global level[57].

Despite these strong economic rationales for liberalising the temporary mobility of workers, the opportunities for such mobility through the multilateral approach of the WTO are quite limited. The focus on skilled worker mobility by the WTO provides no outlet for less developed and developing countries endowed with semiskilled and unskilled labor. The temporary movement of workers is catered for by the WTO under its General Agreement on Trade in Services (GATS) through Mode 4[58]. It is however very restrictive in scope and was more designed to augment services trade, rather than create greater labor mobility generally. Though it does not restrict the movement to skilled service workers, countries have nonetheless mainly committed to movement of a narrow range of highly skilled

[57] These papers are discussed in section 3.2.3 (Economic gains from migration).
[58] Services trade is categorized under four different modes in the WTO's GATS (1995). Mode 1 includes provision of services abroad from home country, Mode 2 includes consumption abroad, Mode 3 is commercial presence abroad, and Mode 4 is the movement of natural persons to provide services across borders.

service workers in order to facilitate Mode 3 (commercial presence abroad). Furthermore, a lack of clarity in definitions (for example of 'service workers' and 'temporary'), inflexibility (Goswami & Saez, 2013), WTO's principle of Most Favoured Nation (MFN) treatment[59] (Poot & Strutt, 2010) and the reciprocal exchange of concessions (Dowlah, 2014) are additional factors that explain the relatively slow progress of labor mobility at the multilateral level. Dowlah (2014) posited that the WTO negotiations on Mode 4 appear futile despite being a credible window of opportunity.

The political and social issues associated with the inflow of foreign workers have prompted the labor receiving countries to explore alternative options to address their labor market concerns rather than seeking foreign workers. These alternative polices include for example, raising female labor participation rates, extending retirement age, shifting towards capital intensive production and outward investment (Chia, 2006). Nevertheless, despite these efforts, the scope for foreign workers still remains. With a lack of global efforts to mobilise these workers, both labor exporting and importing countries have resorted to alternative policies such as PTAs and BLAs[60] to facilitate the movement of labor across their borders. While these alternatives are not substitutes to the multilateral option, they have served as credible complements over the years. Blank (2011) defines BLAs as an agreement between two countries that facilitates the exchange, recruitment, welfare, health, training, compensation and rights of migrant workers.

Amidst the rising anti-immigrant sentiments in the developed countries and the Doha Round's failure in liberalising this sector, trade agreements may provide a credible outlet for labor movement (Dowlah, 2014). PTA's diverge from the WTO's Mode 4 coverage by including workers at all skill levels and across different sectors. Compared to the narrow list of skilled workers catered for in Mode 4, PTA's have a wider coverage and address additional issues related to labor mobility as well. There are numerous barriers that limit the movement of workers to foreign markets. Included among these are limited visa quotas, economic needs tests, complicated and lengthy visa processes, licensing requirements and an inadequate recognition of professional qualifications (Nielson & Taglioni, 2003). PTAs provide an effective mechanism to negotiate and ease these barriers with potential

[59] The Most-favored-nation (MFN) treatment is one of the principles of the WTO which does not allow WTO member countries to discriminate between their member trading partners. Whatever treatment is accorded to one member trading partner has to be extended to all others; however some exceptions such as free trade agreements or special access to developing or less developed countries are allowed. (www.wto.org).

[60] A BLA is an agreement between two countries that facilitates the exchange, recruitment, welfare, health, training, compensation and rights of migrant workers (Blank, 2011).

destination countries. Figueiredo, Lima and Orefice (2016) and Orefice (2015) elaborated on the following ways through which a PTA could encourage migration. They viewed the signing of a PTA as an awareness mechanism. In other words, when a PTA is signed between a host and origin country, individuals obtain information and hence get familiar with partner countries. Furthermore, the inclusion of deeper integration provisions such as labor provisions may further stimulate cross-border worker movement. However, they also noted that greater trade flows stimulated through PTAs may reduce the need for foreign workers should trade and foreign labor act as substitutes. Nevertheless, demand may still persist in specific non-tradeable sectors such as services and/or other jobs which are not attractive to domestic workers.

The popularity of PTAs as a labor mobility instrument has increased over time. In an in-depth examination of over 150 trade agreements, Ebert and Posthuma (2011) revealed that the proportion of trade agreements with labor provisions rose from a low of 4.0 percent in the 1995-1999 period to an 11 percent share in 2000-04. This further increased to around 30 percent in 2005-2009. Goswami and Saez (2013) documented the following PTAs that offer almost full labor mobility – European Economic Area (EEA), European Free Trade Association, and Common Market for Eastern and Southern Africa (COMESA). The coverage of skill levels and sectors negotiated under PTAs are also more comprehensive. Countries such as the US, Canada, Australia, New Zealand and many others have negotiated various trade agreements that include mobility of a range of highly skilled to semi and low skilled workers in services, manufacturing and agricultural related activities.

Given the narrow scope for labor mobility through the WTO despite the substantial economic importance of the same, the question that arises is how can less developed and developing countries increase their temporary labor mobility across borders? As mentioned earlier, PTAs offer an alternative option. But does the signing of a PTA in fact facilitate greater labor mobility amongst PTA partners? This is clearly an empirical question, yet several data constraints have perhaps limited such investigations. For a prolonged period of time, the empirical work on the determinants of migration was mainly confined to country specific studies due to a lack of panel bilateral data (Llull, 2016). Recent advances in the availability of data on migration have facilitated country panel studies. Pedersen, Pytlikova, and Smith (2008) and Mayda (2010) are the initial papers that have addressed bilateral migration flows for a panel of countries. The existing migration literature has explained the

cross-border movement of people using a number of economic, social, demographic, geographical and political factors. However, a literature search revealed only two very recent studies (Figueiredo et al., 2016 and Orefice, 2015) that included trade agreements as a determinant of migration in their estimations. These two pioneering studies have however focused on explaining the role of PTAs in broad migration (permanent, temporary and for various purposes) and not explicitly on labor mobility. To the best of my knowledge, there is no empirical research on the explicit role of PTAs in bilateral labor mobility which undoubtedly, is due to data constraints. A major drawback of migration data is the differences in definitions used across countries in data compilation and the impossibility of discriminating between economic and noneconomic migrants. The OECD is the only source that provides annual bilateral migration flow data for a large number of countries[61]. However, that data is broad with definitional differences across countries[62] and is also restricted to inflows into OECD countries only. Hence movements into non-OECD countries are not captured. According to the ILO, the share of migrants to total host population varies widely across countries with above 50 percent in the Gulf Corporation Countries (GCC) such as United Arab Emirates, Qatar, Kuwait and Bahrain. This study uses bilateral labor flow data compiled by the United Nations Economic & Social Commission for Asia Pacific (UNESCAP). The UNESCAP database provides data on flows of workers from 10 origin countries into their selected destination countries (a total of 150 countries) which includes both OECD and non-OECD countries. Although there are only 10 labor origin countries, it more closely fits the construct of interest. Altogether, there are 388 country pairs in our dataset spanning the period 2000 to 2013. Furthermore, we also include additional indicators such as host and origin country inflation, unemployment and political stability into our empirical model[63]. These determinants are outlined as significantly influential in migrants' decisions (see for example Karamera et al., 2000; Pederson et al., 2008; and others).

Hence, the economic rationales and potential benefits from increased labor mobility on the one hand and the very limited scope and no credible outlet for countries that have abundant semi and unskilled labor on the other hand, inspires this study to explore the role of PTAs

[61] The World Bank and the UN population division provide bilateral migration stock data for every 10 years. Figueiredo et al. (2016) used the World Bank data in their study while Orefice (2015) used the OECD data.
[62] The metadata for the migration database shows that the definition for inflow of foreign population differs across countries. Some countries report permanent and temporary flows separately, some only cover permanent flows, some capture inflows for more than a few weeks while some use a longer time frame of months or almost a year. Such inconsistencies severely limit cross-country comparison. The concept needed for this study is labor mobility only, while the OECD data includes movements beyond labor.
[63] These three variables are not included in Figueiredo et al. (2016) and Orefice (2015).

as an alternative channel for labor movement[64]. Accordingly, chapter 3 is structured in the following manner. In section 3.2, we reviewed the current trend in global migration and labor migration specifically, along with a review of the potential economic gains from temporary migration. Next, section 3.3 illuminates the existing international economic channels through which labor mobility currently takes place. These include the Mode 4 provision of WTO, PTAs and BLAs. In section 3.4, we review the related theoretical and empirical literature, section 3.5 explains the empirical model while the results are presented and discussed in section 3.6. Finally, section 3.7 concludes this chapter.

[64] While the literature relating to developments in and other issues on migration is mentioned in several parts of this chapter, it must be noted that this study is on temporary labor mobility and not permanent migration. The background details on general migration are utilized to develop an understanding of this phenomenon, several aspects of which would also be applicable to temporary labor mobility (which is a subset of broad migration).

3.2: Key stylized facts

3.2.1: Global migration – trends and developments

According to the 2015 International Migration Report (UN, 2016), the number of global migrants reached 244 million in 2015, from 222 million in 2010 and 191 million in 2005. These absolute statistics reflect a growing trend; however, when viewed as a percent of global population, the subdued development is apparent. For example, in 2015 the number of migrants as a percent of global population was only 3.3 percent. The stylized facts in Table 3-1 reveal that relatively better economic condition appears to be the principal motivation for these migrants. The bulk of these international migrations (in 2015) were hosted by high-income countries (71 percent). The high-income OECD countries are a major destination (with 51 percent share) compared to the non-OECD high-income countries (20 percent). The middle-income countries hosted 25 percent while the low-income countries hosted only 4 percent of the world's migrants.

Table 3-1: International migration stock by income group-as at 2015.

Destination	**Number of migrants (millions)**	**As a % of total migrant stock**
High-income countries	173	71
o/w :OECD countries	124	51
:Non-OECD countries	49	20
Middle & low-income countries	71	29
o/w :Middle-income countries	61	25
:Low-income countries	10	4

(Source: International Migration Report 2015, UN (2016))

In terms of geographic distribution, Europe and Asia (see Table 3-2) hosted the majority of the international migrants in 2015, with Asia experiencing the fastest growth (of 53 percent) in migrant stock from 2000 to 2015, compared to other regions. Northern American countries hosted 54 million of the world's migrants in 2015, a 35 percent growth from 2000. This is followed by Africa (21 million), Latin America & the Caribbean (9 million) and Oceania (8 million). In terms of specific countries, the International Migration Report (2015) revealed that the US hosted the largest number of international migrants (47 million) in 2015. The leading European countries that hosted these international migrants in 2015

include Germany, Russian Federation, UK, France, Spain, Italy, and Ukraine. Germany and the Russian Federation positioned as the second and third largest hosts, with 12 million migrants each in 2015. The top five Asian destination countries include Saudi Arabia, United Arab Emirates, India, Thailand, and Pakistan.

Table 3-2: Geographic distribution of global migrant stock - 2000 & 2015.

Destination Country	Number of migrants (millions)		% Growth (2000 to 2015)
	2000	2015	
Europe	56	76	36
Asia	49	75	53
Northern America	40	54	35
Africa	15	21	40
Latin America & the Caribbean	7	9	29
Oceania	6	8	33

(Source: International Migration Report 2015, UN (2016))

The origin of these international migrants is mainly middle-income countries. As revealed in UN (2016), 65 percent of the migrants in 2015 were born in a middle-income country, 25 percent in high-income and only 10 percent in low-income countries. Table 3-3 shows that Asia is the main supplier of international migrants with 43 percent of the global migrants (2015) being Asian born. This is followed by Europe (25 percent), Latin America & Caribbean (15 percent), Africa (14 percent), Northern America (2 percent) and Oceania (1 percent).

Table 3-3: International migration stock by area of origin - 2015.

Origin Country	Number of migrants - 2015 (millions)	As a % of total migrant stock
Asia	104	43
Europe	62	25
Latin America & Caribbean	37	15
Africa	34	14
Northern America	4	2
Oceania	2	1

(Source: International Migration Report 2015, UN (2016))

Tables 3-2 and 3-3 reveal that the European and Asian countries were the top two hosts and origins of international migrants in 2015. Relatively fewer migrants originated from Northern America while it ranked third in terms of hosting these migrants.

3.2.2: Key insights on global labor migration

Next, we present an overview of global labor migration with particular focus on its composition, economic sectors and distribution by region and by host country income level. These insights are sourced from a recent and one-off estimate by the ILO. The ILO estimated the global labor migration stock for 2013, as part of their broader objective of an improvement in and production of labor migration statistics at national, regional and global levels. Since the unavailability of comparable yearly data precludes the discussion of trend over time, we illustrate the global composition of migrant workers, distribution by broad regional groups and income levels of host countries, and the sectoral composition.

As revealed in ILO (2015) and summarised accordingly in Table 3-4, the total global population that was aged above 15 years (which is defined by the ILO as the working age group) was 5273 million in 2013. Of these, 3390 million individuals participated in the labor market. Hence, the global labor force participation rate was 64.3 percent in 2003. When analysed in terms of country of origin, 206.6 million of the 5273 million working age population were migrants. Hence, 3.9 percent of the global working age population were international migrants. Further, with respect to the labor market involvement of the migrants' cohort, 150.3 million of the 206.6 million working age migrants participated in the labor market. This shows that the migrants' labor market participation rate was 72.8 percent in 2003. Comparatively, the migrants' labor market participation rate (of 72.8 percent) was higher than the non-migrants' labor market participation rate (of 63.9 percent).

Table 3-4: Population, migrant stock, total workers & migrant workers in 2013.

Total global population (aged 15+ i.e. the working age population)-in millions	5273
o/w Total Migrants (aged 15+) -in millions	206.6
o/w Total non-migrants (aged 15+) – in millions	5066.4
Total workers -in millions	3390
o/w Migrant workers -in millions	150.3
o/w non-migrant workers -in millions	3239.7
Migrants as a % of total population	3.9
Migrants as a % of all workers	4.4

Migrant workers as a % of migrants	72.8
Non-migrant workers as a % of non-migrants	63.9
Total workers as a % of population	64.3

(Source: Calculated using data from ILO, 2015)

In terms of the specific economic areas that absorbed these migrant workers, undoubtedly the services sector was the most popular. According to the WTO, services accounts for two thirds of global output and is the most dynamic part of international trade. The services sector therefore provides the most opportunities for these migrant workers. As per the ILO (2015) estimates, of the 150.3 million migrant workers, 106.8 million (71.1 percent) were engaged in the services sector. The manufacturing sector attracted 26.7 million migrant workers (17.8 percent) while the remaining 16.7 million migrant workers (11.1 percent) were engaged in the agriculture sector.

When focusing on the destination countries chosen by these migrants, the attraction of economically prosperous countries becomes evident. The ILO (2015) revealed that most of the migrant workers (74.7 percent) were living in high-income countries. The middle-income and lower-income countries were relatively less attractive. The upper-middle-income and lower-middle-income countries hosted 11.7 percent and 11.3 percent of migrant workers respectively, while the low-income countries attracted the lowest share of 2.4 percent of migrant workers. Interestingly, when viewed in terms of the regional distribution of these migrant workers, North America and Europe together hosted 57.7 percent of global migrant workers (or 24.7 percent and 33.0 percent, respectively). As revealed in Figure 3-1 and discussed in section 3.2.3, these two regions are faced with declining population and an increasing old age dependency ratio, providing ideal scope for labor sending countries. The Arab States, well known for attracting foreign workers in their lucrative oil, gas, transportation and hospitality sectors absorbed 11.7 percent of migrant workers. The remaining Asia and Pacific countries hosted 16.2 percent, Africa 5.8 percent while Latin America and the Caribbean merely attracted 2.9 percent of the 2013 global migrant stock.

3.2.3: Economic gains from migration

The economic consequences of migration have generated substantial interest and resulted in a huge volume of empirical research that has provided evidence on its positive and negative

effects. Overall, the deliberations in this existing literature on the potential gains and losses from migration remain inconclusive. While some studies have concluded gains, others have highlighted the potential negative impacts.

Firstly, focusing on worldwide effects, various scholars have mainly concluded global gains from increased labour mobility. The World Bank (2006) claimed that a 3.0 percent rise in developed-country labour force (from abroad) will substantiate into a gain of $300 billion. This gain is approximately four and a half times more than the magnitude of foreign aid (Pritchett, 2006). Other researchers also concluding gains include Hamilton and Whalley (1984), Iregui (2005), Moses and Letnes (2004), Docquier et al. (2015), and Walmsley et al. (2002). With the use of a partial equilibrium model and 1977 data, Hamilton and Whalley (1984) estimated global gains ranging from 60 to 205 percent of world GDP from complete elimination of all immigration restrictions. With a similar assumption of full liberalisation, Iregui (1999) arrived at gains ranging from 15 to 67 percent of world GDP, Moses and Letnes (2004) settled at 4.3 to 11.2 percent of world GDP (1977) while more recently, Docquier et al. (2015) concluded efficiency gains of 11.5 to 12.5 percent. While these studies have provided useful insights to the potential effects on global efficiency from totally liberalising labor mobility, their assumption of full liberalisation provides an overly optimistic estimation. The World Bank (2006) and Walmsley et al. (2002) are based on partial liberalisation only. Both these studies have arrived at similar estimates. Walmsley et al. (2002) assumed a 3.0 percent increase in the workforce in developed countries and concluded a global gain of 0.6 percent of world GDP. The different modelling frameworks, assumed parameters and the degree of liberalisation explain the significant differences in these global estimations, however, the general conclusions of positive gains indicate the costs of restricting the international mobility of workers. These studies indicate that if international labor movement is liberalised, the world economy as a whole will gain.

A review of the more focused studies (based on a panel of countries and/or country specific) revealed mixed sentiments on the economic consequences of increased labour mobility. On the downside, some of the potential pitfalls include threats to host workers both in terms of job availability and wages, with consequent resistance from labor unions, a potential welfare burden for host governments, a brain drain from source countries along with lost tax revenues and productivity (Dowlah, 2014; Poot & Strutt; 2010). Alongside this,

geopolitical tensions, rising terrorism, international drug and human trafficking has added to demands for more stringent border control policies. However, on the positive side, there are also claims of potential gains and even offsets to these disadvantages, particularly from temporary migration. One of the increasing trends of the last decade has been the shift toward temporary forms of migration (Harris & Schmitt, 2001). Some of the widely claimed prospective positive effects (argued in Poot & Strutt, 2010; Saez, 2013; Dowlah, 2014; and Felbermayr et al., 2009 amongst others) include;

- reduction in old-age dependency ratios,
- remittances inflows,
- human capital development through spill-overs of knowledge from return migration and greater investment into education underpinned by motivations to work abroad (i.e. brain gain through brain drain),
- opportunities for trade and investment networks with host countries.

Further insight into each of these positive effects is discussed next.

Reduction in old-age dependency ratios

A main demographic impact of international migration is its significant contribution to population dynamics. Statistical projections by the relevant organisations have revealed a global demographic imbalance, both in terms of its age composition and growth. For example, according to the UN (2015) Africa is projected to be the chief contributor to future global population growth between now and 2050.

Table 3-5: Net number of migrants (in thousands).

	Net number of migrants (in 000's)			**Average annual population change (%)**
	2000-2005	**2005-2010**	**2010-2015**	**2020-2050**
Northern America	6174	6296	6179	0.52
Oceania	574	1078	952	0.99
Europe	8269	8495	4123	-0.15
Africa	-1581	-1813	-2900	2.05
Asia	-7912	-11369	-6281	0.45
Latin America & the Caribbean	-5525	-2686	-2074	0.54

(Source: Compiled using data from the UN Department of Economic & Social Affairs, Population Division database available at www.un.org/en/development/desa/population)

The average annual population change (2020-2050) in the African countries is projected at 2.05 percent (see Table 3-5) while in contrast, Europe's population is projected to shrink by 0.15 percent for the same time period. Hence, positive net migration can offset potential declines in a country's population, while negative net migration may ease high population growth pressures and the consequent increasing demand for jobs, health, education and other government services. As a further support, for the high-income countries, while the total births are forecast to outpace deaths by 20 million (i.e. the natural population change) between 2015 to 2050, the net gains in migrants over the same time period (i.e. the migrant-induced population change) is estimated at 91 million (UN, 2015). As shown in Table 3-5, between 2000 and 2015, Northern America, Oceania and Europe recorded positive net migration while negative net migration is evident in Africa, Asia, Latin America & the Caribbean.

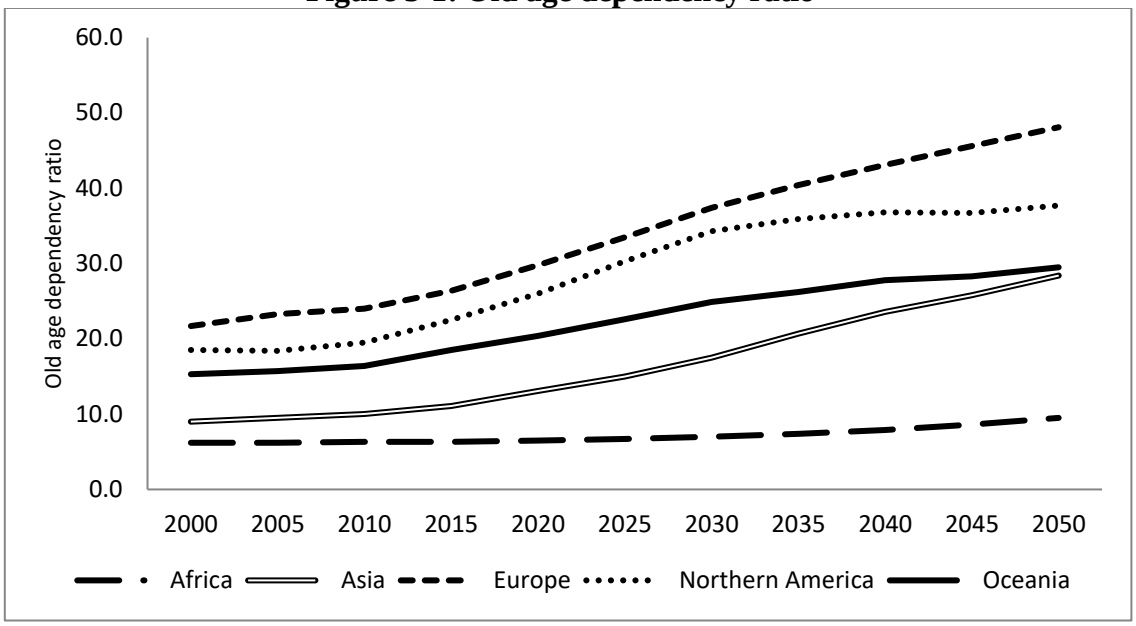
Moreover, in terms of composition by age, the global population aged over 60 is noted to be the fastest growing. Europe is reported to have the greatest share of its population aged over 60 (24 percent). Rapid population aging is also expected in other parts of the world and according to the UN (2016) projections, all major areas except Africa will have nearly 25 percent of their population aged over 60 by the year 2050. An economic advantage of positive net migration (particularly where the migrants are young) for countries where populations are declining/aging (such as in Europe) is a reduction in old-age dependency ratios.

Figure 3-1 reveals the expected rapid growth in the old age dependency ratio, particularly for Europe and Northern America. The ratio for the African countries is projected to remain relatively flat from 2015 onwards. The Oceanic and Asian countries ratios are expected to rise, and a similar pattern is evident for the Northern American countries. Europe's old age dependency ratio has remained comparatively higher than other country groups since 2000 and is projected to grow sharply over the years.

While migration cannot reverse aging, it can mitigate the dependency ratios through an influx of working age population. For example, the UN (2016) estimated that without migrants, the old-age dependency ratio of Europe in 2050 would increase to 51 persons per 100 persons of working age, which would however decline to 48 persons per 100 of working age if the current migration pattern continues. Likewise, Northern America and

Oceania are also expected to experience an increase in their old-age dependency ratios with zero-net migration.

Figure 3-1: Old age dependency ratio*



(Source: Compiled using data from the UN Department of Economic & Social Affairs, Population Division database available at www.un.org/en/development/desa/population). *Ratio of population aged 65+ per 100 population 15-64.

Remittances inflows

A popular claim on the positive consequences of labour mobility is its significance in generating remittances flows. Remittances are an important and resilient source of capital for developing countries. For example, when economic slowdowns reduced foreign direct investment and foreign aid flows from high-income countries, migrant remittances continued to grow (OECD, 2006). The World Bank (2016) estimates of remittances show that global inward remittances flows have surged from US$464 billion in 2010 to US$593[65] billion in 2014. The inward flows for 2015 are forecast to have reached US$601 billion. The importance of remittances is much higher for low-income countries, representing a significant portion of their national income. This is evident from the top ten remittance recipient countries in 2014 (see Table 3-6), as a percentage of GDP.

There is a huge volume of economic literature on the impact of remittances on receiving countries (see for example Salas, 2014; Adams & Page, 2005; Acosta, Calderon, Fajnzylber, & Lopez, 2008; Catrinescu, Leon-Ledesma, Piracha, & Quillin, 2009; Gupta, Pattillo &

[65] These figures reflect officially recorded remittances only.

Wagh, 2009; Adams & Cuecuecha, 2013; Kumar, 2013; Nyamongo, Misati, Kipyegon, & Ndirangu, 2012). Broadly, some of the welfare effects of remittances gathered from this literature include its contribution to education and human capital investment (Salas, 2014; Adams & Cuecuecha, 2013) poverty alleviation (Adams & Page, 2005; Acosta et al., 2008; Gupta et al., 2009; Adams & Cuecuecha, 2013; Hatemi-J & Uddin, 2014; Rubrico, 2015), balance of payment effects (OECD, 2006), and economic growth (Catrinescu et al., 2009; Kumar, 2013; Nyamongo et al., 2012; Imai, Gaiha, Ali, & Kaicker, 2014; Giuliano & Ruiz-Arranz, 2009). Moreover, through a comparative lens, Dowlah (2014) highlighted that remittances have outpaced flows of foreign direct investment as well as foreign aid, making it a top source of development capital for many countries.

Table 3-6: Top ten remittance recipient countries – 2014.

Country	**Remittances inflows as a % of GDP**	**Country**	**Remittances inflows as a % of GDP**
Tajikistan	42	Liberia	25
Kyrgyz Republic	30	Haiti	23
Nepal	29	Comoros	20
Tonga	28	Gambia	20
Moldova	26	Armenia	18

(Source: World Bank: Migration & Remittances Fact book, 2016)

Human capital development

A particularly frequent concern within the literature on the negative economic effects of migration is the loss in knowledge capital – termed as 'the brain drain'. The brain drain effect of migration has long been a development concern, particularly for poorer countries (Agrawal, Kapur, McHale, & Oettl, 2011; Maria & Stryszowski, 2009; and others). However, contrary to the conventional view of the brain drain, several authors (IOM, 2008; Stark, 2004; Stark & Wang, 2002; Beine, Docquier, & Rapoport, 2001; Dustmann, Fadlon, & Weiss, 2011; Mayr & Peri, 2008) have argued on the prospect of "brain-gain through brain-drain". These new insights argued that instead of a winner or loser position from migration, origin countries can transform these skill-losses into gains. While agreeing that brain drain may have a direct negative impact on human capital of the origin country, these authors emphasised indirect effects with the potential to reduce this negative impact and even result in a brain gain. More explicitly, the IOM (2008) stated that labour migration has the potential to enhance human capital development in labour-sending countries by

raising skill levels, increasing the competitiveness of the workforce, and strengthening global networks. Additionally, Stark et al. (1998) and others used representative agent models and emphasised that not only actual migration but an anticipation of migration itself has the possibility of raising human capital formation in the home country. The main proposition of these authors is that the probability of migration strengthens the incentives to upgrade skills which results in an overall gain in the human capital of the home country. This assertion is further developed in Stark (2004) who explained the possibility of brain-gain rather than brain-drain using the concept of the socially optimal level of human capital investment. According to Stark, individuals underinvest in human capital when there is zero migration due to the ignorance of a human capital externality. The possibility of migrating to another country with relatively higher wages induces individuals (both migrating and non-migrating) to choose a much higher level of human capital. Stark labels this as the inducement-effect which he argued could even be strong enough to result in a brain-gain for the home country.

In an earlier work, Stark and Wang (2002) showed that the presence of migration is akin to a government subsidy in pushing an economy towards the socially optimal level of human capital. They concluded that migration triggers both – brain drain and brain gain and a well-planned migration policy can produce a welfare gain for both migrating and non-migrating workers. Furthermore, temporary migration provides a platform for skill-diffusion from return migrants (Barrett & O'Connell, 2000; Borjas & Bratsberg, 1996; Mayr & Peri, 2008; Dustmann et al., 2011). Motives for return-migration may be visa related (short-term approvals), an optimal life-cycle residential location sequence, or because initial migration decisions were based on erroneous information (Borjas & Bratsberg, 1996).

In sum, while the issue of brain drain cannot be ignored - particularly in low income countries where the endowment of skilled professionals is scarce, and the possibilities of return migration are low - there is another growing strand of thought that has emphasised the possibility of migration and return-migrants as potential channels of human capital development for the origin country. This different perspective has led to a twist on how the migration and human capital nexus is viewed. Diaspora knowledge networks and return-migrants are now viewed as essential capital that can be harnessed to convert the

conventional and criticised brain drain consequence into a brain gain outcome (Meyer & Wattiaux, 2006).

Trade, FDI and migration

The relationship between migration and trade has been extensively studied and while there is a growing consensus that both are connected, the deliberation on whether they are substitutes or complements to each other is contentious. On the theoretical front, the standard international trade theories provide contrasting implications. For example, the Hecksher and Ohlin model suggests that trade and factor movements are substitutes. Based on this argument then, increased trade should reduce immigration pressure – which is what the many supporters of NAFTA as well as the EU's eastern enlargement suggested (Gaston & Nelson, 2013). However, with developments on the theoretical front, particularly the incorporation of increasing returns to scale and monopolistic competition, the implication is that trade and migration are complementary (Bruder, 2004). Meanwhile, as regards further theoretical and empirical explorations, while Mundell (1957) concluded them as substitutes there are others who claimed them to be complementary (Markusen, 1983; Felbermayr et al., 2009; Rauche & Trindade, 2002; Anukoonwattaka & Heal, 2014; Rauch, 2001; Bruder, 2004). The idea of substitutability can be traced back to the very early works of Mundell (1957) who used standard competitive economic models to show that (i) higher trade restriction produces more factor movements and (ii) restricting factor movements encourages more trade. Later on, the ideas developed in Mundell (1957) were challenged by Markusen (1983). The perspective of trade and migration as substitutes indicates that the rapid liberalisation of trade that the global economy has experienced over the past decades would lessen migration. More specifically, countries then have a choice between admitting goods and admitting people (Anukoonwattaka & Heal, 2014).

However, in line with the implications of the new trade theories and the empirical works mentioned earlier, the trade-migration connection cannot be restricted to substitutes only. There is also the possibility of a complementarity relation between trade and migration. This line of thought reveals the potential trade-enhancing gains from migration. In fact, many empirical works (such as Rauch, 2001; Felbermayr et al., 2009; Rauche & Trindade, 2002) have found evidence of this connection. The main premise of this strand of the literature is that migrants can facilitate source-host trade by reducing trade costs due to

incomplete information, through the establishment of networks, and simply by creating demand due to their preference for home produced goods. In a meta-analysis of 48 studies, Genc, Gheasi, Nijkamp and Poot (2011) revealed that migration increases trade between host and origin countries, with a marginally higher impact on exports than imports. Overall, they concluded that an increase in the number of immigrants by 10 percent increased trade by 1.5 percent.

By analogy to trade connections, migrants can also be channelled into possible information providers and network to attract more foreign investment (see for example Kugler & Rapoport, 2006; Javorcik, Ozden, Spatareanu, & Neagu, 2011; Rauch, 2001; Federici & Giannetti, 2008; Docquier & Lodigiani, 2010). While the related literature exploring the migration-FDI nexus have acknowledged the possibility of a substitutability relation, the possibility that migration may enhance bilateral FDI has also been expressed. Migrant networks can create trust (Docquier & Lodigiani, 2010) as well as be a source of information thus reducing the country risk-premium (Kugler & Rapoport, 2006). Migrants have greater familiarity with their home country and hence are a good source of information on market opportunities, market structure, consumer preferences, business ethics and commercial codes (Javorcik et al., 2011). In fact, both Kugler and Rapoport (2006), and Javorcik et al. (2011) used data on US FDI abroad and migrants in the US and concluded that ethnic networks were important channels of information for FDI purpose. Similar assertions surfaced in others such as Federici and Giannetti (2008), and Docquier and Lodigiani (2010). Moreover, in a study on the significance of ethnic Chinese networks in facilitating bilateral FDI, Tong (2005) found evidence of a positive relation which held not only for the Southeast Asian economies but also for countries in other regions.

3.3: International economic migration channels: what currently exists?

International migration is a complex reality and while international cooperation is critical to ensure safe, orderly and regular migration (UN, 2016) there is no coherent global regime in place for managing these flows (Panizzon, 2010). The economic virtues of greater labour mobility are well understood; however, migration is also a socially and politically sensitive issue. As revealed in Pritchett (2006) several countries have tightened immigration policies in response to various geopolitical tensions while at the multilateral level, the WTO negotiations are more focused on specific sets of skilled labour movement. Labour mobility is therefore in a policy deadlock at the WTO's multilateral level negotiations (Doha 2001 round) and countries have resorted to other mechanisms to include labour issues into international relations (Ebert & Posthuma, 2011). Hence, besides the limited provision for labour mobility through the WTO's GATS Mode 4, countries have engaged in bilateral labour agreements and international trade agreements. These bilateral agreements (discussed below) offer the advantage of forming more customised polices to suit respective countries labor market conditions, social, cultural aspects along with greater flexibility (Chanda, 2009).

3.3.1: WTO's GATS Mode 4 for labour mobility

Labour movement at the multilateral level appears in the WTO's General Agreement on Trade in Services (GATS) which was created in 1995. GATS is a multilaterally agreed framework applicable to all WTO members for the trade in services. It provides four modes through which service trade may take place. These include cross-border supply (Mode 1, e.g. distance education received from abroad), consumption abroad (Mode 2, e.g. an international student), commercial presence (Mode 3, e.g. a foreign bank) and presence of natural persons (Mode 4, e.g. foreign consultant present in destination country). Thus, labour mobility is catered for through Mode 4. The movement of natural persons provisioned for in Mode 4 is defined by the WTO as service suppliers from one country (who may be independent or who work for a service supplier) moving abroad to provide the service. It does not concern people seeking access to the employment market in the partner country or other issues such as citizenship or residence. GATS Mode 4 does not override a

country's migration policies, but is implemented within that context (IOM, World Bank, WTO, 2004). The purpose is mainly to facilitate services trade between countries, given that not all services can be provided from the home country. Some services may require the service providers to move across borders. Therefore, Mode 4 service suppliers can be defined as service providers moving for a specific purpose, are confined to one sector and are temporary (Nielson & Taglioni, 2003).

Similar to the flexibility provided under the WTO's trade rules (GATT), countries are permitted to exclude some provisions and practise flexibility in their commitments under GATS. For example, a country may exclude selected sensitive sectors or a particular mode of supply, limit the market access or adopt specific conditions or requirements for market entry. The agreement allows the process of services liberalisation to occur with consideration of the national policy objectives and development level of member countries. While the other three modes of services supply have achieved deeper liberalisation, Mode 4 remains highly restricted with countries hesitant to expand on their commitments (Carzaniga, 2003). In fact, a main criticism of GATS from the less developed and developing countries is its failure in producing any meaningful market access to them in the mode of supply (i.e. Mode 4) that is of the greatest interest to them (Chanda, 2009). From the perspective of these countries, the potential economic returns from labor mobility are large enough to keep demand for such liberalisation high on their list of negotiations (Dawson, 2013).

Table 3-7 presents some key features on Mode 4 commitments which reveal the restrictive position that countries have adopted in terms of liberalising labour mobility and other issues of concern with Mode 4. Clearly, definitional issues, greater emphasis on skilled service personnel, narrower list of commitments compared to other modes, stringent entry barriers through economic needs test among other caveats have contributed to the slow progress on labor liberalisation through this channel. In particular, the focus on higher skill levels is a disadvantage for developing and less developed countries that have semi-skilled to unskilled labor in abundance but are unable to access foreign markets for their workers through Mode 4.

Table 3-7: An evaluation of Mode 4 commitments.

Skill levels	• Technically covers all skill levels but commitments are limited to the higher skilled (managers, executives, specialists). • More emphasis on intra-corporate transferees. • General terms such as managers or business visitors are not defined, making possible considerable scope for interpretation and discretionary action by officials.
Horizontal rather than sectoral commitments	• Same conditions applied to all service sectors with no greater access given in sectors of particular relevance.
More restrictive	• Comparatively fewer commitments on mode 4 than the other 3 modes. • Very few cases of full commitments and fewer cases of partial commitments compared to the other modes. • Sectors where mode 4 is important has fewer commitments.
Length of stay	• No standard definition on temporary movement. • Only one third of commitments include specified duration of stay: mainly for intra-corporate transferees (2-5 years) and business visitors (3 months).
Economic Needs Test	• Sector specific ENT appears in medical, dental, entertaining, financial services and generally applies to specialist personnel, highly qualified professionals, managers, executives. • 23 countries have exempted ENT for certain categories of natural persons (generally those that facilitate mode 3 and managerial or other experts with specialised company knowledge). • Few countries comply with the requirement for information as to ENT criteria.
Other restrictions	• Quotas on number of foreign suppliers. • Proportion of total employment met by foreigners or the proportion of senior staff (found in 80 cases). • Pre-employment requirements. • Technology transfer requirements. • Restrictions on geographic and sectoral mobility or between firms.
MFN Exemptions	• 38 MFN exemptions relevant to mode 4 (32 are preferential agreements and others are reciprocal). • Examples of measures include granting of work permits, waiving of ENTs, improved access for certain services. • Beneficiary countries not clearly and always identified.
Wage purity and strike clauses	• 50 countries have scheduled conditions relating to domestic wage legislation, working hours, social security. • Right to suspend commitments in the event of labour dispute (in 22 cases).

(Source: Nielson & Taglioni, 2003). This information is from Nielson and Taglioni (2003), who originally sourced it from the WTO Secretariat (1998), Chanda (1999) and Young (2000).

Moreover, as summarised in Table 3-7, the number of commitments in Mode 4 are relatively smaller than the number of commitments in the other three Modes. According to Self and Zutshi (2003), two particular reasons for the limited commitments in Mode 4 are firstly, enforcement concerns and secondly protection of the domestic labour market. They outlined that although the GATS provides the flexibility to governments to enforce measures to control movement of people into their country, concerns that bound commitment may affect this flexibility remain. Further, policies that generate fears of job stability and wage declines have the scope to reduce the political popularity of any regime, prompting governments to prioritise labour market protection despite the economic logic of liberalisation.

Meanwhile, given the existing caveats on Mode 4, WTO member countries have tabled their proposals in several sequential negotiation phases on how these limitations can be improved. Some of the suggestions include the need for greater clarity and development of common definitions, more transparency, separate GATS visa to facilitate entry rather than the detailed and lengthy normal visa procedures, and more market access (Nielson & Taglioni, 2003). Nevertheless, further opening of Mode 4 has achieved very little progress at these WTO negotiations, the latest being the Doha 2001 round. As mentioned in Dowlah (2014), negotiation on services is more complicated than in goods and the application of WTO principles such as reciprocal exchange of conditions and national treatment have stalled further liberalisation.

3.3.2: Labour mobility through Bilateral Labour Agreements

Bilateral labour agreements (BLAs) provide yet another mechanism to achieve cross-border movement of workers. Blank (2011) defines BLAs as an agreement between two countries that facilitates the exchange, recruitment, welfare, health, training, compensation and rights of migrant workers. Thus, a BLA is not simply designed to express demand or supply for foreign workers, but it extends into addressing other economic and social issues related to labor. Managing labor flows through BLAs allows greater involvement from the respective partner countries' governments (OSCE[66], ILO, IOM, 2006). Moreover, the inherent policies in these agreements have the advantage of being linked to the specific demand and supply conditions in both the partner countries. From the perspective of the origin

[66] Organization for Security and Co-operation in Europe.

countries, BLAs offer a mechanism to negotiate on wages, living conditions, job security and other labor related issues for their citizens' temporarily working abroad.

Table 3-8: BLAs by region from 1990-2014.

Year	Africa	Asia	Europe & Americas	Total
1990-1994	0	0	11	11
1995-1999	2	4	4	10
2000-2004	1	6	23	30
2005-2009	17	32	10	59
2010-2014	2	18	6	26
Total	**22**	**60**	**54**	**136**

(Source: ILO, 2015)

The use of BLAs can be traced back to the early 1900s with the agreement between France and Italy signed in 1904 being the first BLA (ILO, 2015). BLAs have been used for both skilled and unskilled labour movement. They have increased in number over the years however there is no single institution which monitors or provides information on global BLAs. Hence, it is impossible to capture the trend in BLAs or to include them in multi-country estimations; however, some studies in the migration literature (see for example Blank, 2011; Hars, 2002) have explored their usage by certain countries to some extent. Moreover, labour related global organisations such as the ILO and IOM have also showed interest in the development of BLAs.

Table 3-8 shows the BLAs by region and for each five-year interval from 1990 to 2014. The Asian region has a relatively larger number of BLAs from the 1990 to 2014 period, however as revealed by ILO (2015) if the BLAs signed prior to 1990 were included, then the total for Europe and Americas would dominate all other areas. Strikingly, Table 3-8 reveals a surge in BLAs signed after 2000 until 2009, after which the volume of BLAs declined. The rise in BLAs in the 2000-2004 period was clearly driven by Europe and the Americas, whereas in the next five-year interval, Africa and Asia also increased their involvement in BLAs. Table 3-9 provides some examples of countries[67] that have signed BLAs extracted from the Compendium of Good Practice Policy Elements in Bilateral Temporary Labour Arrangements (2008)[68]. Given the countries listed in Table 3-9, it is evident that Canada, Italy, Spain and South Africa have signed several BLAs. Most of

[67] It must be noted that Table 3-9 provides only some examples of countries that have BLAs and is not an exhaustive list.
[68] This is an outcome of an expert symposium on Good Practice Policies in Bilateral Temporary Labour Arrangement held in Madrid, Spain (in October 2008). Participants included EC, ILO, IOM, OSCE, OECD amongst others.

South Africa's BLA partner countries are from within the same African region. The scopes of these BLAs vary widely. They are mainly sector specific with different operational procedures. For example, the Canadian and Spanish BLAs are mainly for the agriculture sector, the UK BLAs are for the health care workers, Greece has signed BLAs covering agriculture and fisheries while South Africa mainly focused on the mining sector (Stephenson & Hufbauer, 2011). Therefore, BLA's have been extensively used to mobilise semi-skilled to unskilled workers, which are not catered for under the WTO's GATS. However, the effectiveness of these BLAs in managing cross-border movement of workers remains unknown with little research on their impact. The effectiveness also depends, to a large extent on whether these policies enshrined in the BLAs are actually implemented. As reported in (OSCE, ILO, IOM, 2006), almost 25 percent of the BLAs in OECD countries are not implemented.

Table 3-9: Bilateral Labour Agreements - some examples.

Country	**Partners**
Argentina	Bolivia, Peru
Canada	Barbados, Colombia, Guatemala, Jamaica, Mexico, Trinidad & Tobago, Organisation of Eastern Caribbean States
France	Mauritius
Guatemala	Mexico
Greece	Albania, Bulgaria, Egypt
Italy	Egypt, Albania, Tunisia, Colombia, Ecuador, Morocco, Moldova, Sri Lanka
Japan	Philippines, Indonesia
Mauritius	China
Portugal	Bulgaria, Cape Verde, Romania, Ukraine
Spain	Bulgaria, Colombia, Dominican Republic, Ecuador, Mauritania, Morocco, Romania, Senegal, Phillipines
Sri Lanka	Qatar, Jordan, Libya, United Arab Emirates

South Africa	Cuba, Iran, Colombia, Dominican Republic, Ecuador, Mauritania, Morocco, Senegal, Tunisia, Mozambique, Lesothos, Botswana, Swaziland, Malawi
UK	India, Philippines, Spain

(Source: ILO, IOM, OSCE (2008))

3.3.3: Labour mobility through trade agreements

Given the impasse on cross-border labour mobility in the Doha Round (2001), countries have shown an increasing interest to include such provisions in international trade agreements (Dowlah, 2014). PTAs were initially designed to facilitate the flow of goods between countries, however, a striking development of these PTAs is their expansion into other areas such as labor flows. There are a number of ways that PTAs accommodate labor mobility and differ from the Mode 4 provision of the WTO. As revealed in Grover and Saez (2013), PTAs provide a wider scope compared to Mode 4 by including both skilled and/or unskilled labor, and also extend into a larger set of sectors (services, manufacturing, agriculture). The NAFTA is often referred to as an ideal example. Through the "temporary movement of business people" provision, NAFTA provides opportunities for temporary labour mobility across Canada, USA and Mexico. This movement is facilitated through a NAFTA visa (TN-non-immigrant visa). Table 3-10 provides key coverage of some leading trade agreements with labour mobility provisions.

Table 3-10: Labour mobility provisions in selected trade agreements.

Trade Agreement	Labour mobility provisions
NAFTA	• Temporary movement of business people across US, Mexico, Canada. • Has own trade NAFTA visa (TN visa). • TN visa uncapped for Canadians since 1994 and Mexicans since 2004. • TN visa permits work for 1 year with unlimited renewals. • Development of mutually acceptable standards, criteria for licensing and certification of professionals.
US-Chile	• Entry for professional workers. • Special visa (H-1B1 visa).

US-Singapore	• Capped at 1400 professional visas (for Chile) and 5400 visas (Singapore) per year. • Stays up to 18 months with unlimited extensions.
EU Chile	• Temporary movement of natural persons under 33 categories of professional service providers. • Subject to necessary academic qualification and experience.
EU-CARIFORUM	• Temporary movement of natural persons under 28 categories of professional service providers. • Expanded to include a few categories of workers beyond Mode 4. These include contractual service suppliers, independent professionals, and graduate trainees. • Subject to necessary academic qualification and experience.
Canada-Chile	• Access for professionals as well as semiskilled foreign workers. • Covers 72 categories. • No specified length of stay.
Canada-Colombia Canada-Peru	• Access for professional workers (As per Mode 4) and 50 categories of semi-skilled workers. • No specified length of stay.
Japan-Mexico Japan-Chile	• Access to traders, investors, Information Technology, business visitors, intra corporate transferees, independent professionals. • Time limit of three years (except for business visitors).
Japan-Indonesia Japan-Philippines	• An expanded list of professional workers compared to Mode 4 coverage. • Includes nurses and health care workers and independent professionals. • Stay up to 3 years.

(Source: Dowlah, 2014; Stephenson & Hufbauer, 2011)

As revealed from Table 3-10, while some trade agreements have mirrored the WTO's Mode 4 in setting up their labour provisions, others have expanded their provisions. The developed countries have a clear interest in the mobility of professional service providers and are more focused on using Mode 4 to facilitate their multinational corporations whereas developing countries interest lie in the movement of independent service suppliers and not

mainly employees of multinational corporations (Stephenson & Hufbauer, 2011). Accordingly, many of the trade agreements have incorporated provisions that not only include a wider category of workers but also provide longer-term stays with unlimited visa renewals. Nevertheless, as argued in Stephenson and Hufbauer (2011), the issue of labour mobility in trade agreements is still evolving. With the current impasse on this issue at the WTO level and given the economic significance of labor mobility, the use of PTAs as a labor mobility instrument may grow further over time. Such trend is evident in a study by Ebert and Posthuma (2011) who examined over 150 trade agreements and revealed that the proportion of trade agreements with labor provisions rose from a low of 4 percent in the 1995-99 period to an 11 percent share in 2000-04. This further increased to around 30 percent in 2005-09.

In sum, while the GATS Mode 4 provides a credible window of opportunity for mobilising workers across borders, countries have remained hesitant to further develop this provision. On the one hand, while developing and less developed countries have emphasised the importance of foreign labor markets for their abundant semi-skilled to unskilled labor, the developed countries on the other hand have mainly exploited Mode 4 to assist the flow of skilled personnel in order to facilitate their foreign direct investment activities. In addition to this mismatch in interests, issues such as the WTO's principles of MFN treatment and reciprocity have further derailed any progress on Mode 4. Alternatively, countries have resorted to arrangements at bilateral or regional level. The use of PTAs to mobilise workers provides countries with the advantage to link worker mobility with trade and/or multinational activity, as well as provides them with bargaining power when negotiating with partners. Countries can trade their interests with their partner countries with a focus on specific industry needs and their labour market characteristics. Moreover, when compared to PTAs and GATS Mode 4, BLAs provide scope for greater flexibility since they are formed between two countries only. The involvement of a smaller number of players (i.e. only two countries) implies a less cumbersome process of revision and amendments to provisions. Moreover, these agreements can be designed to respond to economic cycles, be firm based, and members can utilise joint efforts in monitoring foreign workers (Stephenson & Hufbauer, 2011). However, on the downside, neither trade agreements nor BLAs can achieve a market reach as large as that of the WTO (Dawson, 2013). Moreover, Dawson (2013) also underlined human and administrative costs and lack

of resources as potential setbacks for developing countries to fully participate in the negotiation process of these alternative arrangements. Nevertheless, statistical evidence on the shift in PTAs towards inclusion of labor provisions and the growing use of BLAs indicate that nations are investing in alternative mechanisms to obtain, secure and develop their access to foreign labor markets.

3.4: Literature Review

3.4.1: Selected theories on migration

Broadly, there are multiple reasons that motivate people to migrate. While some individuals move abroad for work (i.e. economic migrants), others may be motivated by the desire to join their families, or the movement could be a result of forced migration, such as refugees. Various schools of thought across multiple disciplines have emerged to explain these different motivations for migration. Migration is too diverse and multifaceted to be explained in a single theory (King, 2012). As mentioned in Massey, Arango, Hugo, Kouaouci, Pellegrino and Taylora (1993), there is no single coherent international migration theory, but a set of fragmented perspectives guided by different concepts and assumptions. Migration research itself has attracted attention from various disciplines such as economics, sociology, anthropology, human geography, demography, politics, history and international relations (O'Reilly, 2012). Given this multi-disciplinary interest and multi-motivated nature, migration has been theorised from a diverse number of viewpoints. For example, the neoclassical theory explains the movement from an individual's economic decision perspective (Massey et al., 1993), while the classical assimilation theory is a sociological perspective on migration (Lee, 2009). Hence, these theories - while not contentious with each other - supplement the viewpoints on migration and are therefore useful in their own way. On this note, we highlight the basic tenets of five of these schools of thought that explain migration.

- Neoclassical theory,
- New Economics of Labor Migration (NELM) theory,
- Dual Labor Market Theory,
- World Systems theory,
- Network theory,
- Institutional theory.

The Neoclassical, New Economics of Labor, and Dual Labor Market theories concentrate on the labor market elements – hence providing an explanation for the economic migrants who are the focus of this paper. The latter three (World Systems, Network and Institutional)

are much broader perspectives and provide additional insights on the factors that may encourage migration, including economic migration. Hence, these general insights are also useful and applicable in the construction of the explanatory variables for our empirical model (which explains temporary labor migration) since they outline additional (non-economic) variables that may facilitate this movement.

Neoclassical theory

The neoclassical theory is an economic approach to migration and is also labelled as the oldest and most popular school of thought by Massey et al. (1993). This theory focuses on individuals as the decision-making agents. These individuals are rational, risk-neutral and seek to maximise their utility (Karpestam & Frederik, 2013; Zickute & Kumpikaite-Valiuniene, 2015; Hagen-Zanker, 2008). The imbalance in the demand and supply of labor across countries results in wage differentials (Massey, 2013). Labor abundant countries have relatively lower wages while labor scarce countries have higher wages. Hence, the wage disparity creates migration opportunities for individuals willing to move abroad for these higher incomes. The central argument of the neoclassical view is therefore the relative difference in income that drives migration of workers across borders. Some examples of the neoclassical theories mentioned in Zickute and Kumpikaite-Valiuniene (2015) include Ravenstein (1889), Heckscher (1949) and Ohlin (1993) migration theory, Todaro (1969) and Harris-Todaro (1970) rural-urban migration theory. The analytical rigour, ability to produce a discernible set of testable hypotheses and useful tools for analysing both the causes and effects of migration underpin the popularity of the neoclassical theory in the current migration literature (Kurekova, 2011). Nevertheless, the narrow perspective of the neoclassical thought with wage difference as its central argument attracted many criticisms as well.

New Economics of Labor Migration (NELM) theory

The New Economics of Labor Migration (NELM) is also an economic perspective on migration. This theory augmented the neoclassical thinking (discussed earlier) by broadening the decision-making agent from an individual to larger units (families or households) and including risk and diversification into the decision making process. Households therefore manage the risks to their income by diversifying labor into local and foreign markets (Massey et al., 1993). Through a collective decision, they send one or few

members to work abroad while others remain in domestic markets (Hagen-Zanker, 2008). Migration therefore is a household decision and not purely an individual utility maximising outcome (Kurekova, 2011), with the costs of migration and income from foreign employment (remittances) shared within households.

The inclusion of risk into decision making is a major highlight of the NELM stream, particularly for poor countries where market (e.g. insurance, capital) failures or weak markets make individuals more vulnerable to uncertain events such as drought, hurricane, or crop failure (Hagen-Zanker, 2008), and at the same time also inhibits their ability to finance consumer purchases or production activities (Massey & Espinosa, 1997).

Dual Labor Market Theory

While the neoclassical and NELM theories explained migration as an outcome of individual or household decision, the dual labor market theory - also an economic viewpoint - posits that migration arises from the labor demands of modern industrial societies (Massey et al., 1993). Accordingly, it is not the push factors such as low wages (as in the previous two theories) but rather the labor need (hence a demand side perspective) of the receiving countries that generates migration. This theory divided the labor market into two segments - a well-paying primary sector and an unskilled lower paying secondary sector. The reluctance of the local workers to accept the lower paying jobs in the secondary sector creates demand for foreign workers. As mentioned in Hagen-Zanker (2008) and on the basis of the multifaceted nature of migration, the focus of this theory is narrow with emphasis only on the demand side of foreign labor. The characteristics of the labor sending economies and other determinants (both from origin and host country perspective) are not adequately linked to migration in this theory.

World Systems theory

The World Systems theory has a broader perspective in that it does not narrowly confine the phenomenon of migration to labor markets within nations only but has linked it to the structure of the world market instead. This theory aligns much more closely to the process of globalisation (such as the emergence of multinational firms, international relations, global integration etc.) whereby driven by capital accumulation motives (such as the search for new raw materials, land, labor, markets etc.), there are movements across countries.

Migration is viewed as a response to capitalist developments whereby the spreading of the global economy into peripheral regions is the catalyst for international movement (Massey et al., 1993). Hence, it is the dynamics of market creation and the structure of the global economy that creates migration (Hagen-Zanker, 2008), a quite different and much broader perspective than the three theories reviewed earlier. While the World Systems Theory does focus on economic motives (such as multinational firms, search for factors of production) it brings in additional non-economic elements into explaining migration. These include the links developed between countries due to their past colonial relations. The cultural, transportation, lingual and communication links developed through such linkage facilitate migration (Gallup, 1997).

Network theory and Institutional theory

Additional theories such as the network theory and institutional theory emerged to explain the development of migration over time and highlight the support elements that ease this process, rather than the initiation of migration which was the main focus of the theories discussed earlier. According to the network theory, previous migrants (through their ties of friendship, family, community links) form a source of social network that potential migrants can rely on for information and other support such as temporary accommodation and employment search (Massey & Aysa, 2005; King, 2012). On these grounds, the network theory is also referred to as social capital theory in the literature (see for example Massey & Espinosa, 1997). More precisely, the potential value of the relationship with these previous migrants is viewed as a form of social capital which individuals can draw on when deciding to migrate or even after they have moved abroad. These pioneer migrants act as an integrating device for new migrants who would otherwise face higher costs of migration (Hagen-Zanker, 2008) and therefore have a multiplier effect (i.e. perpetuate movement) on migration (King, 2012). Hence, the network theory adds a dynamic perspective to the process of migration and emphasises the role of relationships between individuals and/or societies that facilitate this movement. The intuition from this theory is relevant broadly across a variety of different motivated movements (such as student, worker, and/or refugee migration).

Finally, the institutional theory emphasises the role of private institutions and voluntary organisations that emerge in response to migratory flows and further facilitate migration.

This theory argues that with the onset of migration, institutions that provide a range of migration related services emerge. These institutions can be profit-making or voluntary, and as these institutions become well established and popular, they form a social capital for migrants (Gallup, 1997).

In summary, a number of theories emerged from the early 1960s to the present to explain migration through a variety of mechanisms. Evidently, migration is a multifaceted and complex phenomenon and no single theory sufficiently explains this process. While some theories narrowly explain a specific migration motive (for example the Neoclassical and Dual Labor Market Theory focus on labor migrants), other schools of thought can be more generally applied to understand several other motivated migration such as family reunification, education, refugee movements etc. Moreover, researchers from a variety of disciplines (such as sociology, anthropology, human geography, demography, politics, history and international relations) have utilised and developed migration theories from their perspective. Hence, the evolution of thought on migration is diverse, cuts across multiple disciplines and is influenced by a mix of political, economic, sociological and other factors.

3.4.2: Empirical literature

The earlier empirical works on the determinants of migration were mainly country specific studies due to data constraints. However, with advancements in migration data this stream of research has broadened into country panel studies. This section reviews both (country specific and country panel) types to highlight the (pull and push) factors that motivate an individual to move across borders. Various macroeconomic, social, demographic, political and geographical characteristics have been utilised in these empirical works to understand what drives migration. However, the inclusion of PTAs has only surfaced in two very recent papers; Orefice (2015) and Figueiredo et al. (2016).

Mayda (2010) and Pederson et al. (2008) claim to be the pioneering cross-country studies on the determinants of migration. Some of the other works include Ramos and Surinach (2013), Llull (2016), Cuaresma, Moser, and Raggl (2013), Ortega and Peri (2009), Kim and Cohen (2010), and Fagiolo and Santoni (2016).

Mayda (2010) investigated the determinants of bilateral migration inflows into 14 OECD countries between 1980 and 1995. In a panel regression framework, the migration inflow (from country i into country j at time t) as a ratio of the population (in country i at time t) was used as the dependent variable. The explanatory variables included the GDP per worker in the migrant originating country, GDP per worker in the host country, distance between the home and host country, common border, colonial relationship, the share of young population in the home country, and dummies for host and home country specific effects. The paper concluded that a 10 percent increase in the host country's per worker GDP resulted in a 20 percent increase in the immigration rate. Further, doubling the great-circle distance between the source and host country decreased the number of emigrants by 41 per 100,000 individuals in the origin country, while a common land border did not play a relevant role. The impact of a common language, though of the right sign, was not statistically significant and the same was concluded for past colonial relationships. The share of the origin country's population who is young resulted in a positive and significant impact on emigration rates.

In the same vein but with particular focus on network and selection effects[69], Pederson et al. (2008) investigated the determinants of immigration flows into OECD countries in 1990-2000. Their paper operationalised the dependent variable analogous to Mayda (2010) while the control variables included cultural similarity, colonial past, common language, distance, trade, relative size of population, political situation (represented using the freedom house index), income distribution, GDP per capita in the home country, unemployment in the home and host countries, stock of foreigners from the home country in the host country as a ratio of the host country population, and public social expenditure to GDP ratio in the host country. The latter two variables capture the network and selection effects respectively. The authors concluded a large positive network effect, however, they found no evidence for selection effects. Further, linguistic, closeness, and current business ties were noted as important positive factors.

Mayda claims to be the first paper to use OECD migration data for explaining migration flows. Pederson et al. (2008), a precursor to Mayda also used data from the OECD

[69] Network effects arise when previous migrants in a country encourage potential migrants and selection effects are where the decision of migrants to move into a particular country is influenced by the ease with which they can gain access to the respective destination country's welfare schemes and provisions (Pederson et al., 2008).

migration database, together with additional data sourced from the individual countries in the sample.

Ramos and Surinach (2013) estimated a gravity model of migration between 16 of the European Union's neighbouring countries (ENC) and the EU. They concluded a positive effect of relative GDP per capita, origin country population, common language, and colonial relationship on bilateral migration stock while the population of the host country and distance had significant negative coefficients.

Llull (2016) explored the determinants of bilateral migration after constructing a database of bilateral migrant stocks from data obtained from the National Statistics Offices of 24 OECD countries. The findings revealed that relatively higher income opportunities (real GDP per capita of host), population of the origin country and gravitational variables such as common language, border, colonial relationship facilitated greater cross-border movement of people.

Cuaresma et al. (2013) arrived at similar findings in their gravity model specification. In addition to GDP per capita, population, and geographical and cultural contiguity variables, they also found that the stock of migrants from the origin country already present in the host country also positively influenced migration.

Ortega and Peri (2009) merged the migration flows data from Mayda (2010) with the OECD International Migration data for 14 OECD countries to explain the economic and legal determinants of international migration. Consistent with Mayda (2010) and others, Ortega and Peri (2009) confirmed that differences in the level of per capita income between the destination and origin countries and colonial relations have a positive and significant role in migration. They however did not find any role for common border or common language. Moreover, by utilising a list of immigration laws by country and year for their sample of countries, the authors developed indices of migration policy tightness from the reforms mentioned in the immigration laws. As expected, their findings revealed that tighter non-asylum migration policies significantly reduced immigration inflows while the tightness of asylum laws had negative but insignificant impacts. Moreover, with the use of dummy variables they also concluded significant positive effects of the Maastricht treaty but not for the Schengen Agreement.

Kim and Cohen (2010) quantified the determinants of migration inflows into 17 OECD countries and outflows from 13 OECD countries in two separate gravity models. They extended the debate on the predictors of migration by including additional demographic/social variables such as the infant mortality rates and urbanisation. In their inflows specification, they concluded significant positive effects of origin population, infant mortality rate of host, urban population of both origin and host, land area of destination, common border, language and colony. Significant negative effects were arrived at for distance, land area and infant mortality rate of origin. For migratory outflows, they outlined urban population of origin and host, infant mortality rate, land area of origin and the common gravitational variables (common border, colonial links, common language) as relevant positive variables while infant mortality rate of host and distance were found to be negative.

Fagiolo and Santoni (2016) used migration data sets on 191 countries from Abel (2013) and concluded that an increase in origin population, violence in origin country, common border, common language and past colonial relation boosted emigration flows. They also found a positive income (at destination) and migration relationship while income at origin country was also positive, albeit comparatively smaller. Regarding the role of migrant networks, the study found that an increase in the stock of migrants at destination increased bilateral migration flows.

Among the country specific studies reviewed are the works of Clark, Hatton, and Williamson (2007), Karemera, Oguledo, and Davis (2000), Sulaimanova and Boston (2014), Hatton (2005), Ahmad, N. Hussain, Sial, M. Hussain, and Akram (2008), Gallardo-Sejas, Pareja, Llorca-Vivero, and Martínez-Serrano (2006), Freguglia, Goncalves, and Silva (2014), Cheng and Yang (1998). Clark estimated a model to explain variations in immigration into the US by source country from 1971-1998. The paper concluded that a 10 percent increase in a source country's income per capita reduces the immigration rate by 4.4 percent. Migrant stock was also concluded as having a positive impact, while in terms of migration policy, an increase of 10 percent in the family quota raised immigration from a country by 0.3 percent. The same proportionate increase in employment visas raised it by 1.4 percent. Meanwhile, a 10 percent increase in the refugee allowance raised immigration by 0.5 percent, while the effect of the diversity quota was minimal. By contrast, the effects of the Immigration Reform and Control Act were relatively large. The inclusion of

migration policy as a control variable is an important contribution of this paper, and the consequent results point to its relevance. Such inclusion is relatively more feasible in country specific studies.

Karemera et al. (2000) and Sulaimanova and Boston (2014) are broader studies compared to Clark (2007) since they cover immigration into two countries. Karemera et al. (2000) focused on immigration into the US and Canada from 1976 - 1986. In their paper, migration policy is also addressed, however, with the use of a dummy variable. The findings are that while distance impairs migration flows to North America, population growth in the countries of origin leads to increased migrant flows. Population growth in US and Canada however reduce migration inflows. In response to the level of economic development in the two destinations, immigration flows are positively associated for the case of USA, while having no relevance for Canada. Meanwhile, economic developments in the source countries decrease immigration in both cases. The estimated coefficient for unemployment in the USA model is less than 1, while in the Canadian model it has an unexpected sign and is not statistically significant. Tighter migration policy restricts immigration in both cases.

Sulaimanova and Boston (2014) presented empirical evidence on the determinants of emigration from Tajikistan and Kyrgyzstan from 1998 to 2011. Their results underlined per capita GDP as the main macroeconomic determinant of migration. Moreover, higher labor force size of origin, higher wages in host and depreciation of the domestic currency exerted a positive and significant effect on migration. Higher remittances received and improvement in per workers value-added in agriculture discouraged individuals from moving abroad.

Meanwhile, Ahmad et al. (2008) studied the macroeconomic determinants of international outward migration from Pakistan. Using time series data from 1973 to 2005, they found that a higher domestic unemployment, lower real wages and high inflation rate drove locals out of the country. Moreover, lucrative inward remittances (an indication of better economic conditions overseas) also further motivated locals to move abroad. In Hatton (2005), three different migration flows are investigated for the UK economy, from 1976 to 2000. This paper investigated the impacts on immigration, emigration and net immigration. In the immigration model unemployment has a negative effect, GDP is positive, relative Gini coefficient (a measure of income inequality) has a positive sign but is not statistically

significant, the migrant stock has a large and significant positive effect, and the dummies for EU enlargement of 1986 takes a relatively smaller coefficient compared to the 1995 dummy. The relaxation of migration policy (approximated using a dummy variable) has strong positive effect. The emigration model has similar results as above except with the opposite signs. The impact of income inequality is more pronounced in the emigration equation.

Gallardo-Sejas et al. (2006) studied the determinants of immigration into 13 European destination countries from 139 origin countries. Their results supported the following host and origin variables as significant; population, GDP per capita, language, young population, education, inflation and the GINI coefficient. Moreover, they found that while the unemployment rate of the origin country mattered, the unemployment rate in the destination country and the presence of a common border were insignificant.

Marfouk (2007) examined the forces driving highly-skilled emigration from Africa to the OECD countries and found that both economic and non-economic factors mattered. In particular, income difference, past colonial relations, linguistic similarity, population growth and social welfare program at destination country encouraged migration. The factors that discouraged this worker mobility included distance and higher unemployment at destination. A further insight provided by this researcher is the impact of the immigration policies[70] of the five traditional immigration OECD nations (Australia, Canada, NZ, USA and the EU). They found that the immigration policies of the first four countries (collectively) encouraged workers to emigrate while the policies of the EU were found to be neutral.

Furthermore, on a national level, Freguglia et al. (2014) analysed the determinants of interstate skilled labor mobility in the Brazilian labor market for the period 1995-2006. The study identified wage differences, more work experience, economically prosperous states, larger population agglomeration and urban amenities as essential push factors. Hence, these results confirm that better economic conditions and livelihood drive workers to move from one location to another. Cheng and Yang (1998) tested the determinants of highly skilled migration to the US from 104 countries for the year 1988. Consistent with

[70] The proxy for immigration policy utilized is however questionable. The study used a dummy variable strategy. Hence if the destination country is the EU, it was categorized as a dummy variable reflecting EU policies, and if the destination country was either Australia, NZ, Canada or the US, it was assigned as another dummy variable, reflecting the significant selective programs that existed in those countries. These dummies may very well capture other effects apart from migration policies.

their expectations, they found that economic interaction and educational articulation between the origin country and the US facilitated the inflow of foreign workers. Economic interaction is defined by the authors as economic interdependency between the origin countries and the US through trade relations, foreign investment, multinational corporations etc. All of these are hypothesized to increase the origin country workers' knowledge (via networking and as employees of foreign corporations at home) of opportunities abroad, the inherent disparities in living and working conditions while at the same time developing their skills through employment with these foreign operations on their soil. Educational articulation referred to students or workers from origin countries attaining education or training in the US or the replication of the US education/training systems in the origin countries which heightens the similarity in knowledge and hence facilitates the absorption of these foreign workers abroad[71]. Furthermore, while differences in living conditions and job opportunities enhanced labor migration into the US, research opportunities, political conditions and children's education opportunities were concluded to be irrelevant.

As mentioned earlier, Orefice (2015) and Figueiredo et al. (2016) are the only papers that have included PTAs in their empirical works. Orefice (2015) claims to be the first study that considered PTAs as a determinant of migration. The investigation utilised data on bilateral migration from 198 origin countries into a sample of 29 OECD destination countries over the period 1998-2008. The main premise of Orefice (2015) is that the presence of a PTA between the origin and the host country facilitates migration. Moreover, the findings also revealed that migration related provisions in PTAs are also significantly influential in encouraging cross-border movement of people. Figueiredo et al. (2016) used the World Bank data on bilateral migration stocks for every 10 years for 200 countries to investigate the role of PTAs as a determinant of migration. The study confirmed the positive and significant role of PTAs and the migration related provisions of PTAs in stimulating greater migration. Additionally, relative GDP, population of origin country, initial migrant stock, and gravitational factors (common colony, border, language) also encouraged migration while destination population and distance discouraged cross-border movement.

[71] US FDI, imports and exports to the US, number of students from origin country in the US, foreign students in origin country, book imports, and periodical imports were used to proxy for economic interaction and education articulation.

The main propositions of the literature reviewed here are that favourable economic, geographic and demographic characteristics of destination countries motivate migration while at the same time, relatively better prospects in origin countries may retain individuals in their home countries. For instance, Sulaimanova and Boston (2014) revealed that improvements in agricultural output and remittances discouraged migration. While the economic, geographic and demographic explanatory variables included in these studies are broadly consistent, selected studies have also emphasized the importance of migration policy and previous migrants in the destination countries. Moreover, more recently, Orefice (2015) and Figueiredo et al. (2016) have also added PTAs to these traditional determinants of migration.

3.5: Research method and data

The objective of this empirical analysis is to explain the variation in labor mobility from country *i* (origin) into country *j* (host) at time *t* using a set of independent variables, with specific focus on the role of PTAs. We adopt an augmented gravity model approach. Apart from modelling bilateral trade and FDI flows, this technique has also been used for migration flows (see for example Karemera et al., 2010; Vanderkamp, 1977; Garcia, Pindolia, Lopiano, & Tatem, 2014; Greenwood, 2005; Lewer & Berg, 2008). As mentioned in Greenwood (2005), in a gravity model migration is hypothesized to be positively related to the size of the host and source country, while negatively associated with the geographical distance between them. The model is augmented in the sense that additional variables expected to influence bilateral migration are added. The model to be estimated is as follows:

$$\begin{aligned}\ln(LF)_{ijt} = {} & \beta_0 + \beta_1 LnRGDPC_{i,jt} + \beta_2 lnPop_{it} + \beta_3 LnPop_{jt} + \beta_4 INF_{it} + \beta_5 INF_{jt} + \beta_6 UNEM_{jt} \\ & + \beta_7 UNEM_{it} + \beta_8 LnD_{ij} + \beta_9 Lang_{ij} + \beta_{10} Border_{ij} \\ & + \beta_{11} Col_{ijt} + \beta_{12} Pol_{it} + \beta_{13} Pol_{jt} + \beta_{14} PTA_{ijt} + \alpha_{ij} + \alpha_t + \varepsilon_{ijt}\end{aligned} \quad (1)$$

The dependent variable in equation 1 $\left(ln(LF)_{ijt}\right)$ is bilateral labor mobility which is defined as people moving from country i into country j at time t on a *work visa*. The country from which labor originates is referred to as the origin country (*i*) while the destination of these workers is the host country (*j*). The data is sourced from the UNESCAP Labor Migration Outflow database and includes labor outflows from a total of 10 origin countries into 150 host countries. Altogether, there are 388 country pairs spanning the period 2000-2013[72]. The main explanatory variable in equation 1 is the existence of a PTA $\left(PTA_{ijt}\right)$ between the origin and host country in year t, denoted using a dummy variable. This data is sourced from the WTO's trade agreements database available at www.wto.org. We later expand our analysis and investigate if the presence of labour provisions in each of these trade agreements generates greater labour mobility between the origin and host countries. Information on the specific provisions of a PTA is obtained from the accompanying text of each PTA available on the WTO's website. The rest of the

[72] See Table 25 in the Appendix for the list of country pairs.

explanatory variables include relative GDP per capita *($RGDPC_{i,jt}$)*, population of origin and host country *(Pop_{it}, Pop_{jt})*, inflation, political stability and unemployment rates in the origin and host country (INF_{it}, INF_{jt}, Pol_{it}, Pol_{jt}, $UNEM_{it}$, $UNEM_{jt}$, respectively) and standard gravity variables between each country pair such as distance (D_{ij}), the existence of a common language ($Lang_{ij}$), common border ($Border_{ij}$) and past colonial relationship (Col_{ijt}). The data on the macroeconomic and demographic indicators (GDP, population, unemployment, inflation) are sourced from the World Bank's World Development Indicators, political stability data are from the World Governance Indicators of the World Bank, while the gravity variables (distance, border, language, colonial relation) are from CEPII. Finally, α_{ij} captures country-pair fixed effects, α_t are time fixed effects whereas ε_{ijt} is the stochastic error term. Table 3-11 provides a summary of the explanatory variables included in specification 1 and their expected relation with labor mobility, after a discussion of these expectations.

Though workers leaving on a temporary work permit are preferred, it is not possible to distinguish between temporary and permanent migrant workers. It is noted that workers may later apply for permanent residence while working abroad which categorises them as permanent migrants. International trade policies, either through the WTO provisions or through any form of trade agreements cater for temporary mobility and not the permanent movement of people. These international instruments are not designed to handle permanent migration issues. Data that specifically focuses on movement of workers on a temporary basis is not available. The UNESCAP data is the closest measure of labor mobility across borders and preferred over the OECD migration data. The OECD database is the only comprehensive source of bilateral migration data for a group of 34 OECD member countries. This database shows the inflows of foreign population from a total of 200 home countries into the 34 OECD member countries. While this migration data can be a proxy for labor mobility, the main drawback is that it is limited to a narrow group (34 countries) of industrialised OECD member countries as the host countries. According to the ILO, the share of migrants to total population varies widely across countries with above 50 percent in the Gulf Corporation Countries such as United Arab Emirates, Qatar, Kuwait and Bahrain. The adoption of the OECD database would preclude these countries as the host countries from the sample. Hence while the OECD database has the disadvantage of a narrow group of host countries, the UNESCAP database has the downside of a narrow

group of origin countries. Further, the OECD migration data is broader with definitional differences across countries. It measures flows beyond labor, such as asylum seekers (in some countries), family migrants, international students etc. The UNESCAP data covers only individuals leaving on work permits. Hence, the UNESCAP data (sourced from the UNESCAP Labor Migration database) is adopted as it provides the closest approximation to temporary worker mobility.

Relative GDP per capita (calculated as the ratio of host to origin GDP per capita at time *t*) is used as a proxy to capture the migration incentives resulting from income differentials between the host and origin country. It is assumed that the per capita GDP reflects the general income in the respective country and hence a comparatively better earning propensity in the foreign country will induce more workers to move (Gregoriou et al., 2010; Karamera et al., 2000; Orefice, 2015; Figueiredo et al., 2016; and others). The relationship to the dependent variable is expected to be positive.

The population (of origin and host country) controls for the size of these respective countries. A more populated origin country indicates a larger supply of workers who may move abroad (Pederson et al., 2010). Karamera et al. (2000) concluded the population of origin country to be the single most significant determinant of migration flows. Figueiredo et al. (2016) also provided evidence of a significant positive relationship between the origin country population and migration. Hence, this supply factor is expected to have a positive relation to labor mobility. The impact of the host country population on opportunities for foreign workers can be explained in the following ways. Firstly, growth in the host country population increases the possibility that the employment needs will be provided by domestic labour instead. This therefore reduces the absorption capacity of the host countries (Karamera et al., 2000) and would dampen demand for foreign workers. However, from another perspective, a growing host country population may also stimulate more demand for goods and services and thus create job opportunities for foreign workers. Moreover, if the population growth is driven by an increasing life expectancy of individuals, then an aging population will also stimulate demand for foreign workers particularly in the services sector. Accordingly, the expected sign of the coefficient of this variable is ambiguous.

Other macroeconomic indicators included in our specification are the unemployment and inflation rates of the host and origin countries. The inflation-labor mobility relation can be

viewed as follows: On the one hand, increases in origin (host) country inflation may indicate economic instability and thus motivate (discourage) individuals to move to more stable (unstable) economies (see for example Karamera et al., 2000). On the other hand, increased origin (host) inflation could also signal an expanding economy and reduce (increase) the incentives to move abroad. Given these mixed possibilities, the expected sign of inflation is ambigious. The unemployment rates reflect the labor market conditions of the respective country. A rising unemployment rate in destination countries would indicate less job opportunities and dampen demand for foreign workers whereas higher source country unemployment rates would push individuals to seek jobs abroad (Karamera et al., 2000; Pederson et al., 2008). Hence, origin country unemployment coefficient is expected to be positive while host country unemployment is expected to be negatively related to labour mobility. Additionally, political instability in host countries would discourage inward migration (Karamera et al., 2000; Greenwood & McDowell, 1992). With regards to political stability in the origin country, while a more politically stable economy may encourage individuals to remain in their country, the same could positively influence their decisions to seek jobs abroad. Accordingly, the host country political stability coefficient is expected to be positive while the expected relation between the origin country political stability and cross-border labor mobility is ambiguous.

As mentioned earlier, the presence of a PTA between the home and host country (denoted using a dummy variable strategy) is the main variable of interest in this study. As summarised in Orefice (2015) and Figueiredo et al. (2016), a PTA can generate greater labor mobility through the following two ways. Firstly, a PTA reflects formation of an international/diplomatic relation between countries. This information and network effect may contribute to greater movement of workers across borders. Secondly, the inclusion of labor provisions in PTAs[73] may also facilitate labor movement among member countries. Nevertheless, given that a PTA is a direction towards greater trade liberalisation, it can also be argued that such freer trade may reduce the need for foreign workers. Both theoretical and empirical research on the relation between trade and migration provide mixed results. While some have regarded them as substitutes, others have argued that trade and migration are complementary[74]. Hence, from the perspective of trade-migration acting as substitutes, a PTA may discourage the need for foreign workers whereas a complementary relation will

[73] We later expand our analysis and decompose the PTA variable into those that contain labor provisions (such as visa related issues, GATS and/or GATS type provisions on movement of natural persons, provisions for specific type of labor etc.) and those that do not.
[74] See Section 3.2.3: Economic gains from migration for a detailed discussion on the relation between trade and migration.

stimulate greater labor mobility. Based on the arguments presented here, the a priori relationship of PTAs to labor mobility is therefore ambiguous.

The rest of the bilateral variables included in our model are geographical distance, language, past colonial relationship, and common border. These variables incorporate the monetary and nonmonetary costs of migration. The physical distance between two countries relates to both these costs of moving across borders. Greater distance implies higher transportation costs to reach a destination as well as costly return home visits (Gregoriou et al., 2010; Mayda, 2010; Pederson et al., 2008; Greenwood & McDowell, 1992; and others). Moreover, greater remoteness may also result in unfamiliarity (nonmonetary cost) with a foreign nation. Hence, distance and labor mobility are expected to be negatively related. The great circle distance[75] between the two most important cities (based on population) of each country pair is used as the physical distance between two countries. The presence of a common border, common language and past colonial relationship between countries are expected to stimulate more labour mobility between countries. Each of these three determinants is incorporated as a dummy variable, assuming the value of 1 if present and 0 otherwise. A common border - where two countries are on the same land block albeit separated by a border – reduces both monetary and non-monetary costs of migration in the following ways. First, it makes countries more accessible in terms of land transport instead of air and secondly, it enhances the ability to make more frequent trips back home. Finally, countries located very close together may also have cultural or language similarity. A common language and sharing of past colonial relationship indicate greater familiarity and ease of communication for the foreign workers. As emphasised in Greenwood and McDowell (1992), occupational skills are not perfectly transferable between countries and the ease with which a potential migrant can transfer or adopt these occupational skills in a different country would influence the migration decision. On this note, past colonial relations may influence cultural distance by providing better information on potential destination and thus lowering migration costs (Pederson et al., 2008). Likewise, as suggested in Massey et al. (1993), migration is likely between past colonial powers because the cultural, linguistic, administrative, investment, transportation and communication links

[75] In the Wikipedia, the great-circle or orthorhombic distance is defined as the shortest distance between two points on the surface of a sphere, measured along the surface of the sphere (as opposed to a straight line through the sphere's interior). The distance between two points in Euclidean space is the length of a straight line between them, but on the sphere there are no straight lines. Through any two points on a sphere which are not directly opposite each other, there is a unique great circle. The two points separate the great circle into two arcs. The length of the shorter arc is the great-circle distance between the points.

that were established early have facilitated specific transnational markets and cultural systems.

Table 3-11: Explanatory variables and their expected signs.

Dependent variable: log(bilateral Labor Flow)	
Explanatory variables	**Expected sign of coefficient**
Relative GDP per capita*	+
Population (origin country)*	+
Inflation (origin country)	+/-
Unemployment (origin country)	+
Population (host country)*	+/-
Inflation (host country)	+/-
Unemployment (host country)	-
Political stability (host country)	+
Political stability (origin country)	+/-
Bilateral variables	
PTA	+/-
Common border	+
Distance*	-
Common Language	+
Past Colonial Relationship	+

*Variables expressed in log form for all estimations

3.6: Results and discussion

Table 3-12 presents the summary statistics of all non-dummy variables used in our estimation. Results show that there is great variability in bilateral labor mobility in our sample of countries. Selected countries (such as Bangladesh and Philippines) experienced significant (absolute) labor outflows mainly to the United Arab Emirates (UAE) and Saudi Arabia. The largest bilateral labor flow in our sample was between Bangladesh and the UAE in 2008. The UAE has attracted significant numbers of skilled and unskilled workers over the past few decades due to its economic attractiveness, political stability and modern infrastructure (Malit & Youha, 2013). Moreover, while the host countries are comparatively richer (in terms of average GDP per capita) than the origin countries, the origin countries are more populated. On average, the host countries are politically more stable than the origin countries. In terms of geographical proximity, the largest bilateral distance is between the Philippines and Brazil.

Table 3-12: Summary statistics.

Variables	Mean	Standard Deviation	Maximum	Minimum
Ln Bilateral Labor Flow	5.813	2.880	12.946	0
Ln Bilateral Distance	8.684	0.688	9.843	6.264
Ln Relative GDP per capita	1.113	0.168	1.583	0.671
Ln GDP per Capita (host country)	9.218	1.262	11.821	6.200
Ln GDP per Capita (origin country)	8.317	0.052	9.612	7.223
Ln Population (origin country)	11.356	1.250	14.062	9.409
Ln Population (host country)	8.698	2.282	14.152	2.305
Unemployment (host)	8.285	5.818	0.2	38.6
Political Stability (host)	-0.0005	0.997	1.668	-3.185
Political Stability (origin)	-1.139	0.738	0.462	-2.812
Inflation (host)	6.103	10.893	-10.068	324.997
Unemployment (origin)	4.509	2.862	0.2	11.900
Inflation (origin)	6.569	4.508	-1.710	24.997

Notes: GDP per capita, population unemployment, inflation and political stability are host/origin country specific variables and averaged over the host/origin countries respectively and not as country pair variables. Distance and labor flow are averaged as country pair variables.

The average inflation of host countries is lower than that of the group of origin countries. The peak of 324.99 percent in the host country inflation rate reflects the hyperinflation experienced in Angola in the early 2000's. Higher international food prices, strong domestic demand due to rapid money growth and domestic currency depreciation are some of the reasons for Angola's triple digit inflation rates (Klein & Kyei, 2009). The minimum inflation rate of -10.07 percent reflects the inflation rate of Iraq in 2007. Following tighter monetary policy and the subsequent appreciation of the exchange rate during 2006 and early 2007, Iraq's inflation rate declined (Grigorian & Kock, 2010). Finally, the host countries' average unemployment rate is larger than that of the origin countries in our sample, however there is great variability. While some nations have very low unemployment rates of 0.2 percent, there were significant unemployment in countries such as Lesotho (38.6 percent in 2003) and the Philippines (11.9 percent in 2004). Unemployment (driven by structural problems in the public sector and a small private sector) has been identified as the most important problem for the Lesotho economy which has prompted many nationals to seek employment in neighbouring countries (Shale, 2013). Moreover, significant increases in the Philippines labor force participation rate each year have undermined efforts to reduce their unemployment rate (Montalvo, 2006).

Next, we investigated the underlying stochastic process of our time variant variables using the Im-Pesaran-Shin (IPS) test. The IPS test calculates a standardised t-bar test statistic based on the averaged augmented Dickey Fuller statistics for panels (Im et al., 2003). It tests the null hypothesis of each series in a panel containing a unit root against the alternative that allows for some (but not all) of the individual series to have unit roots (Baltagi, 2008). As presented in Table 3-13, the null hypothesis of a unit root is rejected for all variables except for relative GDP per capita. Given that the dependent variable (log labor flow) and the residuals[76] from the estimation of our model are both stationary, the presence of this non-stationary variable does not raise concerns of spurious correlation. Nevertheless, as a robustness check, we re-estimated the base model using the first-differenced form of the non-stationary variables[77].

[76] See Table 26 in the Appendix for results.
[77] See Table 27 in the Appendix for results. The coefficient of relative GDP per capita remains positive and significant despite a decline in magnitude.

Table 3-13: Panel unit root test results– Im, Pesaran and Shin (IPS).

Variables	IPS W statistic	Average DF statistic	Variables	IPS W statistic	Average DF statistic
Ln Labor Flow▫	-5.96***	-2.84***	Inflation (host country)	-21.32***	-4.36***
Ln Relative GDP per capita▫	-1.82	-2.07	Unemployment (origin country)	-5.167***	-3.83***
Ln Population (origin country)	-5.96***	-4.19***	Unemployment (host country)	-73.66***	-8.83***
Ln Population (host country) ▫	-33.59***	-5.12***	Political stability (host country)	-26.69***	-5.64***
Inflation (origin country)	-2.87***	-3.08***	Political stability (origin country)	-2.16**	-2.94**

Significance levels: *10% **5% ***1%. ▫ Includes constant and trend. Automatic lag selection based on Schwarz Information Criterion.

Table 3-14 presents the results of the Feasible Generalized Least Squares (FGLS) estimation of our Fixed Effects Model (FEM). The Hausman specification test (χ^2 = 274.5, p =0.00) rejected the null hypothesis that a Random Effects Model (REM) provides consistent estimates and hence a FEM was chosen. Moreover, the residuals from the OLS estimation of our FEM revealed the presence of autocorrelation and heteroscedasticity[78] resulting in the selection of the FGLS estimation method. The FGLS technique allows estimation of efficient coefficients in the presence of autocorrelation and/or heteroscedasticity[79] (Medvedev, 2011; Tadesse & White, 2011).

Starting with Model 1, along with the other determinants of labor mobility, we investigated the role of a PTA between the origin and host country. Our results support that a common PTA between the origin and host country facilitates greater labor mobility. Consistent with Figueiredo et al. (2016) and Orefice (2015), we obtained a positive and significant coefficient for the PTA variable which suggests that the presence of a PTA facilitates cross-border worker movement. At this juncture however, we do not separate these PTAs into those that contain labor specific provisions and those that do not. Such disaggregated analysis is conducted in Model 2. In terms of relative difference in income (relative GDP per capita) between the host and origin country, our results provide evidence that relatively higher income opportunities abroad are significantly influential in stimulating cross-border

[78] The Breusch Pagan test results (χ^2 = 41.92, p =0.00) rejected the null hypothesis of homoscedasticity at the 5 percent level of significance. The Woodridge test for autocorrelation also indicated the presence of serially correlated residuals (F (1,372) = 129.8, p=0.00). See Table 29 in the Appendix for results.

[79] Alternatively, clustering standard errors by country pair would also account for the problem of heteroskedasticty and autocorrelation (Cameron & Trivedi, 2010).

labor movements. Similar findings of a positive income-migration nexus were concluded by Lllul (2016), Figueiredo et al. (2016), Mayda (2010), Ramos & Surinach (2013) and others. Hence, we conclude that relatively higher income is an important determinant of labor migration in our sample.

Table 3-14: FGLS estimation results.

Dependent variable: log(bilateral Labor Flow)						
Explanatory variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
Log Relative GDP per capita	7.384*** (0.669)	7.391*** (0.665)	7.769*** (0.675)	6.032*** (0.692)	7.349*** (0.778)	8.306*** (0.842)
Log Population (host)	0.921*** (0.087)	0.930*** (0.087)	0.669*** (0.096)	0.754*** (0.091)	0.751*** (0.096)	1.084*** (0.098)
Log Population (origin)	4.837*** (0.461)	4.905*** (0.461)	4.588*** (0.435)	4.466*** (0.465)	4.660*** (0.466)	4.681*** (0.575)
Log Distance	-0.901 (2.167)	-0.741 (2.164)	-0.994 (2.093)	-0.823 (2.224)	-0.936 (2.203)	1.174 (2.167)
Common language	-2.862 (3.061)	-3.061 (3.055)	-2.157 (2.924)	-3.644 (3.149)	-2.723 (3.118)	-8.362 (4.275)
Common Border	0.606 (1.756)	0.709 (1.754)	0.520 (1.711)	0.439 (1.795)	0.926 (1.768)	2.197 (1.757)
Colonial relationship	0.094 (1.023)	0.036 (1.020)	0.616 (0.978)	0.004 (1.060)	0.097 (1.049)	0.358 (1.097)
PTA	0.145* (0.077)		0.143* (0.077)	0.143* (0.076)	0.143* (0.079)	0.193** (0.092)
PTA_Labor provision		0.205** (0.082)				
PTA_No labor provision		-0.023 (0.102)				
Inflation (host)			0.000 (0.001)			0.007*** (0.002)
Unemployment (host)				-0.033*** (0.005)	-0.031*** (0.005)	
Inflation (origin)			-0.004 (0.002)			-0.001 (0.003)
Unemployment (origin)				0.033*** (0.009)	0.040*** (0.009)	
Political Stability (host)					-0.018 (0.027)	
Political Stability (origin)					0.182*** (0.029)	
Migrant stock						0.639** (0.282)
Constant	-49.614*** (17.859)	-51.745***	-43.612**	-44.154** (18.288)	-45.878** (18.130)	-60.297** (18.272)
N	4260	4260	4040	4090	3886	2465

Notes: Significance levels: *10% **5% ***1%. Standard errors are reported in brackets. Country and time fixed effects are included in all models, but results are not reported here due to space constraints. Country fixed effects are jointly significant at 1% level of significance, and the time fixed effects are also significant at 1%.

Turning to the demographic variables, the estimated coefficients on both host and origin population are significant and positive. As expected, a higher population in the origin country has a positive relation to bilateral labor flows. A higher origin country population implies a greater pool of potential migrant workers available. In fact, growing population pressures (in developing and less developed countries) have been identified as a contributory factor in labor migration (OECD, ILO, World Bank, 2015). Meanwhile, the coefficient of host country population – which was expected to be either positive or negative – is positive and significant. Hence, our results support that a growing population in the host country is increasing the absorption capacity of these countries rather than crowding out the need for foreign workers. We provided three reasons for this positive relation. First, a higher host population may increase the demand for goods and services and create a greater need for foreign workers. A second point is that despite a growing host population, opportunities may still exist in low-prestige jobs (which Chia (2006)) refers to as the 3D jobs: dirty, demanding, and dangerous) that are viewed unfavourably by native workers. Thirdly, as has already been discussed in section 3.2.3, a striking feature of the demographic trend in many developed countries is population aging. While noting that we do not analyze the impact of population in terms of its composition, population growth driven by population aging also creates demand for foreign workers either directly as service providers or for social security support.

Unlike more general migration equations, here the other gravity variables – distance, common language or border and past colonial relations - do not appear to be significant for labor mobility, similar to Mayda (2010) and Ortega and Peri (2009). This may be attributed to the fact that most of the bilateral labor flows that occur in our sample are between countries that do not have such proximity advantage or lingual and/or cultural similarities. For example, some destination countries such as Saudi Arabia, United Arab Emirates and Brunei Darussalam have attracted large flows of migrant workers mainly due to their economic advantages rather than geographical and/or other similarities. But we should not discount the possibility that temporary migrant workers are less concerned about the distance and unfamiliarity of their host country. However, on suspicions of collinearity, we added the distance and common border variables one at a time[80]. While distance remained correctly signed but insignificant, the presence of a common border is positive

[80] See Table 28 in the Appendix for the regression results.

and significant, indicating that countries that are on the same land block albeit separated by a border ease cross-border movement.

In the second estimation (Model 2), we focused much more closely on the PTA variable and categorized PTAs into those that contain labor provisions and those that do not. At this point, it must be mentioned that while the specific labor provisions may differ in terms of their effectiveness in stimulating labor mobility, we do not weight the PTA's as such. As mentioned and empirically evidenced in Figueiredo et al. (2016) and Orefice (2015), the presence of labor provisions such as visa related issues, recognition of professional qualifications, and other guidelines on the movement of natural persons will ease the process of entering a foreign market for work. Our investigation also produces similar results in that PTAs that contain labor provisions are positive and significant while PTAs without such provisions are negatively signed and insignificant. The irrelevance of PTAs with no labor provisions may suggest that it is not the awareness transmission mechanism of PTAs that stimulate greater labor mobility in our case but rather it is the presence of labor provisions that matter.

In Model 3, we included inflation of the host and origin country into our estimation while unemployment[81] in both sets of countries is introduced in Model 4. Notably, the number of observations decline in Models 3 and 4 due to missing inflation and/or unemployment data for some countries. As suggested in the related literature (see for example Karamera et al. (2000); Ahmad et al. (2008); and Gallardo-Sejas et al. (2006)), inflation is a malaise of the local economy. On this note, inflationary pressures in the origin country could act as a push factor for migrant workers (i.e. workers try to avoid economic instability). However, increased inflation in the origin country may also indicate a growing economy and thus motivate workers to remain in their home country. Meanwhile for the destination country, a higher inflation would reduce its attractiveness and thus discourage migrants from moving into unstable economies or a higher inflation may indicate a growing economy and this increase demand for foreign workers. Rather surprisingly, we do not find any significant inflation-labor mobility relation. Both, inflation of the host country and inflation of the origin country are insignificant. However, the coefficient for the unemployment rate is significant for both the host and origin countries (see Model 4). One

[81] We introduced unemployment, inflation, political stability and migrant stock one at a time in our estimations due to its effect on the sample sizes. The sample decreases when these variables are incorporated due to unavailability of the respective data for some countries.

might expect unemployment rates to be particularly relevant to labor mobility and this indeed proves to be the case. Both these coefficients are also very similar in magnitude but have opposite signs. For the origin country unemployment, we obtained a positive and significant coefficient which indicates that migrant workers are sensitive to domestic labor market conditions. An increase in the unemployment rate in their domestic market pushes them to seek jobs in foreign markets. A negatively signed and significant coefficient for the host country unemployment indicates that workers decisions to move into foreign markets are affected by the availability of jobs in those markets. As expected, our results show that a high unemployment rate in destination countries deters such movement. But since these are migrants on work visas, it may also reflect deliberate visa-policy actions, at least on the part of the host government.

In Model 5, we explored if political stability and absence of violence[82] (in host and origin country) mattered for labor mobility. As evidenced in Karamera et al. (2000) political instability in host countries discourages inward migration. Countries with political turmoil and crisis would be less attractive for potential migrants (Greenwood & McDowell, 1992). However, our estimation results in Model 5 show that host country political stability is not relevant in terms of labor mobility. Next, turning to origin country political environment, our results show a positive and significant relation between political stability and labor mobility. While on the one hand, it is recognized that politically stable and violent free origin country may encourage individuals to remain in their country rather than move abroad (i.e. a negative relation with labor mobility), on the other hand it could also enhance their ability for the same (i.e. a positive relation with labor mobility). Our results indicate the latter, which we explain as follows: leaving behind family members is always a difficult decision for migrant workers (see for example Stohr (2013); Graham, Jordan, & Yeoh (2015); Mazzucato et al. (2015); Siriwardhana et al. (2015)) which would no doubt be heightened (lessened) in more (less) politically unstable and violent economies. As a corollary to this, migrants would feel more secure to leave behind family members and work abroad when their home country is politically stable.

[82] A higher index indicates better outcomes.

Finally, in Model 6 we investigated for any diaspora[83] effects on bilateral labor mobility. The cost of migrating may be relevant to the presence of previous migrants in a respective destination country. These social networks form an ideal source of information on jobs and other aspects of a destination country which may facilitate the social and cultural transition for new migrants (Greenwood & McDowell, 1992). Moreover, having friends and family from the same origin also lowers the monetary and psychological cost of migrating (Ruyssen, Everaert, & Rayp, 2012). Consistent with the findings of Pederson et al. (2008), Fagiolo and Santoni (2016), Clark (2007), and Hatton (2005), our results also provide support to the positive role of previous migrants in facilitating cross-border labour mobility.

[83] The term diaspora refers to the much earlier migrants who have settled abroad and are valued highly by new migrants for their entrepreneurial, professional skills and social networks (Chia, 2006). We used the migrant stock in 2001 (from the OECD database) to measure for network effects. Due to missing data, there is a significant drop in our sample size.

3.7: Conclusion

Our primary objective in Chapter 3 was to examine the link between PTAs and international labor mobility. Cross-border movement of workers is an important aspect of globalisation. International mobility of workers can be a positive force for economic and social development as they offer a mechanism to rebalance labor markets in areas of origin and destination (UN, 2015). The general conclusion to be drawn from the several empirical investigations on the global effects of greater worker liberalisation is that the world as a whole would benefit if the restrictions on labor mobility across borders were reduced. However, labor mobility remains restricted. The WTO has a very narrow provision for skilled labor movement only but the developing and less developed countries have a greater interest in mobilising their unskilled/semi-skilled workers, which they have in abundance. Given this slow progress, policy makers have resorted to alternative options such as BLAs and PTAs. A notable development of PTAs is their expansion into deeper integration provisions, some of which include specific labor provisions. Thus, based on the argument that PTAs may stimulate labor mobility, we investigated for any such role in this study, using data from UNESCAP which includes workers leaving for foreign markets on a work visa. A literature search produced only two very recent papers (Orefice, 2015 and Figueiredo et al., 2016) that investigated the role of PTAs, and then not specifically on labor mobility but on overall migration. Orefice (2015) and Figueiredo et al. (2016) used data from the OECD and the World Bank database, respectively. Their data covers a larger set of labor origin countries but excludes some important non-OECD labor host countries and covers broad migration. While our data includes only a limited number of origin countries, it focuses specifically on migrant workers and includes a larger set of labor host countries.

Consistent with Orefice (2015) and Figueiredo et al. (2016), our empirical investigations confirmed the positive role of PTAs in stimulating international labor mobility. We found consistent evidence that a bilateral PTA between the origin and host country encouraged cross-border worker movement in our sample of countries. Labor mobility is not the core objective of PTAs, but these agreements have been extended to accommodate labor provisions. We included a dummy variable to capture the presence or absence of these labor provisions and found that significant positive effect attaches entirely to those PTAs

with labor provisions. A PTA without labor provisions has no significant effect on worker migration. There are two implications from these findings. First, while PTAs are not a substitute for the global labor mobility efforts of the WTO, they can be utilised by countries to facilitate movement of their workers across countries. A PTA between a host and origin country indicates better diplomatic relations and familiarity amongst all partner countries (Orefice, 2015). Second, the content of PTAs also matters. Agreements at a bilateral level provides both countries the flexibility and scope to design policies to suit to their specific labor market conditions and to implement the required monitoring and regulation as joint policy initiatives. Global efforts have not opened corridors for unskilled or semi-skilled workers which developing and less developed countries have in abundance. Our results provide evidence that PTAs provide an opportunity for policy makers to exploit such opportunities.

In terms of the economic determinants of labor migration included in our empirical investigations, our results confirmed the importance of relative GDP per capita and host or origin unemployment. But we did not find any significant role of host or origin inflation. Consistent with the existing literature, we found that relatively higher income opportunities positively impact bilateral worker migration. Workers, like other migrants, tend to move to countries where incomes are higher on average. In terms of unemployment, while a higher rate of unemployment in the host country reduces bilateral worker mobility, a higher rate of unemployment in the source country increases it. Our results suggest that migrant workers are sensitive to job availability in both host and origin country. The coefficients are very similar in magnitude, so that parallel movements in unemployment in the two countries would leave worker migration largely unaffected.

For geographic and other similarities, similar to Mayda (2010) and Ortega and Peri (2009), we do not find any relationship between distance, common border, language or colonial relationship and bilateral labor mobility. Likewise, host country political stability is not significant either. But origin country political stability stimulates labor mobility. Workers are more contented to leave behind family members and work abroad when their home country is politically stable. To this end, our results suggest that labor mobility is mainly driven by economic determinants while host political condition, geographical and other similarities are less pronounced. Perhaps individuals migrating temporarily for work are

less concerned than more permanent migrants about the costs and political conditions in the host country and are more attracted by the relatively higher income and temporary work opportunities. These findings indicate that the origin countries do not need to confine furthering economic relations with only familiar, closer and politically stable countries in order to exploit foreign labor market opportunities. Even distant, but economically advantaged countries with job opportunities can be potential destinations.

In terms of demographic variables, our results revealed that a larger host or origin population encourages bilateral worker migration. This can be thought of as a supply effect in the origin country. In the host country it means that whatever labor force effects are associated with the higher host country population are not strong enough to crowd out the demand for foreign workers. Opportunities for foreign workers may still exist, perhaps in specific sectors, occupations or in certain jobs rejected by natives. Also, to the extent that population growth is driven by population aging, demand for foreign workers may arise as service providers or for social security support. Our results also indicate the relevance of previous migrants in facilitating bilateral worker migration. This suggests that social networks form a useful source of information and support for potential migrants. Such networks may provide information on possible work opportunities and other host country information such as transport, accommodation and other support services. They may also facilitate the social and cultural transition for new migrants. On this note, origin country efforts to maintain and facilitate communication between past migrants and potential migrant workers would benefit labor origin countries.

For a prolonged period of time, lack of panel bilateral migration data had severely limited empirical work on the determinants of migration. While the recent advances in the availability of data on migration have facilitated country panel studies, the differences in definitions used across countries in data compilation and the impossibility of discriminating between economic and noneconomic migrants limits investigations by type of migrant. Moreover, definitional differences of migrants in the migration data of different countries and coverage of only member countries in existing migration data (such as the OECD) are further limitations. As future research, development of an indicator to measure migration policy and including this explicitly in the empirical investigation would enrich the existing literature. Morevoer, the absence of data on BLA's has also limited our ability to compare

the impacts of PTA's and BLA's. Also, since the dependent variable (bilateral labor flow) is included in the model in log form, zero flows are automatically excluded from our analysis. This gives rise to concerns about sample selection bias where the sample is not drawn randomly from the population but is restricted to positive and non-zero observations. As future research, alternative gravity model estimation techniques that address this sample selection bias (such as those recommended by Helpman et al (2008)) can be used to improve the results from this chapter. Moreover, Hofman et al; 2017 has developed a database which provides information on the deep provisions in almost 279 PTAs. This information can be used in future research to construct indexes of PTAs depth, particularly for labor related provisions and investigate the nexus of these provisions to bilateral labor mobility

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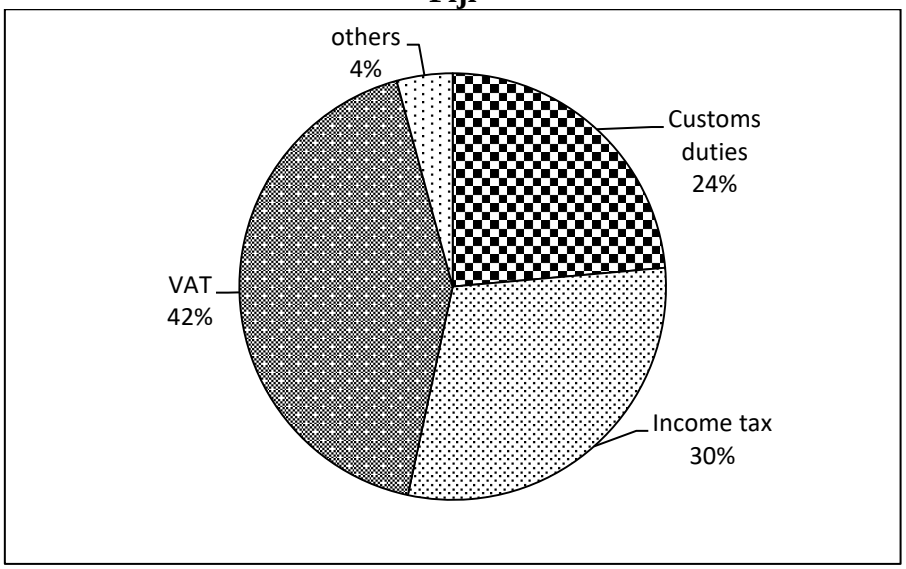
5.0 Appendix

A: Appendices to Chapter 1

A.1: Composition of Fiji governments revenue from taxation

Figure 1 illustrates the percentage share of Value Added Tax (VAT), customs duties, income tax and others, averaged from 2000 to 2015. Almost half of Fiji's taxation revenue is generated from VAT alone. Customs duties and income tax represent the other half of taxation revenue.

Figure 1: Average (2000-2015) percentage share of government taxation revenue for Fiji



Source: RBF Quarterly Review (March 2017)

A.2: The transition from the European Economic Community (EEC) into the European Union (EU).

The EEC was formed in 1957 by six countries, which later evolved into the EU in 1993. Table 1 summarises this development.

Table 1: The timeline of the EEC into EU membership

Year	Enlargement	Total membership
1957	EEC formed by Belgium, Germany, France, Italy, Luxembourg, Netherlands	6
1973	Denmark, Ireland UK joined the EEC	9

1981	Greece joined the EEC	10
1986	Spain and Portugal joined the EEC	12
1993	EU was formed among the 12 existing EEC members	12
1995	Austria, Finland, Sweden joined the EU	15
2004	Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Slovakia, Slovenia joined the EU	25
2007	Bulgaria, Romania joined the EU	27
2013	Croatia joined the EU	28

(Source: http://europa.eu)

A.3: Main exports from selected ACP sub-regional groups to the EU

The importance of the EU market for exports originating in the ACP countries varies at sub-regional level. Eastern & Southern Africa (ESA), South African Developing Community (SADC) and West Africa have percentage shares greater than 20 percent in total ACP exports to the EU. Table 2 provides the main exported items from each of these sub-groups that are over US$200 million in value.

Table 2: Exported items (over US$200m) from ESA, SADC and West Africa to the EU

Eastern & Southern Africa	**2000-2015 average**
Exports items over USD 200M	USDM
[TOTAL] Total all products	**36419**
[333] Petroleum oils, oils from bitumin. materials, crude	20724
[334] Petroleum oils or bituminous minerals > 70 % oil	2635
[343] Natural gas, whether or not liquefied	1612
[292] Crude vegetable materials, n.e.s.	729
[071] Coffee and coffee substitutes	646
[845] Articles of apparel, of textile fabrics, n.e.s.	642
[061] Sugar, molasses and honey	593
[667] Pearls, precious & semi-precious stones	479
[054] Vegetables	454
[037] Fish, aqua. invertebrates, prepared, preserved, n.e.s.	424
[682] Copper	419
[121] Tobacco, unmanufactured; tobacco refuse	404
[562] Fertilizers (other than those of group 272)	380
[342] Liquefied propane and butane	309
[057] Fruits and nuts (excluding oil nuts), fresh or dried	258
[684] Aluminium	241
[841] Men's clothing of textile fabrics, not knitted	227
[344] Petroleum gases, other gaseous hydrocarbons, n.e.s.	200
West Africa	**2000-2015 average**
Exports items over USD 200M	USDM

[TOTAL] Total all products	**31401**
[333] Petroleum oils, oils from bitumin. materials, crude	17041
[292] Crude vegetable materials, n.e.s.	4359
[343] Natural gas, whether or not liquefied	2206
[071] Coffee and coffee substitutes	779
[334] Petroleum oils or bituminous minerals > 70 % oil	730
[682] Copper	485
[061] Sugar, molasses and honey	355
[057] Fruits and nuts (excluding oil nuts), fresh or dried	337
[845] Articles of apparel, of textile fabrics, n.e.s.	318
[054] Vegetables	298
[037] Fish, aqua. invertebrates, prepared, preserved, n.e.s.	297
[121] Tobacco, unmanufactured; tobacco refuse	272
[773] Equipment for distributing electricity, n.e.s.	271
[841] Men's clothing of textile fabrics, not knitted	268
[571] Polymers of ethylene, in primary forms	232
[684] Aluminium	201
[075] Spices	200
SADC	**2000-2015 average**
Exports items over USD 200M	USDM
[TOTAL] Total all products	**32117**
[292] Crude vegetable materials, n.e.s.	5223
[333] Petroleum oils, oils from bitumin. materials, crude	5001
[057] Fruits and nuts (excluding oil nuts), fresh or dried	1564
[121] Tobacco, unmanufactured; tobacco refuse	1443
[071] Coffee and coffee substitutes	1334
[037] Fish, aqua. invertebrates, prepared, preserved, n.e.s.	1198
[061] Sugar, molasses and honey	1091
[334] Petroleum oils or bituminous minerals > 70 % oil	978
[343] Natural gas, whether or not liquefied	751
[841] Men's clothing of textile fabrics, not knitted	608
[773] Equipment for distributing electricity, n.e.s.	579
[054] Vegetables	577
[845] Articles of apparel, of textile fabrics, n.e.s.	538
[683] Nickel	514
[667] Pearls, precious & semi-precious stones	492
[342] Liquefied propane and butane	482
[682] Copper	461
[074] Tea and mate	445
[684] Aluminium	420
[034] Fish, fresh (live or dead), chilled or frozen	353
[562] Fertilizers (other than those of group 272)	350
[268] Wool and other animal hair (incl. wool tops)	331
[075] Spices	279

[651] Textile yarn	239
[582] Plates, sheets, films, foil & strip, of plastics	233

(Source: UNCTAD stat)

A.4: Estimated income transfer under the Sugar Protocol for ACP sugar exporting countries

The EU has provided lucrative returns to ACP sugar exporters under the Sugar Protocol in the form of guaranteed market, import quotas and prices that were almost three times more than the world market sugar price. The income transfers from this arrangement is summarised in Table 3.

Table 3: Income transfer for sugar exporting ACP countries under the Sugar Protocol.

ACP country	Estimates of income transfer using constant 1987 prices: Mcdonald (1996)			Estimates of income transfer using constant 2001 prices: Milner et al. (2003)			Estimates of income transfer using 2000-2002 average prices: LMC/OPM (2004)		
	US$M	% of GDP	% of Exports	US$M	% of GDP	% of Exports	US$M	% of GDP	% of Exports
Mauritius	75.3	1.8	2.9	180.7	4.0	6.5	205.6	5.2	8.0
Fiji	25.4	1.2	2.0	48.8	2.9	4.9	69.5	4.7	7.3
Guyana	24.5	3.5	3.4	60.9	8.7	8.9	61.3	10.1	11.4
Jamaica	18.2	0.3	0.6	46.4	0.6	1.4	53.2	0.8	1.8
Swaziland	18.1	1.4	n.a	56.4	4.3	5.0	57.4	5.3	8.6
Barbados	7.7	0.4	0.6	16.2	0.6	1.2	24.7	1.1	2.3
Trinidad & Tobago	6.7	0.1	0.2	14.7	0.2	0.3	20.1	0.3	0.5
Belize	6.2	1.0	2.0	14.8	1.9	3.3	17.1	2.5	4.9
Zimbabwe	4.6	0.1	0.1	19.9	0.2	0.9	20.9	0.3	1.3
Malawi	3.2	0.1	0.6	12.2	0.7	2.7	13.8	1.1	4.0
St. Kitts & Nevis	2.4	1.0	2.0	0	0	0	7.3	2.4	5.4
Madagascar	1.7	0.	n.a	4.9	0.1	0.4	10.3	0.3	0.8
Congo	1.6	0	0.1	0.7	0	0.1	5.4	0.2	0.3
Côte d'Ivoire	1.6	0	0	3.3	0	0.1	7.7	0.1	0.2
Tanzania	1.6	0	0.1	4.5	0	0.3	4.3	0.1	0.9
Total	**198.6**			**490.1**			**584.2**		

(Source: Gilson et al. (2005))

A.5: Sectoral contribution to Fiji's GDP

Table 4 shows the percentage contribution from each sector to the Fijian economy since 2011 to 2015.

Table 4: Percentage Contribution to Fiji's GDP (constant (F$M) basic price of 2011)

Sector	2011	2012	2013	2014	2015
Agriculture	8.2	8.0	8.2	7.8	8.1
Forestry & Logging	0.6	0.5	0.7	0.7	0.7
Fishing & Aquaculture	2.1	2.0	1.9	1.8	1.8
Mining & Quarrying	1.6	1.5	1.0	0.8	0.8
Manufacturing	14.1	13.6	13.8	13.2	12.8
Electricity, gas	1.9	2.0	2.0	1.9	1.9
Water	0.3	0.3	0.3	0.3	0.3
Construction	2.7	2.4	2.7	2.7	2.8
Wholesale & Retail	11.7	11.6	11.4	11.1	11.1
Transport	6.3	6.7	7.4	8.9	8.8
Accommodation & Food service	6.4	6.4	6.2	6.1	6.4
Information & Communication	5.9	6.0	5.9	5.7	5.8
Financial & Insurance activities	9.2	9.1	9.1	9.8	9.6
Real Estate	5.0	5.0	4.9	4.6	4.5
Professional, scientific & technical activity	2.2	2.4	2.4	2.4	2.4
Administrative & Support	2.3	2.4	2.3	2.3	2.2
Public Administration	7.6	8.3	8.4	8.5	8.6
Education	7.1	7.2	7.2	7.0	6.9
Human Health & Social Work	2.4	2.3	2.2	2.1	2.2
Arts, entertainment	0.4	0.4	0.4	0.3	0.3
Other services	2.0	1.9	1.9	1.8	1.9

(Source: Fiji Islands Bureau of Statistics Key Economic Indicators, 2017)

A.6: Trade agreements formed by the Fijian economy.

Fiji is signatory to a number of trading arrangements. These include the Melanesian Spearhead Group (MSG), Pacific Island Countries Trade Agreement (PICTA), Pacific Agreement on Closer Economic Relations (PACER), South Pacific Regional Trade & Economic Agreement (SPARTECA) and the interim EU-EPA. Table 5 provides information on these agreements.

Table 5: Fiji's Trade Agreement details

MSG: Melanesian Spearhead Group	The Melanesian Spearhead Group Trade Agreement (MSGTA) came into effect in 1993 with Fiji signing up to the agreement in 1998. The agreement aims to promote regional integration through the facilitation of a free flow of goods and services and the removal of trade barriers. Members include the Solomon Islands, Vanuatu, Papua New Guinea, Fiji
PICTA: Pacific Island Countries Trade Agreement	PICTA is a free trade agreement between the 14 Forum Island Countries (FIC)*. The agreement was signed in 2001, Fiji ratified it in 2002 and it came into force in 2006. The trade agreement aims to eliminate trade barriers, both tariff and non-tariff

	barriers and promote trade with fair competition and hence expansion of world trade.
PACER: Pacific Agreement on Closer Economic Relations	PACER was signed in 2001 and aims to create a single regional economy. PACER works to increase opportunities and competitiveness, to promote economic and technical assistance between nations and to also minimize effects and costs. Members include the 14 FIC and Australia and New Zealand.
SPARTECA: South Pacific Regional Trade & Economic Agreement	SPARTECA is a regional trade agreement between Australia, New Zealand and countries of the South Pacific Forum signed in 1981. The agreement aims to address the unequal trade relationship between Australia and New Zealand and Forum Island Countries (FIC). The agreement progressively allows duty free and unrestricted access to Australia and New Zealand markets, with as many products as possible. The agreement therefore works to foster greater penetration of exports from FICs into Australia and New Zealand markets.
Interim EU-EPA	Fiji entered into an Interim Economic Partnership Agreement (IEPA) with the European Community in 2009 with the expiration of the Cotonou Agreement in 2007. The IEPA is now active while the terms of the Economic Partnership Agreement (EPA) between PACP and the European Community are being negotiated. The IEPA protects Fiji's sugar exports to the European Community while the negotiations are being carried out.

(Source: www.wto.org)

A.7: Derivation of equations in section 1.4.1

Equation (2)

Solve the optimisation problem in (1)[84] by setting the Lagrangean;

$$L = \left[\sum_j \left(u^j\right)^\delta \right]^{1/\delta} - \lambda \left[\sum_j \pi^j u^j - E \right]$$

which yields the following FOC:

$$\frac{\partial L}{\partial u^j} = \left[\sum_j \left(u^j\right)^\delta \right]^{1/\delta - 1} \left(u^j\right)^{\delta - 1} = \lambda \pi^j \qquad \text{(i)}$$

From (i) solve for u^j. This yields;

[84] The term in the brackets denotes the equation number that is used to represent that equation in the main document.

$$u^j = \left[\frac{\lambda}{\left[\sum_j \left(u^j\right)^{\delta}\right]^{1-\delta/\delta}}\right]^{1/\delta-1} \left(\pi^j\right)^{1/\delta-1} \quad \text{(ii)}$$

Then substitute (ii) into $\sum_j \pi^j u^j$ and simplify to get;

$$\sum_j \pi^j u^j = \left[\frac{\lambda}{\left[\sum_j \left(u^j\right)^{\delta}\right]^{1-\delta/\delta}}\right]^{1/\delta-1} \sum_j \left(\pi^j\right)^{\delta/\delta-1} \quad \text{(iii)}$$

Set $\sum_k \pi_k u_k = E$ and using (iii) obtain;

$$\left[\frac{\lambda}{\left[\sum_j \left(u^j\right)^{\delta}\right]^{1-\delta/\delta}}\right]^{1/\delta-1} \sum_k \left(\pi^k\right)^{\delta/\delta-1} = E \quad \text{(iv)}$$

In (iv), make the first term the subject of the expression and substitute into (ii) to get;

$$u^j = \frac{E\left(\pi^j\right)^{1/\delta-1}}{\sum_k \left(\pi^k\right)^{\delta/\delta-1}} \quad \text{(v)}$$

Since $E_j = \pi^j u^j$, then substituting (v) into this results in (2) reproduced below;

$$E_j = \frac{\left(\pi^j\right)^{\delta/\delta-1}}{\left[\sum_k \left(\pi^k\right)^{\delta/\delta-1}\right]} E \quad \text{(2)}$$

Total differentiation of (2) produces (4).

Equation (6)

Maximise (5) subject to its constraint by setting the following Lagrangian:

$$L = \left[M_j^{\ell} + D_j^{\ell}\right]^{1/\ell} - \lambda\left[P_j^M M_j + P_j^D D_j - E_j\right]$$

Get the First Order Condition (FOC):

$$\frac{\partial L}{\partial M_j} = \left[M_j^{\ell} + D_j^{\ell}\right]^{1/\ell - 1} M_j^{\ell - 1} - \lambda P_j^M = 0 \qquad \text{(i)}$$

$$\frac{\partial L}{\partial D_j} = \left[M_j^{\ell} + D_j^{\ell}\right]^{1/\ell - 1} D_j^{\ell - 1} - \lambda P_j^D = 0 \qquad \text{(ii)}$$

$$\frac{\partial L}{\partial \lambda} = P_j^M M_j + P_j^D D_j - E_j = 0 \qquad \text{(iii)}$$

Divide (i) and (ii) to get;

$$\frac{M_j^{\ell - 1}}{D_j^{\ell - 1}} = \frac{P_j^M}{P_j^D}$$ and solve for M_j to get;

$$M_j = D_j \left(\frac{P_j^M}{P_j^D}\right)^{1/\ell - 1} \qquad \text{(iv).}$$

Plug (iv) into the constraint in (5) and solve for D_j to get (6).

From Equation (7) to (10);

Multiply both sides of (6) to get the value of D_j. Then, total differentiation of (6), noting $\hat{}$ denotes a proportional change $\left(\Delta z / z\right)$ for any variable z results in (7) reproduced below;

$$\hat{D}_j = \hat{E}_j + \left(\hat{P_j^D}\right)^{\ell/\ell - 1} - \left[\left(P_j^M\right)^{\ell/\ell - 1} \hat{+} \left(P_j^D\right)^{\ell/\ell - 1}\right] \qquad (7)$$

Differentiation of each term in (7) gives;

$$\left(\hat{P_j^D}\right)^{\ell/\ell - 1} = \frac{\ell}{\ell - 1} \hat{P}_j^D \qquad \text{(i)}$$

$$\left[\left(P_j^M\right)^{\ell/\ell-1}\hat{+}\left(P_j^D\right)^{\ell/\ell-1}\right]=\frac{\ell}{\ell-1}\left\{\left[\frac{\left(\hat{P_j^M}\right)^{\ell/\ell-1}}{\left(\left(P_j^M\right)^{\ell/\ell-1}+\left(P_j^D\right)^{\ell/\ell-1}\right)}\right]\hat{P}_j^M+\left[\frac{\left(\hat{P_j^D}\right)^{\ell/\ell-1}}{\left(\left(P_j^M\right)^{\ell/\ell-1}+\left(P_j^D\right)^{\ell/\ell-1}\right)}\right]\hat{P}_j^D\right\}$$

Denote the term $\left[\frac{\left(\hat{P_j^M}\right)^{\ell/\ell-1}}{\left(\left(P_j^M\right)^{\ell/\ell-1}+\left(P_j^D\right)^{\ell/\ell-1}\right)}\right]=a_j^M$ (share of imported j in total expenditure on j)

and $\left[\frac{\left(\hat{P_j^D}\right)^{\ell/\ell-1}}{\left(\left(P_j^M\right)^{\ell/\ell-1}+\left(P_j^D\right)^{\ell/\ell-1}\right)}\right]=a_j^D$ (share of domestic produced j in total expenditure on j) to get;

$$\left[\left(P_j^M\right)^{\ell/\ell-1}\hat{+}\left(P_j^D\right)^{\ell/\ell-1}\right]=\frac{\ell}{\ell-1}\left[\left(a_j^M\hat{P}_j^M\right)+\left(a_j^D\hat{P}_j^D\right)\right] \quad \text{(ii)}$$

Substitute (i) and (ii) into (7), to get (8) and then rearrange to get (9). Noting that $\hat{l}=\left(\Delta z/z\right)$ for any variable z, then Δz is obtained by moving z to the right hand side (RHS) of the resultant expression. Hence this yields (10).

From Equation (12) to (16);

Solve the consumer optimisation problem in (11) the Lagrangean for which is;

$$L=\left[\sum_{i=0}^{n}c_{ij}^{\xi}\right]^{1/\xi}-\lambda\left[P_{ij}c_{ij}-E_j^M\right]$$

FOC;

$$\frac{\partial L}{\partial c_{ij}}=\left[\sum_{i=0}^{n}\left(c_{ij}\right)^{\xi}\right]^{1/\xi-1}\left(c_{ij}\right)^{\xi-1}=\lambda P_{ij} \quad \text{(i)}$$

From (i) solving for c_{ij} yields;

$$c_{ij} = \left[\frac{\lambda}{\left[\sum_{i=0}^{n} \left(c_{ij} \right)^{\xi} \right]^{1-\xi/\xi}} \right]^{1/\xi-1} \left(P_{ij} \right)^{1/\xi-1} \qquad \text{(ii)}$$

Then substitute (ii) into $\sum_i P_{ij} c_{ij}$ and simplify to get;

$$\sum_i P_{ij} c_{ij} = \left[\frac{\lambda}{\left[\sum_{i=0}^{n} \left(c_{ij} \right)^{\xi} \right]^{1-\xi/\xi}} \right]^{1/\xi-1} \sum_i \left(P_{ij} \right)^{\xi/\xi-1} \qquad \text{(iii)}$$

Then set $\sum_{k=1}^{n} P_k c_{kj} = E_J^M$ and using (iii) obtain;

$$\left[\frac{\lambda}{\left[\sum_{i=0}^{n} \left(c_{ij} \right)^{\xi} \right]^{1-\xi/\xi}} \right]^{1/\xi-1} \sum_{k=1}^{n} \left(P_k \right)^{\xi/\xi-1} = E_J^M \qquad \text{(iv)}$$

In (iv), make the first term of the expression the subject and substitute into (ii) to get;

$$c_{ij} = \frac{\left(P_{ij} \right)^{1/\xi-1}}{\sum_{k=1}^{n} \left(P_k \right)^{\xi/\xi-1}} E_j^M \qquad \text{(v)}$$

Multiply both sides of (v) by P_{ij} to get value of import demand for variety i of j and get (12).

Total differentiation of (12) gives;

$$\hat{X}_{ij} = \left(\hat{P_i t_{ij}} \right)^{1-\sigma} + \hat{E}_j - \hat{R}_j \qquad \text{(i)}$$

Solving each term in (i) for variety h results in;

$$\left(\hat{P_i t_{ij}} \right)^{1-\sigma} = \left(1 - \sigma \right) \hat{t}_{hj} \qquad \text{(ii)}$$

and let $\left(\sum_{k=1}^{n} P_k t_{kj}\right) = \Pi$

$\hat{R}_j = \frac{(1-\sigma)(\Pi)^{1-\sigma}}{(\Pi)^{1-\sigma}} \frac{\partial \Pi}{\Pi}$ and given that R_j is the aggregate consumer prices for j, then the derivative of this is equivalent to an average of changes in component product prices weighted by their respective market shares. Hence;

$\frac{\partial \Pi}{\Pi} = \sum_i m_{ij} \frac{\partial P_i t_{ij}}{P_i t_{ij}}$ where $\frac{\partial P_i t_{ij}}{P_i t_{ij}} = \hat{t}_{ij}$ and for variety *l* from the EU, $\sum_{l \in EU} m_{lj} \hat{t}_{lj}$ where m_{ij} is the market share of variety i in total imports of product j. This gives (14). Substitute (ii) and (14) into (i) and rearrange to get (13). Noting that $\hat{z} = \left(\Delta z / z\right)$ for any variable z, then Δz is obtained by moving z to the right hand side (RHS) of the resultant expression. This produces (15).

Equations 27 to 29

Along the same line, equations 27 to 29 are derived, where the change in the aggregate consumer prices for j now also reflects changes in prices of imports from the ROW and the Region. Hence using

$\hat{R}_j = \frac{(1-\sigma)(\Pi)^{1-\sigma}}{(\Pi)^{1-\sigma}} \frac{\partial \Pi}{\Pi}$ and given that $\Pi = R_j$ which is the aggregate consumer prices for j, then the derivative of this is equivalent to an average of changes in component product prices weighted by their respective market shares. Hence;

$\frac{\partial \Pi}{\Pi} = \sum_i m_{ij} \frac{\partial P_i t_{ij}}{P_i t_{ij}} + \sum_i m_{kj} \frac{\partial P_i t_{kj}}{P_i t_{kj}} + \sum_i m_{gj} \frac{\partial P_i t_{gj}}{P_i t_{gj}}$ where $\frac{\partial P_i t_{ij}}{P_i t_{ij}} = \hat{t}_{ij}$ is the change in prices on EU imports weighted by market share of variety i of product j from the EU (m_{ij}); $\frac{\partial P_i t_{kj}}{P_i t_{kj}} = \hat{t}_{kj}$ is the change in prices on ROW imports weighted by market share of variety k (ROW variety) of product j (m_{kj}) ;and $\frac{\partial P_i t_{gj}}{P_i t_{gj}} = \hat{t}_{ig}$ is the change in process of imports from the Region weighted by market share (m_{gj}) of variety g of product j from the Region. Substituting this derivative of R_j (which now also reflects changes in prices of ROW and Regional imports) into (i) above produces equation 27 which captures the change in demand for imports from the EU with an EU-EPA plus external tariff reform:

$$\Delta X_{hj} = \left[-[\sigma - 1]\left[1 - m_{hj}\right]\hat{t}_{hj} + [\sigma - 1] \sum_{\substack{l \in EU \\ l \neq h}} m_{lj}\hat{t}_{lj} + \sum_{k \in ROW} m_{kj}\hat{t}_{kj} + \sum_{g \in Reg} m_{gj}\hat{t}_{gj} + \hat{E}_j \right] X_{hj}$$

Hence, change in demand for imports from the ROW and change in demand for imports from the Region are derived in the same manner to give equations 28 and 29:

$$\Delta X_{hj} = \left[-[\sigma - 1]\left[1 - m_{hj}\right]\hat{t}_{hj} + [\sigma - 1] \sum_{\substack{k \in ROW \\ k \neq h}} m_{kj}\hat{t}_{kj} + \sum_{l \in EU} m_{lj}\hat{t}_{lj} + \sum_{g \in Reg} m_{gj}\hat{t}_{gj} + \hat{E}_j \right] X_{hj}$$

$$\Delta X_{hj} = \left[-[\sigma - 1]\left[1 - m_{hj}\right]\hat{t}_{hj} + [\sigma - 1] \sum_{\substack{g \in Reg \\ g \neq h}} m_{gj}\hat{t}_{gj} + \sum_{l \in EU} m_{lj}\hat{t}_{lj} + \sum_{k \in ROW} m_{kj}\hat{t}_{kj} + \hat{E}_j \right] X_{hj}$$

Equation (16)

The total substitution effect (grouped by Region and ROW) can be found by looking at the change in the sum of the value of imports from each group i.e. $\sum_{i \notin EU} X_{ij}$

$$\widehat{\sum_{i \notin EU} X_{ij}} = \sum_{i \notin EU} \frac{X_{ij}}{E_j} \frac{E_j}{\sum_{k \notin EU} X_{kj}} \hat{X}_{ij} = \sum_{i \notin EU} m_{ij} \frac{1}{1 - M_j} \left[\hat{E}_j - \hat{R}_j\right] = \frac{\left[\hat{E}_j - \hat{R}_j\right]}{1 - M_j} \sum_{i \notin EU} m_{ij}$$

where $\sum_{i \notin EU} X_{ij} = E_j[1 - M_j]$ is used. Since $\sum_{i \notin EU} m_{ij} = 1 - M_j$, then

$\widehat{\sum_{i \notin EU} X_{ij}} = \hat{E}_j - \hat{R}_j = [\sigma - 1] \sum_{l \in EU} m_{lj}\hat{t}_{lj} + \hat{E}_j$ which yields (16).

Equation (18) and (22);

Solve the Producers optimisation problem identified in (17), the Lagrangean for which is;

$$L = P_j^D Q_j^D + P_j^F Q_j^F - \lambda \left[\left[\left(Q_j^D\right)^{\psi} + \left(Q_j^F\right)^{\psi} \right]^{1/\psi} - K_j \right]$$

This gives the following FOC's;

$$\frac{\partial L}{\partial Q_j^D} = P_j^D - \lambda \left[\left(Q_j^D\right)^{\psi} + \left(Q_j^F\right)^{\psi} \right]^{1/\psi - 1} \left(Q_j^D\right)^{\psi - 1} = 0 \qquad \text{(i)}$$

$$\frac{\partial L}{\partial Q_j^F} = P_j^F - \lambda \left[\left(Q_j^D\right)^{\psi} + \left(Q_j^F\right)^{\psi} \right]^{1/\psi - 1} \left(Q_j^F\right)^{\psi - 1} = 0 \qquad \text{(ii)}$$

Divide (i) and (ii) to obtain;

$\frac{P_j^D}{P_j^F} = \frac{\left(Q_j^D\right)^{\psi-1}}{\left(Q_j^F\right)^{\psi-1}}$ and make Q_j^D the subject. This gives;

$$Q_j^D = \left(\frac{P_j^D}{P_j^F}\right)^{1/\psi-1} Q_j^F \qquad \text{(iii)}$$

Substitute (iii) into the resource constraint in (17). This allows solving for Q_j^F and yields (18). Then substitute (18) into (iii) and simplifying produces (22).

From Equation (19) to (21);

Total differentiation on (18) produces (19). Differentiating each component in (19) yields;

$$\left(P_j^F\right)^{\wedge 1/\psi-1} = \frac{1}{\psi-1}\hat{P}_j^F \qquad \text{(i)}$$

$$\left[\left(P_j^D\right)^{\psi/\psi-1} + \left(P_j^F\right)^{\wedge \psi/\psi-1}\right]^{1/\psi} = \frac{1}{\psi-1}\left\{\left[\frac{\left(P_j^D\right)^{\wedge \psi/\psi-1}}{\left(\left(P_j^D\right)^{\psi/\psi-1} + \left(P_j^F\right)^{\psi/\psi-1}\right)}\right]\hat{P}_j^D + \left[\frac{\left(P_j^F\right)^{\wedge \psi/\psi-1}}{\left(\left(P_j^D\right)^{\psi/\psi-1} + \left(P_j^F\right)^{\psi/\psi-1}\right)}\right]\hat{P}_j^F\right\}$$

Denote the term $\frac{\left(P_j^D\right)^{\wedge \psi/\psi-1}}{\left(\left(P_j^D\right)^{\psi/\psi-1} + \left(P_j^F\right)^{\psi/\psi-1}\right)} = a_j^D$ (share of domestic *j* in total income from *j*)

and $\frac{\left(P_j^F\right)^{\wedge \psi/\psi-1}}{\left(\left(P_j^D\right)^{\psi/\psi-1} + \left(P_j^F\right)^{\psi/\psi-1}\right)} = a_j^F$ (share of exports of *j* in total value of *j*) to get;

$$\left[\left(P_j^D\right)^{\psi/\psi-1} + \left(P_j^F\right)^{\wedge \psi/\psi-1}\right] = \frac{1}{\psi-1}\left[\left(a_j^D\hat{P}_j^D\right) + \left(a_j^F\hat{P}_j^F\right)\right] \qquad \text{(ii)}$$

Substitute (i) and (ii) into (19), and then rearrange to get (20). Then Δz is obtained by moving z to the right hand side (RHS) of the resultant expression. Hence this yields (21).

From Equation (23) to (25);

Total differentiation on (22) produces (23). Differentiating each component in (23) yields;

$$\left(P_j^D\right)^{\wedge}{}^{1/\psi-1} = \frac{1}{\psi-1}\hat{P}_j^D \qquad \text{(i)}$$

$$\left[\left(P_j^D\right)^{\psi/\psi-1} + \left(P_j^F\right)^{\wedge}{}^{\psi/\psi-1}\right]^{1/\psi} = \frac{1}{\psi-1}\left\{\left[\frac{\left(P_j^D\right)^{\wedge}{}^{\psi/\psi-1}}{\left(\left(P_j^D\right)^{\psi/\psi-1} + \left(P_j^F\right)^{\psi/\psi-1}\right)}\right]\hat{P}_j^D + \left[\frac{\left(P_j^F\right)^{\wedge}{}^{\psi/\psi-1}}{\left(\left(P_j^D\right)^{\psi/\psi-1} + \left(P_j^F\right)^{\psi/\psi-1}\right)}\right]\hat{P}_j^F\right\}$$

Denote the term $\dfrac{\left(P_j^D\right)^{\wedge}{}^{\psi/\psi-1}}{\left(\left(P_j^D\right)^{\psi/\psi-1} + \left(P_j^F\right)^{\psi/\psi-1}\right)} = a_j^D$ (share of domestic *j* in total income from *j*)

and $\dfrac{\left(P_j^F\right)^{\wedge}{}^{\psi/\psi-1}}{\left(\left(P_j^D\right)^{\psi/\psi-1} + \left(P_j^F\right)^{\psi/\psi-1}\right)} = a_j^F$ (share of exports of *j* in total value of *j*) to get;

$$\left[\left(P_j^D\right)^{\psi/\psi-1} + \left(P_j^F\right)^{\wedge}{}^{\psi/\psi-1}\right] = \frac{1}{\psi-1}\left[\left(a_j^D\hat{P}_j^D\right) + \left(a_j^F\hat{P}_j^F\right)\right] \qquad \text{(ii)}$$

Substitute (i) and (ii) into (23), and then rearrange to get (24). Noting that $\hat{z} = \left(\Delta z/z\right)$ for any variable z, then Δz is obtained by moving z to the right hand side (RHS) of the resultant expression. Hence this yields (25).

Equation (26)

Market equilibrium implies demand equals supply which also holds for change in demand and change in supply. Then, put (9) = (24) to get;

$$\hat{E}_j - \left\{\frac{\ell - \ell a_j^D}{1-\ell}\right\}\hat{P}_j^D + \left\{\frac{\ell a_j^M}{1-\ell}\right\}\hat{P}_j^M = \hat{K}_j + \left[\frac{1-a_j^D}{\psi - 1}\right]\hat{P}_j^D - \left[\frac{a_j^F}{\psi - 1}\right]\hat{P}_j^F \qquad \text{(i)}$$

Solving for $\hat{P}_j^D$ in (i) and with some rearrangement produces (26).

A.8: Substitution Elasticities

Table 6 provides the elasticity values used in our empirical framework. The second column reports the elasticity of substitution between domestic and imported goods while the elasticity of substitution between imports sourced from different source markets is provided in column 3, by commodity. These import substitution elasticities were sourced from GTAP while the elasticity of export substitution (value of 0.2) was sourced from Devarajan et al. (1999).

Table 6: Substitution elasticities*

GTAP Commodities	Elasticity of substitution (domestic and imported goods)	Elasticity of import substitution between countries
Paddy rice	5.05	10.10
Wheat	4.45	8.90
Cereal Grains n.e.c	1.30	2.60
Vegetables, fruit, nuts	1.85	3.70
Oil seeds	2.45	4.90
Sugar cane, sugar beet	2.70	5.40
Plant-based fibers	2.50	5.00
Crops n.e.c	3.25	6.50
Bovine cattle, sheep and goats	2.00	4.00
Animal products n.e.c	1.30	2.60
Raw milk	3.65	7.30
Wool, silk-worn cocoons	6.45	12.90
Forestry	2.50	5.00
Fishing	1.25	2.50
Coal	3.05	6.10
Oil	5.20	10.40
Gas	17.20	34.40
Minerals n.e.c	0.90	1.80
Bovine meat prods	3.85	7.70
Meat products n.e.c	4.40	8.80
Vegetable oils and fats	3.30	6.60
Dairy products	3.65	7.30
Processed rice	2.60	5.20
Sugar	2.70	5.40
Food products n.e.c	2.00	4.00

Beverages and tobacco products	1.15	2.30
Textiles	3.75	7.50
Wearing apparel	3.70	7.40
Leather products	4.05	8.10
Wood products	3.40	6.80
Paper products, publishing	2.95	5.90
Petroleum, coal products	2.10	4.20
Chemical, rubber, plastic products	3.30	6.60
Mineral products n.e.c	2.90	5.80
Ferrous metals	2.95	5.90
Metals n.e.c	4.20	8.40
Metal products	3.75	7.50
Motor vehicles and parts	2.80	5.60
Transport equipment n.e.c	4.30	8.60
Electronic equipment	4.40	8.80
Machinery and equipment n.e.c	4.05	8.10
Manufactures n.e.c	3.75	7.50
Electricity	2.80	5.60
Gas manufacture, distribution	2.80	5.60
Water	2.80	5.60
Construction	1.90	3.80
Trade	1.90	3.80
Transport n.e.c	1.90	3.80
Water transport	1.90	3.80
Air transport	1.90	3.80
Communication	1.90	3.80
Financial services n.e.c	1.90	3.80
Insurance	1.90	3.80
Business services n.e.c	1.90	3.80
Recreational and other services	1.90	3.80
Public Admin, Defense, Education	1.90	3.80
Dwellings	1.90	3.80

(Source: Dimaranan, B., McDougall, R., & Hertel, T. (2006). Center for Global Trade Analysis). *The elasticity of export transformation (value 0.2) was sourced from Devarajan et al. (1999).

A.9: Import categories.

The Harmonised System 6 (HS6) imports data was used for our analysis. This is an internationally standardised system of names and codes to classify traded products and is organised into 22 broad sections and 99 chapters with approximately 300 items under each chapter. While the analysis was conducted at this detailed level, the results are presented in section 1.5 by grouping these products into 9 broad categories. Table 7 provides information on the items included under each broad category.

Table 7: Items included under each broad category

Food & Live Animals	**Beverages & Tobacco**
Live animals: animal products	Beverages, spirit and vinegar
Meat and edible meat offal	Tobacco & tobacco substitutes
Fish and crustaceans	
Dairy produce	**Mineral fuels and products**
Product of animal origins n.e.c*	Mineral products
Vegetable products	Ores, slag, and ash
Edible vegetables, certain roots & tubers	Mineral fuels, mineral oils and products
Edible fruits & nuts	
Coffee, tea, mate and spices	**Animals, vegetable oils and fats**
Cereals	Residues and waste from the food industries
Product of the milling industry, malt, starch	Animal or vegetable fats and oils
Oils, seeds, oligeneous fruits	
Vegetable plating materials	**Chemicals & Related Products**
Prepared foodstuffs	Products of chemical or allied industries
Sugar & sugar confectionary	Organic chemicals
Cocoa & cocoa preparations	Pharmaceutical products
Cereal, flour, starch, milk preparations	Fertilizers
Preparation of vegetables, fruits, nuts	Tanning or dyeing products
Miscellaneous edible products	Essential oils, perfumery, cosmetic toilet pre
	Soap, organic surface-active agents, washing
Manufactured Goods chiefly by material	Albuminoidal substances, glues, enzymes
Plastics & articles	Explosives, pyrotechnic products, matches
Rubber & articles	Miscellaneous chemical products
Raw hides, skins, leather furskins	
Articles of leather, saddlery, harness	**Machinery & Transport Equipment**
Fur-skins and artificial fur, manufactures thereof	Machinery, mechanical appliances, electrical equipment
Wood & wood articles, charcoal, cork	Electrical machinery, equipment and parts
Cork & articles of	Vehicles, aircraft, vessels, railway
Manufactures of straw	Vehicles other than railway, tramway, parts
Wood pulp/other fibrous cellulosic material	Aircraft, spacecraft, and parts
Paper & paper board	Ships, boats, and floating structures
Printed books, papers, pictures	
Textiles & textile articles	**Miscellaneous Manufactured Articles**
Wool, fine or coarse hair	Photographic or cinematographic good
Cotton	Articles of apparel & clothing accessories
Other vegetable textile fibres, paper yarn	Footwear, headgear, umbrellas, walking sticks
Man-made filaments, strip and the like of man-made textile materials	Headgear and parts
Man-made staple fibres	Toy umbrellas, sun umbrellas, walking sticks
Wadding, fels and nonwovens, special yarns	Prepared feathers and down and articles

Carpets and other textile floor coverings	Optical, cinematographic, photographic goods
Special woven fabrics, tufted textile fabrics	Checking, medical, surgical equipment
Impregnated, coated, covered, laminated textile	Clocks, watches, parts
Knitted or crocheted fabric	Musical instruments
Other made up textile articles	Miscellaneous manufactured articles
Articles of stone, plaster, cements	Toys, games and spot requisites
Ceramic products	
Glass and glassware	**Commodities n.e.c***
Natural or cultural pearls	Arms and ammunition
Base metals and articles of	Miscellaneous manufactured articles
Articles of iron or steel	Work of art, collectors' pieces and antiques
Copper & articles thereof	Commodities & transaction not classified according to kind
Nickel & articles thereof	
Aluminium & articles thereof	
Lead & articles thereof	
Zinc & articles thereof	
Tin & articles thereof	
Other base metals	
Tools, implements, cutlery, spoons	
Miscellaneous articles of base & metal	

Note: For our analysis we used the HS6 (Harmonised System for classifying imported goods at 6-digit level). The HS is organised into 99 chapters and 21 sections, with around 300 items under each chapter. The representation of the 6 digits is as follows: the first two digits is the chapter in which the good falls, the next two represents the group in that chapter, and the last two digits identify more specific description of the good. For presentation of results, we aggregated the products by broad category shown in this table using the Standard International Trade Classification (SITC) as a guide. *n.e.c is not elsewhere classified.

A.10: Imports and tariff revenue results disaggregated by HS6 chapter

Table 8 shows the base year imports, and the EU-EPA impact on imports and tariff revenue disaggregated by the HS6 chapter level (99 chapters) under the assumption of full liberalisation, while Table 9 provides results under partial liberalisation. There are approximately 300 items included under each of these chapters.

Table 8: Base year imports and EU-EPA impact on tariff and imports disaggregated by chapter level under full liberalisation.

	Full Liberalisation	**Base Year Imports F$M**			**Tariff revenue impact F$M**				**Impact on imports F$M**		
Chapter	**PRODUCT DESCRIPTION**	**Region**	**EU**	**ROW**	**Direct: from Existing EU imports**	**Indirect: from Region**	**Indirect: from ROW**	**Total tariff revenue effect**	**Change in imports from EU**	**Change in imports from REG**	**Change in imports from ROW**
1	Live animals	-	-	3,314,256	-	-		-	-	-	-
2	Meat and edible meat offal	-	30,026	54,021,826	-4,504	-	-1,200	-5,704	6,233	-	-6,233
3	Fish and crustaceans, molluscs and other aquative invertibrates	1,330,708	270,360	248,506,637	-40,554	-	-8,465	-49,019	56,091	-299	-55,792
4	Dairy produce; birds' eggs; natural honey; edible prod of animal origin	-	40,743	68,480,719	-5,801	-	-1,080	-6,880	8,034	-	-8,034
5	Products of animal origin n.e.s	-	-	261,635	-	-	-	-	-	-	-
6	Vegetable Products	486	-	30,103	-	-	-	-	-	-	-
7	Edible vegetables and certain roots and tubers	-	23,738	47,470,773	-1,187	-	-32	-1,219	1,186	-	-1,186
8	Edible fruit and nuts; peel of citrus	4,988	984	13,933,742	-49	-	-3	-52	49	-0	-49

	fruit or melons										
9	Coffee, tea, mate and spice	549,411	97,832	11,659,137	-4,943	-	-464	-5,406	4,897	-220	-4,677
10	Cereals	203,112	1,065	144,577,847	-53	-0	-2	-55	53	-0	-53
11	Products of the milling industry; malt; starches, wheat gluten	92	961	8,863,155	-48	-	-2	-50	48	-0	-48
12	Oil seeds and oleaginous fruits;	5,636,655	-	2,652,300	-	-	-	-	-	-	-
13	Lac; gums, resins and other vegetable saps and extracts	-	-	525,289	-	-	-	-	-	-	-
14	Vegetable plaiting materials; vegetable products	5,214	-	19,552	-	-	-	-	-	-	-
15	Animal or vegetable fats & oils	-	706,579	61,718,268	-101,354	-	-17,460	-118,814	104,564	-	-104,564
16	Prepared foodstuffs	5,738,022	1,162	26,618,684	-372	-9	-138	-519	531	-94	-437
17	Sugar and sugar confectionery	-	144,130	27,297,219	-46,122	-	-10,877	-56,999	33,991	-	-33,991
18	Cocoa and cocoa preparations	-	718,764	6,630,241	-229,856	-	-33,830	-263,686	153,617	-	-153,617
19	Preparations of cereals, flour, starch or milk	329	287,121	17,538,688	-73,454	-0	-15,161	-88,615	58,831	-1	-58,830
20	Preparations of vegetables, fruits, nuts	2,044	4,612,348	19,815,827	-1,345,444	-	-231,721	-1,577,165	854,117	-88	-854,029
21	Miscellaneous edible preparations	312	733,917	26,628,392	-95,318	-0	-29,293	-124,611	100,428	-1	-100,427
22	Beverages, spirits and vinegar	3,286	2,385,975	26,529,178	-716,918	-9	-271,151	-988,078	1,477,280	-183	-1,477,097

23	Residues and waste from the food industries;	2,138	25,039	3,330,630					34,475	-22	-34,453
24	Tobacco and manufactured tobacco substitutes	-	25,617	21,341,515	-8,038	-1	-2,797	-10,835	1,919	-	-1,919
25	Mineral Products	26,551	900,662	1,229,637,050	-1,281	-	-483	-1,764			
26	Ores, slag and ash	6,433	13,958	14,978,931	-	-	-	-			
27	Mineral fuels, mineral oils and products				-45,033	-	-4,357	-49,390	33,750	-1	-33,752
28	Products of the chemical or allied industries				-698	-	-29	-727	523	-0	-523
29	Organic chemicals	138	20,705	10,115,957	-1,087	-	-90	-1,177	805	-0	-805
30	Pharmaceutical products	44,759	2,100,297	51,126,975	-	-	-	-	-	-	-
31	Fertilisers	-	6,659,361	14,669,653	-	-	-	-	-	-	-
32	Tanning or dyeing extracts;	11,025	834,668	16,464,598	-134,653	-0	-11,290	-145,943	85,135	-57	-85,079
33	Essential oils and resinoids; perfumery,cosmetic ,toilet prep	33,189	10,622,651	33,859,532	-895,216	-62	-78,380	-973,658	943,109	-924	-942,185
34	Soap, organic surface-active agents, washing prep artificial waxes, candles, dental waxes	198,298	59,642	21,269,822	-11,913	-14	-4,692	-16,619	15,272	-141	-15,131
35	Albuminoidal substances; glues, enzymes	-	108,935	8,240,689	-16,319	-	-1,633	-17,952	11,151	-	-11,151
36	Explosives; pyrotechnic products; matches;	75,579	173,829	10,522,312	-8,691	-	-594	-9,285	6,413	-46	-6,368

37	Photographic or cinematographic good	169	31,846	4,867,382	-1,592	-0	-115	-1,707	2,373	-0	-2,373
38	Miscellaneous chemical products	6,482	628,167	28,862,722	-31,932	-0	-857	-32,789	23,362	-5	-23,356
39	Plastics & articles thereof	83,755	583,193	133,654,241	-98,286	-4	-8,450	-106,739	61,806	-39	-61,767
40	Rubber and articles thereof	269,381	1,686,670	43,518,772	-369,949	-137	-51,541	-421,627	222,611	-1,369	-221,242
41	Raw hides & skins, leather, furskins & articles	-	28,460	2,540,211	-1,423	-	-199	-1,622	3,987	-	-3,987
42	Articles of leather; saddlery and harness	13,892	87,776	8,008,338	-13,227	-0	-5,409	-18,636	32,563	-56	-32,507
43	Furskins and artificial fur; manufactures thereof	-	-	6,284	-	-	-	-	-	-	-
44	Wood & articles of wood: charcoal, cork	1,003,511	14,729	12,078,044	-2,329	-0	-289	-2,618	2,959	-227	-2,732
45	Cork and articles of cork	-	-	31,179	-	-	-	-	-	-	-
46	Manufactures of straw, of esparto or of other plaiting	-	-	155,579	-	-	-	-	-	-	-
47	Pulp of wood or of other fibrous cellulosic material	-	-	533	-	-	-	-	-	-	-
48	Paper and paperboard	5,170	5,015,804	22,615,152	-206,563	-18	-21,164	-227,745	112,424	-258	-112,166
49	Printed books, newspapers, pictures	-	1,135	87,996	-285,814	-	-15,149	-300,963	338,885	-77	-338,807
50	Textiles &textile articles	-	47,572	4,771,236	-57	-	-5	-62	107	-	-107

51	Wool, fine or coarse animal hair	-	822,983	29,975,596	-2,379	-	-226	-2,604	4,514	-	-4,514
52	Cotton	-	-	178,343	-41,149	-	-3,838	-44,987	76,762	-	-76,762
53	Other vegetable textile fibres; paper yarn	-	105,700	11,313,628	-	-	-	-	-	-	-
54	Man-made filaments; strip and the like of man-made textile materials	6,978	1,051,794	42,797,097	-5,285	-	-502	-5,787	10,036	-	-10,036
55	Man-made staple fibres	645	49,976	3,455,593	-52,590	-	-4,918	-57,508	98,380	-16	-98,363
56	Wadding, nonwovens; special yarns	592	204	2,813,298	-2,517	-	-645	-3,163	4,745	-1	-4,745
57	Carpets and other textile floor coverings	160	2,458	5,523,832	-31	-	-8	-39	54	-0	-54
58	Special woven fabrics; tufted textile fabrics	-	28,022	7,084,779	-123	-	-12	-135	235	-0	-235
59	Impregnated, coated, covered or laminated textile	-	8,106	12,106,025	-1,401	-	-136	-1,537	2,675	-	-2,675
60	Knitted or crocheted fabric	1,237	25,745	12,785,731	-405	-	-39	-444	776	-	-776
61	Articles of apparel and clothing accessories: knitted or crocheted	13,378	70,466	22,244,511	-8,238	-0	-6,047	-14,286	19,017	-2	-19,015
62	Articles of apparel and clothing accessories; not knitted or crocheted	910,511	32,633	19,426,519	-13,542	-2	-9,731	-23,276	32,088	-19	-32,069
63	Other made up textile articles; sets	61	11,292	14,322,452	-10,443	-108	-7,292	-17,843	24,114	-1,080	-23,035

64	Footwear, headgear, umbrellas, walking sticks	145	6,841	1,218,867	-1,939	-0	-1,337	-3,275	4,402	-0	-4,402
65	Headgear and parts thereof	44	363	1,667,659	-2,156	-	-779	-2,935	2,630	-0	-2,630
66	Toy Umbrellas, sun umbrellas, walking-sticks, seat-sticks,	253	16	573,001	-36	-	-8	-44	51	-0	-51
67	Prepared feathers and down and articles	296	30,860	6,877,576	-2	-	-0	-3	3	-0	-3
68	Articles of stone, plaster, cement	720	172,839	11,553,714	-3,225	-	-291	-3,516	4,526	-0	-4,526
69	Ceramic products	307	75,664	13,428,578	-15,725	-	-1,138	-16,863	22,033	-1	-22,031
70	Glass and glassware	13,790	454,858	28,173,620	-3,783	-	-286	-4,069	5,643	-0	-5,643
71	Natural or cultured pearls	24,355	142,317	57,080,075	-453	-0	-3	-457	669	-0	-669
72	Base metals & articles of base metal	252,203	887,253	69,486,877	-7,116	-	-555	-7,671	10,647	-5	-10,643
73	Articles of iron or steel	599	148,588	11,715,747	-86,940	-4	-16,803	-103,747	115,213	-417	-114,796
74	Copper and articles thereof	-	-	46,516	-7,590	-	-596	-8,186	11,191	-1	-11,190
75	Nickel and articles thereof	26,866	80,109	21,917,613	-	-	-	-	-	-	-
76	Aluminium and articles thereof	26,866	80,109	21,917,613	-15,244	-	-1,411	-16,655	19,125	-23	-19,101
78	Lead and articles thereof	-	-	639,511	-	-	-	-	-	-	-
79	Zinc and articles thereof	-	-	371,475	-	-	-	-	-	-	-
80	Tin and articles thereof	-	-	369,565	-	-	-	-	-	-	-

81	Other Base metals; cermets; articles thereof	-	-	13,066	-	-	-	-	-	-	-
82	Tools, implements, cutlery, spoons	11,959	832,501	12,908,132	-41,625	-	-2,930	-44,555	58,658	-54	-58,604
83	Miscellaneous articles of base metal	4,785	154,727	11,966,057	-7,840	-0	-788	-8,628	11,592	-5	-11,588
84	Machinery & electrical appliances; Electrical Equipmnt	798,465	20,260,972	300,536,517	-1,053,245	-	-97,443	-1,150,688	1,469,570	-3,894	-1,465,676
85	Electrical machinery and equipment and parts thereof	2,153,745	5,533,538	208,006,308	-283,717	-0	-36,679	-320,397	374,400	-3,837	-370,563
86	Vehicles, aircraft, vessels, railway	8,590	-	2,073,445	-	-	-	-	-	-	-
87	Vehicles other than railway or tramway rolling stock & parts	187,944	3,553,347	148,247,859	-790,323	-20	-371,115	-1,161,458	2,108,660	-2,670	-2,105,990
88	Aircraft, spacecraft, and parts thereof	5,726	10,752,763	42,609,547	-537,638	-	-75,120	-612,758	1,502,596	-202	-1,502,394
89	Ships, boats and floating structures	201,660	334,990	24,965,778	-100,959	-227	-82,094	-183,279	285,398	-2,287	-283,111
90	Optical, photographic, cinematographic, medical, surgical equip	142,652	1,448,249	48,810,639	-52,742	-	-2,299	-55,041	75,969	-221	-75,748
91	Clocks and watches and parts thereof	31,189	74,057	6,554,794	-	-	-	-	-	-	-
92	Musical Instruments	-	33,929	893,533	-49	-	-0	-49	71	-	-71

93	Arms & Ammunition	-	8,644	194,155	-2,766	-	-864	-3,630	3,243	-	-3,243
94	Misc. manufactured articles	3,459	426,975	29,525,673	-115,246	-1	-35,112	-150,360	138,915	-16	-138,899
95	Toys, games and sports requisites	8,884	213,575	14,210,285	-11,019	-	-713	-11,733	15,689	-10	-15,679
96	Miscellaneous manufactured articles	41,331	81,782	26,398,195	-7,255	-0	-2,279	-9,535	10,278	-16	-10,262
97	Works of art, collectors' pieces and antique	-	3,374	145,902	-169	-	-12	-181	247	-	-247
99	Commodities and Transactions Not Classified according to kind	352,090	748,884	19,609,794	-3,386	-	-300	-3,686	4,895	-86	-4,809
	TOTAL	**20,677,941**	**89,184,977**	**3,924,125,840**	**-8,090,369**	**-617**	**-1,592,751**	**-9,683,737**	**11,323,296**	**-18,973**	**-11,304,322**
	Total excluding aircraft	20,672,215	78,432,214	3,881,516,293	-7,552,731	-617	-1,517,631	-9,070,979	9,820,697	-18,771	-9,801,928
	Total excluding mineral fuels	20,651,390	88,284,315	2,694,488,790	-8,045,336	-617	-1,588,394	-9,634,347	11,289,543	-18,973	-11,270,570
	Total excl mineral fuels & aircraft	20,645,664	77,531,552	2,651,879,243	-7,507,698	-617	-1,513,274	-9,021,589	9,786,947	-18,771	-9,768,176

Table 9: Base year imports and EU-EPA impact on tariff and imports disaggregated by chapter level under partial liberalisation.

	Partial Liberalisation	**Tariff revenue impact F$M**				**Effect on imports F$M**		
HS code	**Product description**	**Direct: from Existing EU imports**	**Indirect: from Region**	**Indirect: from ROW**	**Total tariff revenue effect**	**Change in imports from EU (total substitution)**	**Change in imports from REG**	**Change in imports from ROW**
1	Live animals	-	-	-	-			
2	Meat and edible meat offal	-222	-	-77	-299	307		-307

3	Fish and crustaceans, molluscs and other aquative invertibrates	-11,072	-	-2,371	-13,443	15,310	-281	-15,028
4	Dairy produce; birds' eggs; natural honey; edible prod of animal origin	-5,749	-	-968	-6,717	7,972	-	-7,972
5	Products of animal origin n.e.s	-	-	-	-	-	-	-
6	Vegetable Products	-	-	-	-	-	-	-
7	Edible vegetables and certain roots and tubers	-4	-	-0	-4	3	-	-3
8	Edible fruit and nuts; peel of citrus fruit or melons	-45	-	-2	-47	45	-0	-45
9	Coffee, tea, mate and spice	-4,822	-	-245	-5,066	4,651	-196	-4,455
10	Cereals	-53	-	-0	-53	53	-	-53
11	Products of the milling industry; malt; starches, wheat gluten	-40	-	-2	-42	40	-	-40
12	Oil seeds and oleaginous fruits;	-	-	-	-	-	-	-
13	Lac; gums, resins and other vegetable saps and extracts	-	-	-	-	-	-	-
14	Vegetable plaiting materials; vegetable products	-	-	-	-	-	-	-
15	Animal or vegetable fats & oils	-101,354	-	-18,114	-119,468	104,178	-	-104,178
16	Prepared foodstuffs; beverages, spirits & Vinegar; Tobacco & Subs	-	-	-	-	-	-	-
17	Sugar and sugar confectionery	-	-	-	-	-	-	-
18	Cocoa and cocoa preparations	-	-	-	-	-	-	-

19	Preparations of cereals, flour, starch or milk	-	-	-	-	-	-	-
20	Preparations of vegetables, fruits, nuts	-19,764	-	-4,793	-24,557	15,644	-	-15,644
21	Miscellaneous edible preparations	-	-	-	-	-	-	-
22	Beverages, spirits and vinegar	-	-	-	-	-	-	-
23	Residues and waste from the food industries;	-	-	-	-	-	-	-
24	Tobacco and manufactured tobacco substitutes	-7,729	-	-2,958	-10,687	30,615	-	-30,615
25	Mineral products	-1,281	-	-483	-1,764	1,919	-	-1,919
26	Ores, slag and ash	-	-	-	-	-	-	-
27	Mineral fuels, mineral oils and products	-3,504	-	-358	-3,862	2,628	-	-2,628
28	Products of the chemical or allied industries	-698	-	-29	-727	523	-0	-523
29	Organic chemicals	-1,087	-	-90	-1,177	805	-0	-805
30	Pharmaceutical products	-	-	-	-	-	-	-
31	Fertilisers	-	-	-	-	-	-	-
32	Tanning or dyeing extracts;	-16,313	-0	-712	-17,025	11,079	-1	-11,078
33	Essential oils and resinoids; perfumery, cosmetic, toilet prep	-895,216	-62	-78,380	-973,658	943,109	-924	-942,185
34	Soap, organic surface-active agents, washing prep artificial waxes, candles, dental waxes	-636	-	-56	-692	928	-	-928
35	Albuminoidal substances; glues, enzymes	-16,319	-	-1,633	-17,952	11,151	-	-11,151

36	Explosives; pyrotechnic products; matches;	-	-	-	-	-	-	-
37	Photographic or cinematographic good	-1,592	-0	-115	-1,707	2,373	-0	-2,373
38	Miscellaneous chemical products	-27,906	-0	-762	-28,667	20,093	-9	-20,084
39	Plastics & articles thereof	-71,227	-0	-4,588	-75,815	44,597	-5	-44,592
40	Rubber and articles thereof	-325,826	-107	-48,738	-374,671	194,823	-1,069	-193,754
41	Raw hides & skins, leather, furskins & articles	-1,423	-	-199	-1,622	3,987	-	-3,987
42	Articles of leather; saddlery and harness	-13,227	-0	-5,409	-18,636	32,563	-56	-32,507
43	Furskins and artificial fur; manufactures thereof	-	-	-	-	-	-	-
44	Wood & articles of wood: charcoal, cork	-	-	-	-	-	-	-
45	Cork and articles of cork	-	-	-	-	-	-	-
46	Manufactures of straw, of esparto or of other plaiting	-	-	-	-	-	-	-
47	Pulp of wood or of other fibrous cellulosic material	-	-	-	-	-	-	-
48	Paper and paperboard	-192,826	-	-13,820	-206,646	104,518	-114	-104,404
49	Printed books, newspapers, pictures	-285,814	-	-15,149	-300,963	338,885	-77	-338,807
50	Textiles &textile articles	-57	-	-5	-62	107	-	-107
51	Wool, fine or coarse animal hair	-2,379	-	-226	-2,604	4,514	-	-4,514
52	Cotton	-41,149	-	-3,838	-44,987	76,762	-	-76,762
53	Other vegetable textile fibres; paper yarn	-	-	-	-	-	-	-

54	Man-made filaments; strip and the like of man-made textile materials	-5,285	-	-502	-5,787	10,036	-	-10,036
55	Man-made staple fibres	-52,590	-	-4,918	-57,508	98,380	-16	-98,363
56	Wadding, felt and nonwovens; special yarns	-2,517	-	-645	-3,163	4,745	-1	-4,745
57	Carpets and other textile floor coverings	-31	-	-8	-39	54	-0	-54
58	Special woven fabrics; tufted textile fabrics	-123	-	-5	-128	236	-0	-106
59	Impregnated, coated, covered or laminated textile	-1,401	-	-136	-1,537	2,675	-	-2,675
60	Knitted or crocheted fabric	-405	-	-39	-444	776	-	-776
61	Articles of apparel and clothing accessories	-2,755	-	-2,029	-4,784	6,342	-	-6,342
62	Articles of apparel and clothing accessories	-1,049	-1	-761	-1,811	2,422	-11	-2,412
63	Other made up textile articles; sets	-1,102	-	-802	-1,904	2,534	-	-2,534
64	Footwear, headgear, umbrellas, walking sticks	-310	-	-91	-401	874	-	-874
65	Headgear and parts thereof	-2,156	-	-779	-2,935	2,630	-0	-2,630
66	Toy Umbrellas, sun umbrellas, walking-sticks, seat-sticks,	-36	-	-8	-44	51	-0	-51
67	Prepared feathers and down and articles	-2	-	-0	-3	3	-0	-3
68	Articles of stone, plaster, cement	-3,225	-	-291	-3,516	4,526	-0	-4,526
69	Ceramic products	-15,725	-	-1,138	-16,863	22,033	-1	-22,031
70	Glass and glassware	-3,783	-	-286	-4,069	5,643	-0	-5,643

71	Natural or cultured pearls	-453	-0	-3	-457	669	-0	-669
72	Base metals & articles of base metal	-7,116	-	-545	-7,660	10,647	-5	-10,643
73	Articles of iron or steel	-1,141	-	-172	-1,312	1,704	-	-1,704
74	Copper and articles thereof	-7,590	-	-596	-8,186	11,191	-1	-11,190
75	Nickel and articles thereof	-	-	-	-	-	-	-
76	Aluminium and articles thereof	-15,244	-	-1,411	-16,655	19,125	-23	-19,101
78	Lead and articles thereof	-	-	-	-	-	-	-
79	Zinc and articles thereof	-	-	-	-	-	-	-
80	Tin and articles thereof	-	-	-	-	-	-	-
81	Other Base metals; cermets; articles thereof	-	-	-	-	-	-	-
82	Tools, implements, cutlery, spoons	-41,625	-	-2,930	-44,555	58,658	-54	-58,604
83	Miscellaneous articles of base metal	-7,840	-0	-788	-8,628	11,592	-5	-11,588
84	Machinery & electrical Equipmnt	-1,051,802	-	-93,584	-1,145,385	1,464,821	-1,754	-1,463,067
85	Electrical machinery and equipment and parts thereof	-283,717	-0	-36,679	-320,397	374,400	-3,837	-370,563
86	Vehicles, aircraft, vessels, railway	-	-	-	-	-	-	-
87	Vehicles other than railway or tramway rolling stock & parts	-378,771	-16	-177,621	-556,408	1,042,514	-268	-1,042,247
88	Aircraft, spacecraft, and parts thereof	-537,638	-	-75,120	-612,758	1,502,596	-202	-1,502,394
89	Ships, boats and floating structures	-1,155	-	-242	-1,397	4,011	-2	-4,009
90	Optical, photographic, cinematographic, checking, medical, surgical equip	-52,742	-	-2,299	-55,041	75,969	-221	-75,748

91	Clocks and watches and parts thereof	-	-	-	-	-	-	-
92	Musical Instruments	-49	-	-0	-49	71	-	-71
93	Arms & Ammunition	-2,215	-	-729	-2,944	2,612	-	-2,612
94	Misc. manufactured articles	-115,246	-1	-35,112	-150,360	138,915	-16	-138,899
95	Toys, games and sports requisites	-11,019	-	-713	-11,733	15,689	-10	-15,679
96	Miscellaneous manufactured articles	-7,255	-0	-2,279	-9,535	10,278	-16	-10,262
97	Works of art, collectors' pieces and antique	-169	-	-12	-181	247	-	-247
99	Commodities and Transactions Not Classified according to kind	-3,386	-	-300	-3,686	4,895	-86	-4,809
	TOTAL	**-4,668,002**	**-188**	**-647,692**	**-5,315,883**	**6,888,617**	**-9,263**	**-6,879,354**
	Total excluding aircraft	**-4,130,364**	**-188**	**-572,573**	**-4,703,125**	**5,386,151**	**-9,061**	**-5,376,960**
	Total excluding mineral fuels	**-4,664,498**	**-188**	**-647,335**	**-5,312,021**	**6,886,118**	**-9,263**	**-6,876,726**
	Total excl mineral fuels & aircraft	**-4,126,859**	**-188**	**-572,215**	**-4,699,263**	**5,383,523**	**-9,061**	**-5,374,332**

A.11: Tariff revenue impacts with an EU-EPA and external tariff reform.

Table 10: Tariff revenue impact of the EU-Fiji EPA & external tariff reform.

Aggregated import category	Scenario 1: Full liberalisation			
	(a) Loss from existing EU imports (F$)	**(b) Loss due to ROW substitution (F$)**	**(c) Loss due to Regional Substitution (F$)**	**(d) Total (F$)**
Food & Live Animals	-1,847,704	-16,878,246	-594,173	-19,320,123
Beverages & Tobacco	-724,956	-2,998,106	-497	-3,723,559
Mineral Fuels and Products	-46,314	-1,813,162	0	-1,859,476
Animals, Vegetable Oils & Fats	-101,354	-17,460	0	-118,814
Chemicals & Related Products	-1,100,509	-2,833,268	-22,092	-3,955,868
Manufactured Goods	-1,283,512	-14,200,850	-141,660	-15,626,021
Machinery & Transport	-2,765,882	-9,522,444	-21,680	-12,310,006
Misc. Manufactured Articles	-206,563	-6,472,638	-994	-6,680,195
Commodities nec	-13,576	-765,860	-1,285	-780,720
Total	**-8,090,369**	**-55,502,034**	**-782,380**	**-64,374,783**
	Scenario 2: Partial liberalisation			
Food & Live Animals	-41,770	-1,551,105	-11,294	-1,604,169
Beverages & Tobacco	-7,729	-16,636	0	-24,365
Mineral Fuels and Products	-4,785	-1,600,469	-104	-1,605,358
Animals, Vegetable Oils & Fats	-101,354	-18,114	0	-119,468
Chemicals & Related Products	-958,174	-317,027	-2,262	-1,277,463
Manufactured Goods	-1,101,123	-4,886,526	-20,890	-6,008,539
Machinery & Transport	-2,253,083	-5,516,643	-1,680	-7,771,406
Misc. Manufactured Articles	-186,958	-2,223,726	-833	-2,411,517
Commodities nec	-13,025	-765,742	-1,285	-780,052
Total	**-4,668,002**	**-16,895,987**	**-38,348**	**-21,602,337**

B: Appendices to Chapter 2

B1. The ACP group

The ACP group comprises of 79 states from Africa, Caribbean and the Pacific. These countries are listed in Table 11.

Table 11: List of ACP countries.

Angola - Antigua and Barbuda - Belize - Cape Verde - Comoros - Bahamas - Barbados - Benin - Botswana - Burkina Faso - Burundi - Cameroon - Central African Republic - Chad - Congo (Brazzaville) - Congo (Kinshasa) - Cook Islands - Cte d'Ivoire - Cuba - Djibouti - Dominica - Dominican Republic - Eritrea - Ethiopia - Fiji - Gabon - Gambia - Ghana - Grenada - Republic of Guinea - Guinea-Bissau - Equatorial Guinea - Guyana - Haiti - Jamaica - Kenya - Kiribati - Lesotho - Liberia - Madagascar - Malawi - Mali - Marshall Islands - Mauritania - Mauritius - Micronesia - Mozambique - Namibia - Nauru - Niger - Nigeria - Niue - Palau - Papua New Guinea - Rwanda - St. Kitts and Nevis - St. Lucia - St. Vincent and the Grenadines - Solomon Islands - Samoa - Sao Tome and Principe - Senegal - Seychelles - Sierra Leone - Somalia - South Africa - Sudan - Suriname - Swaziland - Tanzania - Timor Leste - Togo - Tonga - Trinidad and Tobago - Tuvalu - Uganda - Vanuatu - Zambia – Zimbabwe.
(Source: www.acp.int)

B2. CUSFTA, NAFTA & MERCOSUR

Three trade agreements that have received considerable research interest include the CUSFTA, NAFTA and the MERCOSUR. Table 12 provides details of these agreements.

Table 12: Details of Agreements

CUSFTA: Canada US Free Trade Agreement	This was signed in 1988 by the US and Canada to facilitate trade across borders between these two countries by reducing trade barriers. After Mexico joined in in 1994, this agreement was replaced by NAFTA.
NAFTA: North American Free Trade Agreement	This was formed in 1994 by the US, Canada and Mexico to eliminate trade and investment barriers between members.
MERCOSUR	Southern common market comprising Argentina, Brazil, Paraguay, Uruguay, Venezuela.

(Source: www.wto.org)

B3. Description of variables and data source for the empirical model

The data for the empirical model presented in section 2.4 has been sourced from various sources, as summarised in Table 13.

Table 13: Description and data source of variables used in equation 1 in section 2.4.

Variable	Description	Source
Dependent Variable		
FDI*	Foreign Direct Investment Stock of OECD country into ACP country, in millions of USD.	International Direct Investment Statistics database: OECD
Independent Variables		
Host GDP* (*ACPGDP*)	ACP country GDP, PPP (constant 2011 international $)	WDI
Source GDP* (*OECDGDP*)	OECD country GDP, PPP (constant 2011 international $)	WDI
Host Labor Force* (*LF*)	Size of labor force of host country.	WDI
Host Trade Openness (*TO*)	Share of exports and imports of goods and services as a % of GDP of the ACP country	WDI
Host Natural resource rent* (*NRR*)	Sum of the natural resource (oil, natural gas, coal, mineral, forest) rents received by ACP country as a % of GDP	WDI
Host Investment risk* (*IR*)	A measure of economic freedom based on both quantitative and qualitative factors	Heritage Foundation
Bilateral PTA	Preferential Trade Agreement	WTO
Bilateral BIT	Bilateral Investment Treaty	UNCTAD
Bilateral DTT	Double Taxation Treaty	UNCTAD
Bilateral Distance* (*Dist*)	Bilateral Great circle distance (in kilometres)	CEPII
Bilateral Time difference (*OH*)	Overlap in office hours	www.timeanddate.com
Host Surrounding Market Potential* (*SMP*)	The sum of inverse-distance weighted GDPs of nearby markets.	GDP Data from WDI Distance from CEPII
Host number of PTAs (*NPTA*)	The total number of PTAs of which the host is a member	WTO

Note: * indicates variables transformed by logs.

B4. A summary of the country pairs used in the empirical model

This study used a bilateral econometric specification. Hence, the data set has parent countries (OECD countries from where FDI originates) and host countries (ACP FDI

recipients). In total, there are 305 country pairs in our sample, as reported in Table 14. Furthermore, Table 15 provides a summary of the number of ACP partners for each OECD parent country, while Table 16 is a summary of the number of OECD parents that each ACP host country has.

Table 14: Country Pair by host ACP and origin OECD country.

Country Pair No.	Host (ACP)	Parent (OECD)	Country Pair No.	Host (ACP)	Parent (OECD)
1	Angola	Belgium	153	Malawi	Denmark
2		Denmark	154		France
3		France	155		Italy
4		Germany	156		Netherlnds
5		Italy	157		UK
6		Korea	158		US
7		Netherlands	159	Mali	France
8		Norway	160		Italy
9		Portugal	161		Netherlnds
10		US	162		Norway
11	Bahamas	Chile	163	Mauritania	France
12		Denmark	164		Italy
13		France	165		Netherlnds
14		Germany	166	Mauritius	Belgium
15		Greece	167		Denmark
16		Italy	168		France
17		Netherlands	169		Germany
18		Norway	170		Italy
19		Sweden	171		Korea
20		UK	172		Netherlnds
21		US	173		Norway
22	Barbados	Canada	174		UK
23		France	175		US
24		Germany	176	Mozambique	Denmark
25		Italy	177		France
26		Netherlands	178		Italy
27		Norway	179		Netherlnds
28		UK	180		Norway
29		US	181		Portugal
30	Belize	Canada	182		UK
31		Hungary	183		US
32		Italy	184	Niger	France
33		Netherlnds	185		Greece
34		Norway	186		Italy
35		UK	187		Netherlnds
36		US	188	Nigeria	Belgium
37	Benin	France	189		Denmark
38		Italy	190		France
39		Korea	191		Germany
40		Netherlnds	192		Greece
41		Norway	193		Italy
42		US	194		Korea
43	Burkina Faso	France	195		Netherlnds
44		Italy	196		Norway
45		Netherlands	197		Portugal
46		Norway	198		Switzerland
47	Burundi	Italy	199		UK

Country Pair No.	Host (ACP)	Parent (OECD)	Country Pair No.	Host (ACP)	Parent (OECD)
48		Netherlands	200		US
49	Cameroon	Denmark	201	Papua New Guinea	Australia
50		France	202		Canada
51		Italy	203		Italy
52		Korea	204		Korea
53		Netherlands	205		Netherlnds
54		Norway	206		NZ
55		UK	207		UK
56		US	208		US
57	Central African Republic	France	209	Rwanda	France
58		Italy	210		Italy
59		Korea	211		Netherlnds
60	Chad	France	212	Samoa	Italy
61		Italy	213		Korea
62		Netherlnds	214		NZ
63	Congo	France	215	Senegal	France
64		Italy	216		Italy
65		Korea	217		Korea
66		Netherlnds	218		Netherlnds
67		US	219		US
68	Cuba	France	220	Sierra Leone	Denmark
69		Italy	221		Hungary
70		Netherlnds	222		Italy
71		Spain	223		Korea
72	Dominican Republic	Canada	224		Netherlnds
73		Chile	225		Norway
74		Denmark	226	Solomons	Italy
75		Estonia	227		Korea
76		France	228	South Africa	Australia
77		Germany	229		Austria
78		Italy	230		Belgium
79		Korea	231		Canada
80		Mexico	232		Denmark
81		Netherlnds	233		Estonia
82		Norway	234		Finland
83		Slovenia	235		France
84		Spain	236		Germany
85		UK	237		Greece
86		US	238		Hungary
87	Equatorial Guinea	France	239		Iceland
88		Italy	240		Italy
89		Korea	241		Japan
90		Norway	242		Korea
91		US	243		Netherlnds
92	Ethiopia	France	244		Norway
93		Italy	245		Portugal
94		Korea	246		Slovenia
95		Netherlnds	247		Spain
96		Norway	248		Sweden
97		SR	249		Switzerland
98		US	250		UK
99	Fiji	AU	251		US
100		France	252	St Lucia	France
101		Korea	253		Italy
102		Netherlnds	254		Netherlnds
103		NZ	255		US
104		UK	256	St Vincent &	France

Country Pair No.	Host (ACP)	Parent (OECD)	Country Pair No.	Host (ACP)	Parent (OECD)
105		US	257	Grenadines	Italy
106	Gabon	France	258		Norway
107		Italy	259	Tanzania	Denmark
108		Netherlnds	260		France
109		Norway	261		Germany
110		Slovenia	262		Italy
111		US	263		Korea
112	Gambia	France	264		Netherlnds
113		Italy	265		Norway
114		Netherlnds	266		Sweden
115	Ghana	Canada	267		UK
116		Denmark	268	Togo	France
117		France	269		Germany
118		Germany	270		Italy
119		Italy	271		Netherlnds
120		Korea	272		Norway
121		Netherlnds	273		US
122		Norway	274	Tonga	Australia
123		Sweden	275		Italy
124		UK	276		Korea
125		US	277	Trinidad & Tobago	Canada
126	Kenya	Denmark	278		France
127		Estonia	279		Italy
128		France	280		Korea
129		Germany	281		Netherlnds
130		Greece	282		Norway
131		Italy	283		UK
132		Korea	284		US
133		Netherlnds	285	Uganda	Denmark
134		Norway	286		France
135		Sweden	287		Germany
136		Switzerland	288		Italy
137		UK	289		Korea
138		US	290		Netherlnds
139	Liberia	Denmark	291		Norway
140		France	292		UK
141		Germany	293		US
142		Greece	294	Vanuatu	France
143		Italy	295		Italy
144		Korea	296		Korea
145		Netherlnds	297		US
146		Norway	298	Zimbabwe	Canada
147		Slovenia	299		France
148		US	300		Italy
149	Madagascar	France	301		Korea
150		Italy	302		Netherlnds
151		Korea	303		Norway
152		Netherlands	304		UK
			305		US

(Source: Compiled using data obtained from the International Direct Investment Statistics database of the OECD available at www.oecd.org)

Table 15: Number of ACP partners for each OECD country

OECD Country	No of ACP partners	OECD Country	No of ACP partners
Australia	4	Japan	1
Austria	1	Korea	27
Belgium	4	Mexico	1
Canada	8	Netherlands	38
Chile	2	Norway	26
Denmark	15	NZ	3
Estonia	3	Portugal	4
Finland	1	Slovenia	4
France	38	Spain	3
Germany	13	SR	1
Greece	6	Sweden	5
Hungary	3	Switzerland	3
Iceland	1	UK	18
Italy	43	US	28

(Source: Compiled using data obtained from the International Direct Investment Statistics database of the OECD available at www.oecd.org)

Table 16: Number of OECD partners for each ACP country

ACP country	No of OECD partners	ACP country	No of OECD Partners
Angola	10	Mali	4
Bahamas	11	Mauritania	3
Barbados	8	Mauritius	10
Belize	7	Mozambique	8
Benin	6	Niger	4
Burkina Faso	4	Nigeria	13
Burundi	2	Papua New Guinea	8
Cameroon	8	Rwanda	3
Central African	3	Samoa	3
Chad	3	Senegal	5
Congo	5	Sierra Leone	6
Cuba	4	Solomons	2
Dominican Republic	15	South Africa	24
Equatorial Guinea	5	St Lucia	4
Ethiopia	7	St Vincent & Grenadines	3
Fiji	7	Tanzania	9
Gabon	6	Togo	6
Gambia	3	Tonga	3
Ghana	11	Trinidad & Tobago	8
Kenya	13	Uganda	9
Liberia	10	Vanuatu	4
Madagascar	4	Zimbabwe	8
Malawi	6		

(Source: Compiled using data obtained from the International Direct Investment Statistics database of the OECD available at www.oecd.org)

B4. UNCTAD's list of determinants of FDI

The UNCTAD provides a list of determinants of FDI and the proxy indicators that can be used for these determinants. As summarised in Table 17, the determinants are broadly grouped into market, resources (human and natural) and infrastructure.

Table 17: UNCTAD FDI determinants and proxy indicators.

Market attractiveness	• Size of the market (GDP-PPP) • Spending power (per capita GDP-PPP) • Growth potential of the market (real GDP growth rate)
Availability of low-cost labor and skills	• Unit labor cost • Size of manufacturing workforce
Presence of natural resources	• Exploitation of resources (values of fuels and ores exports) • Agricultural potential
Enabling infrastructure	• Transport infrastructure • Energy infrastructure • Telecom infrastructure

(Source: UNCTAD World Investment Report 2012)

B5. Calculation of selected explanatory variables

Two of the explanatory variables used in our empirical specification are Trade Weighted PTA and Surrounding Market Potential (SMP). Tables 18 and 19 explain how these variables were calculated.

Table 18: Calculation of surrounding market potential

Surrounding market potential is calculated as the inverse distance weighted GDP of surrounding markets. Our approach is similar in spirit to the Blonigen et al. (2007) measure of surrounding market potential except that while Blonigen et al. adopts a broader definition by including all other countries in the world as the surrounding market of a particular country, we only include all other countries within a specific sub-region. The sub-region is defined as the five economic groupings of the African countries (West Africa, Central Africa, Eastern & Southern Africa, Eastern African Countries), Caribbean and the Pacific. The weights are calculated as a simple inverse function where the shortest bilateral distance within the sample is assigned weight of 1, and all other bilateral distances receive a

weight that declines as per the equation below:

$$distance_{ij} = \text{shortest bilateral distance}_{kj}/\text{bilateral distance}_{ij}$$

where $distance_{ij}$ is the distance between country *i* and *j*. Hence the weight for country *i* in calculation of the surrounding market potential of country *j* is obtained by dividing the shortest bilateral distance that country *j* has in that sample (which is with country *k*) with the bilateral distance between *i* and *j*. This weight is then multiplied with the GDP (PPP) of country i. Hence, the inverse distance weighted GDP of all other countries (does not include country j) in the sub-region of country j are summed to give the surrounding market potential of country j. We include GDP of country j as a separate regressor.

B5. Estimation results and diagnostic tests

Table 19: Re-estimation of base model (first-differenced).

Dependent variable Log (FDI)		
Regressors	**Base model**	**Base model: re-estimated**
ACP GDP[1]	0.391** (0.154)	0.197 (0.148)
OECD GDP[1]	0.159 (0.276)	-0.541* (0.222)
Trade Openness	-0.004*** (0.001)	-0.004*** (0.001)
Investment Risk[1]	0.872*** (0.192)	1.446*** (0.189)
Natural Resource Rent[1]	0.024 (0.022)	0.064*** (0.023)
Labor Force[1]	0.591 (0.365)	0.467*** (0.217)
SMP[1]	1.223*** (0.168)	0.585*** (0.190)
Distance[1]	-1.105*** (0.241)	-0.945*** (0.264)
Overlap in office hours	0.028 (0.037)	0.038 (0.037)
BIT	-0.031 (0.065)	-0.069 (0.073)

DTT	1.129*** (0.092)	0.968*** (0.097)
PTA	-0.141 (0.139)	-0.089 (0.136)
NPTA	-0.086*** (0.026)	0.037 (0.031)
Constant	-23.939*** (5.07)	-51.583*** (4.323)

Significance levels: *10% **5% ***1%t. [1]Control variables that are expressed in natural logarithms. ACP GDP. Surrounding market potential (SMP) and OECD GDP are in first differenced forms.

Table 20: Pedroni Residual Cointegration Test (ACP GDP and surrounding market potential).

	Panel Statistic	**Group Statistic**
variance-Statistic	3.241***	
rho-Statistic	-1.531*	1.924
PP-Statistic	-3.342***	-2.189**
ADF Statistic	-5.581***	-6.589***

The Pedroni (1999) Residual Cointegration test employs 4 panel statistics and 3 group statistics, reported in table above. It tests the null hypothesis of no cointegration against the alternative hypothesis of cointegration. * denotes the significance level - * 10%, **5%, ***1%. The null of no cointegration is rejected in all the 4 panel statistics and two of the group statistics, providing evidence of cointegration between ACP GDP and surrounding market potential which are both host country variables. Because our dataset has country pair variables, we have treated these host country variables as host variables and not country pair variables.

Table 21: Unit root test on residuals of base model (model 1).

Method	**Statistic**	**Prob.****	**sections**	**Obs**
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-51.6103	0.0000	242	1624
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-18.3825	0.0000	207	1519

Table 22: Endogeneity test results.

Variable	**Results**
Host GDP	χ^2 =0.90936 p=0.3402
	F=0.889379 p=0.3458
Trade Openness	χ^2 =0.556148 p=0.4558
	F=0.556148 p=0.4687

Table 23: Instrumental Variable Regression.

Regressors	**(a) IV FE estimates**	**(b) Base model**
ACP GDP[1]	0.840** (0.384)	0.391** (0.154)
OECD GDP[1]	0.983* (0.578)	0.159 (0.276)
Trade Openness	-0.007* (0.006)	-0.004*** (0.001)

Investment Risk[1]	1.686**	0.872***
	(0.575)	(0.192)
Natural Resource Rent[1]	0.066	0.024
	(0.078)	(0.022)
Labor Force[1]	-0.659	0.591
	(0.677)	(0.365)
SMP[1]	0.966***	1.223***
	(0.334)	(0.168)
Distance[1]	-0.771	-1.105***
	(0.683)	(0.241)
Overlap in office hours	0.088	0.028
	(1.02)	(0.037)
BIT	-0.098	-0.031
	(0.167)	(0.065)
DTT	0.983***	1.129***
	(0.251)	(0.092)
PTA	0.084	-0.141
	(0.398)	(0.139)
NPTA	0.014	-0.086***
	(0.075)	(0.026)
Constant	-19.943*	-23.939***
	(11.227)	(5.07)

Assuming that host GDP and trade openness are endogenous, we re-estimated this fixed effect model using IV regression (column a), with the use of one year lags as instruments for both these variables. While the coefficient of ACP GDP has increased in size, it's significance and sign are unchanged. A similar observation can be made for the trade openness variable. All other variables show marginal changes.

Table 24: Including Lagged effect (ACP GDP, OECD GDP)

Regressors	**(a) Model a (lagged)**	**(b) Model b (base)**
ACP GDP[1]	0.367**	0.391**
	(0.158)	(0.154)
OECD GDP[1]	0.248	0.159
	(0.276)	(0.276)
Trade Openness	-0.004***	-0.004***
	(0.001)	(0.001)
Investment Risk[1]	0.935***	0.872***
	(0.195)	(0.192)
Natural Resource Rent[1]	0.020	0.024
	(0.023)	(0.022)
Labor Force[1]	0.721*	0.591
	(0.371)	(0.365)
SMP[1]	1.072***	1.223***
	(0.167)	(0.168)
Distance[1]	-1.149***	-1.105***
	(0.242)	(0.241)
Overlap in office hours	0.019	0.028
	(0.037)	(0.037)

BIT	-0.021	-0.031
	(0.669)	(0.065)
DTT	1.130***	1.129***
	(0.092)	(0.092)
PTA	-0.132	-0.141
	(0.139)	(0.139)
NPTA	-0.061**	-0.086***
	(0.028)	(0.026)
ACP GDP_L1	-0.0136	
	(0.057)	
OECD GDP_L1	-0.031	
	(0.247)	
Constant	-23.951	-23.939***
	(5.183)	(5.07)

In model a, we incorporated one-year lagged ACP GDP and OECD GDP to examine if previous years host and origin economy size stimulated more FDI in current year. The coefficients for both lagged ACP GDP and OECD GDP are insignificant, while all other estimates remain intact.

C: Appendices to Chapter 3

C1. Labor source and origin countries.

This table provides a list of all country pairs used in our estimation. The origin country refers to the country from where the labor originates (i.e. the home country of foreign workers), while the host country refers to the foreign country where these workers seek employment. Each combination of origin, host form a country pair.

Table 25: Country Pairs by Origin and Host.

	Origin	**Host**		**Origin**	**Host**		**Origin**	**Host**
1	Bangladesh	Bahrain	131	Philippines	Cambodia	261	Sri Lanka	Bangladesh
2	Bangladesh	Brunei Darussalam	132	Philippines	Cameroon	262	Sri Lanka	Cyprus
3	Bangladesh	Egypt	133	Philippines	Canada	263	Sri Lanka	Egypt
4	Bangladesh	Iraq	134	Philippines	Central African Republic	264	Sri Lanka	Greece
5	Bangladesh	Ireland	135	Philippines	Chad	265	Sri Lanka	HK
6	Bangladesh	Italy	136	Philippines	Chile	266	Sri Lanka	India

7	Bangladesh	Japan	137	Philippines	China	267	Sri Lanka	Israel
8	Bangladesh	Jordon	138	Philippines	Colombia	268	Sri Lanka	Italy
9	Bangladesh	Kuwait	139	Philippines	Congo	269	Sri Lanka	Japan
10	Bangladesh	Lebanon	140	Philippines	Cook Islands	270	Sri Lanka	Jordan
11	Bangladesh	Libya	141	Philippines	Costa Rica	271	Sri Lanka	Kenya
12	Bangladesh	Malaysia	142	Philippines	Croatia	272	Sri Lanka	Kuwait
13	Bangladesh	Mauritius	143	Philippines	Cuba	273	Sri Lanka	Libya
14	Bangladesh	Oman	144	Philippines	Cyprus	274	Sri Lanka	Malaysia
15	Bangladesh	Qatar	145	Philippines	Czech Republic	275	Sri Lanka	Maldives
16	Bangladesh	Rep of Korea	146	Philippines	Denmark	276	Sri Lanka	Mauritius
17	Bangladesh	Saudi Arabia	147	Philippines	Djibouti	277	Sri Lanka	Oman
18	Bangladesh	Singapore	148	Philippines	Dominican Republic	278	Sri Lanka	Pakistan
19	Bangladesh	Sudan	149	Philippines	Egypt	279	Sri Lanka	Qatar
20	Bangladesh	United Arab Emirates	150	Philippines	Equatorial Guinea	280	Sri Lanka	Korea
21	Bangladesh	UK	151	Philippines	Eriteria	281	Sri Lanka	Saudi Arabia
22	Bangladesh	Yemen	152	Philippines	Ethiopia	282	Sri Lanka	Seychelles
23	Cambodia	Malaysia	153	Philippines	Fiji	283	Sri Lanka	Singapore
24	Cambodia	Korea	154	Philippines	Finland	284	Sri Lanka	South Africa
25	Cambodia	Thailand	155	Philippines	France	285	Sri Lanka	Thailand
26	India	Afghanistan	156	Philippines	Gabon	286	Sri Lanka	United Arab Emirates
27	India	Bahrain	157	Philippines	Germany	287	Sri Lanka	UK
28	India	Indonesia	158	Philippines	Ghana	288	Sri Lanka	US
29	India	Iraq	159	Philippines	Greece	289	Thailand	Afghanistan
30	India	Jordon	160	Philippines	Grenada	290	Thailand	Albania
31	India	Kuwait	161	Philippines	Guam	291	Thailand	Algeria
32	India	Lebanon	162	Philippines	Guatemala	292	Thailand	Angola
33	India	Libya	163	Philippines	Guinea	293	Thailand	Australia
34	India	Malaysia	164	Philippines	Guyana	294	Thailand	Austria
35	India	Oman	165	Philippines	Haiti	295	Thailand	Azerbaijan

36	India	Qatar	166	Philippines	Honduras	296	Thailand	Bahrain
37	India	Saudi Arabia	167	Philippines	HK	297	Thailand	Bangladesh
38	India	Sudan	168	Philippines	Hungary	298	Thailand	Belgium
39	India	Thailand	169	Philippines	Iceland	299	Thailand	Botswana
40	India	United Arab Emirates	170	Philippines	India	300	Thailand	Brazil
41	Indonesia	Australia	171	Philippines	Indonesia	301	Thailand	Brunei Darussalam
42	Indonesia	Bahrain	172	Philippines	Iran	302	Thailand	Cambodia
43	Indonesia	Brunei Darussalam	173	Philippines	Iraq	303	Thailand	Canada
44	Indonesia	Germany	174	Philippines	Ireland	304	Thailand	Cape Verde
45	Indonesia	HK	175	Philippines	Israel	305	Thailand	China
46	Indonesia	Italy	176	Philippines	Italy	306	Thailand	Congo
47	Indonesia	Japan	177	Philippines	Jamaica	307	Thailand	Croatia
48	Indonesia	Jordon	178	Philippines	Japan	308	Thailand	Cuba
49	Indonesia	Kuwait	179	Philippines	Jordan	309	Thailand	Cyprus
50	Indonesia	Malaysia	180	Philippines	Kazakhstan	310	Thailand	Czech Republic
51	Indonesia	Mauritius	181	Philippines	Kenya	311	Thailand	Denmark
52	Indonesia	Netherlands	182	Philippines	Kuwait	312	Thailand	Djibouti
53	Indonesia	Oman	183	Philippines	Laos PDR	313	Thailand	Egypt
54	Indonesia	Qatar	184	Philippines	Lebanon	314	Thailand	Ethiopia
55	Indonesia	Korea	185	Philippines	Lesotho	315	Thailand	Fiji
56	Indonesia	Saudi Arabia	186	Philippines	Liberia	316	Thailand	Finland
57	Indonesia	Singapore	187	Philippines	Libya	317	Thailand	France
58	Indonesia	South Africa	188	Philippines	Luxembourg	318	Thailand	Gabon
59	Indonesia	Spain	189	Philippines	Macau China	319	Thailand	Germany
60	Indonesia	Taiwan	190	Philippines	Madagascar	320	Thailand	Ghana
61	Indonesia	Thailand	191	Philippines	Malawi	321	Thailand	Greece
62	Indonesia	Turkey	192	Philippines	Malaysia	322	Thailand	Guinea
63	Indonesia	United Arab	193	Philippines	Maldives	323	Thailand	HK

		Emirates						
64	Indonesia	US	194	Philippines	Mali	324	Thailand	Hungary
65	Nepal	Bahrain	195	Philippines	Malta	325	Thailand	Iceland
66	Nepal	HK	196	Philippines	Marshall Islands	326	Thailand	India
67	Nepal	Kuwait	197	Philippines	Mauritania	327	Thailand	Indonesia
68	Nepal	Malaysia	198	Philippines	Mauritius	328	Thailand	Iran
69	Nepal	Oman	199	Philippines	Mauritius	329	Thailand	Ireland
70	Nepal	Qatar	200	Philippines	Mexico	330	Thailand	Israel
71	Nepal	Korea	201	Philippines	Micronesia Federated States of	331	Thailand	Italy
72	Nepal	Saudi Arabia	202	Philippines	Monaco	332	Thailand	Japan
73	Nepal	United Arab Emirates	203	Philippines	Mongolia	333	Thailand	Jordan
74	Pakistan	Algeria	204	Philippines	Morocco	334	Thailand	Kazakhstan
75	Pakistan	Angola	205	Philippines	Mozambique	335	Thailand	Kenya
76	Pakistan	Azerbaijan	206	Philippines	Myanmar	336	Thailand	Kuwait
77	Pakistan	Bahrain	207	Philippines	Namibia	337	Thailand	Laos PDR
78	Pakistan	Brunei Darussalam	208	Philippines	Nauru	338	Thailand	Lebanon
79	Pakistan	China	209	Philippines	Nepal	339	Thailand	Libya
80	Pakistan	Cyprus	210	Philippines	Netherlands	340	Thailand	Macau China
81	Pakistan	Germany	211	Philippines	New Caledonia	341	Thailand	Madagascar
82	Pakistan	Greece	212	Philippines	New Zealand	342	Thailand	Malaysia
83	Pakistan	Guinea	213	Philippines	Nigeria	343	Thailand	Maldives
84	Pakistan	HK	214	Philippines	Norway	344	Thailand	Mauritius
85	Pakistan	Iran	215	Philippines	Oman	345	Thailand	Mexico
86	Pakistan	Italy	216	Philippines	Pakistan	346	Thailand	Mongolia
87	Pakistan	Japan	217	Philippines	Palau	347	Thailand	Morocco
88	Pakistan	Jordon	218	Philippines	Panama	348	Thailand	Mozambique
89	Pakistan	Kenya	219	Philippines	PNG	349	Thailand	Myanmar

90	Pakistan	Kuwait	220	Philippines	Peru	350	Thailand	Netherlands
91	Pakistan	Lebanon	221	Philippines	Poland	351	Thailand	New Zealand
92	Pakistan	Libya	222	Philippines	Portugal	352	Thailand	Nigeria
93	Pakistan	Malaysia	223	Philippines	Qatar	353	Thailand	Norway
94	Pakistan	Nigeria	224	Philippines	Korea	354	Thailand	Oman
95	Pakistan	Oman	225	Philippines	Romania	355	Thailand	Pakistan
96	Pakistan	Qatar	226	Philippines	Russian Federation	356	Thailand	PNG
97	Pakistan	Korea	227	Philippines	St Kit & Nevis	357	Thailand	Philippines
98	Pakistan	Saudi Arabia	228	Philippines	St Vincent & the Grenadines	358	Thailand	Poland
99	Pakistan	Singapore	229	Philippines	Samoa	359	Thailand	Portugal
100	Pakistan	South Africa	230	Philippines	Saudi Arabia	360	Thailand	Qatar
101	Pakistan	Spain	231	Philippines	Seychelles	361	Thailand	Korea
102	Pakistan	Sudan	232	Philippines	Singapore	362	Thailand	Romania
103	Pakistan	Sweden	233	Philippines	Solomon Islands	363	Thailand	Russian Federation
104	Pakistan	Switzerland	234	Philippines	South Africa	364	Thailand	Saudi Arabia
105	Pakistan	Tanzania	235	Philippines	Spain	365	Thailand	Seychelles
106	Pakistan	Turkey	236	Philippines	Sri Lanka	366	Thailand	Singapore
107	Pakistan	United Arab Emirates	237	Philippines	Sudan	367	Thailand	Slovakia
108	Pakistan	UK	238	Philippines	Swaziland	368	Thailand	Slovenia
109	Pakistan	US	239	Philippines	Sweden	369	Thailand	South Africa
110	Pakistan	Yemen	240	Philippines	Switzerland	370	Thailand	Spain
111	Pakistan	Zambia	241	Philippines	Taiwan	371	Thailand	Sri Lanka
112	Philippines	Afghanistan	242	Philippines	Tanzania	372	Thailand	Sudan
113	Philippines	Albania	243	Philippines	Thailand	373	Thailand	Sweden
114	Philippines	Algeria	244	Philippines	Timor Leste	374	Thailand	Switzerland
115	Philippines	Andorra	245	Philippines	Tonga	375	Thailand	Taiwan
116	Philippines	Angola	246	Philippines	Trinidad & Tobago	376	Thailand	Tanzania

117	Philippines	Antiq & Barbuda	247	Philippines	Tunisia	377	Thailand	Turkey
118	Philippines	Argentina	248	Philippines	Turkey	378	Thailand	Uganda
119	Philippines	Australia	249	Philippines	Uganda	379	Thailand	Ukraine
120	Philippines	Austria	250	Philippines	United Arab Emirates	380	Thailand	United Arab Emirates
121	Philippines	Azerbaijan	251	Philippines	UK	381	Thailand	UK
122	Philippines	Bahamas	252	Philippines	US	382	Thailand	US
123	Philippines	Bahrain	253	Philippines	Vietnam	383	Thailand	Vietnam
124	Philippines	Bangladesh	254	Philippines	Yemen	384	Thailand	Yemen
125	Philippines	Barbados	255	Philippines	Zambia	385	Vietnam	Japan
126	Philippines	Belgium	256	Philippines	Zimbabwe	386	Vietnam	Malaysia
127	Philippines	Botswana	257	Sri Lanka	Afghanistan	387	Vietnam	Korea
128	Philippines	Brazil	258	Sri Lanka	Algeria	388	Vietnam	Taiwan
129	Philippines	Brunei Darussalam	259	Sri Lanka	Australia			
130	Philippines	Bulgaria	260	Sri Lanka	Bahrain			

C2. Estimation and diagnostic test results.

Table 26: Unit root test on residuals of base model (model 1).

Method	**Statistic**	**Prob.****	**Cross sections**	**Obs**
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	28.6094	0.0000	366	3669

Table 27: Re-estimation of base model (first-differenced).

Dependent variable: log(bilateral Labor Flow)	
Explanatory variable	**Equation 1**
Log Relative GDP per capita*	2.977*** (1.082)
Log Population (host)	0.497*** (0.060)
Log Population (origin)	5.819*** (0.449)
Log Distance	0.087 (2.245)
Common language	-7.158** (3.156)

Common Border	0.497 (1.806)
Colonial relationship	-1.228 (1.058)
PTA	0.277*** (0.057)
Constant	-62.684*** (18.347)
N	4054

*Log Relative GDP per capita is in first differenced form. Significance levels: *10% **5% ***1%

Table 28: Estimation by adding distance and common border one at a time

Dependent variable: log(bilateral Labor Flow)			
Explanatory variable	**Column 1**	**Column 2**	**Column 3**
Log Relative GDP per capita	6.032*** (0.692)	6.032*** (0.692)	6.032*** (0.692)
Log Population (host)	0.754*** (0.091)	0.754*** (0.091)	0.754*** (0.091)
Log Population (origin)	4.466*** (0.465)	4.466*** (0.465)	4.466*** (0.465)
Log Distance	**-0.823** **(2.225)**	**-0.823** **(2.225)**	
Common language	-3.644 (3.149)	-3.644 (3.149)	-4.750 (3.062)
Common Border	**0.439** **(1.795)**		**1.127**** **(0.472)**
Colonial relationship	0.004 (1.060)	0.004 (1.060)	0.316 (0.468)
PTA	0.143* (0.076)	0.143* (0.076)	0.143* (0.077)
Unemployment (host)	-0.033*** (0.005)	-0.033*** (0.005)	-0.033*** (0.005)
Unemployment (origin)	0.033*** (0.009)	0.033*** (0.009)	0.033*** (0.009)
Constant	-44.154*** (18.288)	-44.154** (18.288)	-50.669*** (5.226)
N	4090	4090	4090

Specification 1 (column 1) includes both distance and border variable; specification 2 includes distance only while specification 3 includes common border only. Significance levels: *10%t **5% ***1%

Table 29: Test for heteroscedasticity and autocorrelation.

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	chi2(1) = 41.92 Prob > chi2 = 0.0000
Wooldridge test for autocorrelation in panel data	F(1, 372) = 129.845 Prob > F = 0.0000

Notes: The null hypothesis of no heteroscedasticity in the residuals from OLS estimation of equation 1 is rejected in the BP test while the null hypothesis of no first-order autocorrelation is rejected in the Wooldridge test for autocorrelation.