INTERDEPENDENCE OF INTERNATIONAL TRADE AND MIGRATION IN A GLOBALISING ECONOMY: THE EVIDENCE FROM NIGERIA

BY

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A Thesis in the Department of Economics
Submitted to the Faculty of the Social Sciences
in partial fulfillment of the requirements for the Degree of

DOCTOR OF PHILOSOPHY

Of the

UNIVERSITY OF IBADAN

JANUARY, 2013

ABSTRACT

The connection between trade and emigration has received increased attention in the literature. It has been shown that trade barriers and lack of adequate technology contribute to low exports and high imports of developing countries. This partly explains their high unemployment rate which, by implication, generates tendency to emigrate. Also, remittances from emigrants tend to increase imports. Although, researchers have investigated various aspects of trade, the connection between it and emigration has been generally neglected. This study examined the relationship between trade and emigration in Nigeria covering the period between 1980 and 2010.

A gravity model, based on a modified Hecsher-Ohlin framework, was employed to estimate the trade-emigration relationship between Nigeria and five of her major trading partners – United States (US), United Kingdom (UK), Sweden, Italy and Canada. Three-level analyses were carried out in order to gain a deeper insight into trade-emigration relationship as follows: Nigeria and the trading partners as a group, Nigeria and each of the countries, and product-based (agricultural goods, textiles, food and beverages, chemicals, manufactures and petroleum products). Data were sourced from the World Integrated Trade Solution (WITS) and World Development Indicators (WDI). The Arellano-Bover System Generalized Method of Moments estimation technique was used to check simultaneity and endogeneity problems, while the Sagan tests of over-identifying restrictions were carried out to validate the instrumental variables used. All estimates were set at 5% level of significance.

Emigration was negatively associated with exports (-0.20) and positively associated with imports (0.03). The export elasticities of emigration to Canada, US and Sweden were positive with 0.47, 0.27, and 3.90 coefficients respectively. Emigration responded positively to changes in imports from these countries with their corresponding coefficients respectively being 0.39, 0.2 and 1.58. Exports to Italy and UK were negatively related to emigration with an estimate of -3.90 and -0.09 respectively, while import elasticities of emigration from these countries were negative with estimates of -1.58 and -0.11 respectively. Exports of agricultural products, textiles and food and beverages to Canada, UK and US were negatively associated with emigration. Increases in emigration to these countries were associated with increases in imports of manufactured products, food and beverages and chemicals with coefficients ranging from 0.02 to 0.76. However, increases in emigration were associated with decreases in imports of agriculture and textiles products with respective estimates ranging from -1.05 and -0.01. Agriculture, textiles, and food and beverages export elasticities of emigration were, to Italy (0.02, 0.67, and 0.05) and to Sweden (1.91, 0.03 and 1.28). Manufactured import elasticities of emigration to these countries were -0.54 and -0.33 respectively.

There is a strong connection between trade and emigration in Nigeria. Declining exports and rising imports was associated with increased emigration. Declining exports and rising imports of food and beverages, textiles and agricultural products partly accounted for increased emigration. Increase in manufactured goods, and chemical were associated with decrease in emigration. Government should therefore adopt policies that stimulate exports and moderate imports.

Keywords: Emigration, Trade, Gravity Model, Generalized Method of Moments.
Word count: 484

DEDICATION

To the Alpha and Omega, the Everlasting and Almighty GOD for;

He is the Author and finisher of my faith.

ACKNOWLDEGEMENT

CERTIFICATION

We certify that this work was carried out by Mr. Ebenezer Adesoji OLUBIYI in the department of Economics, University of Ibadan.

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LIST OF ABBREVIATIONS

2SLS	Two Stage Least Square
3Ds	Dirty Dangerous and Demanding
ACP	African Caribbean and Pacific
AGOA	African Growth Opportunity Act
ATPA	Andean Trade Preference Act
ATPDEA	Andean Trade Preference and Drug Eradication Act
AVEs	Ad-Valorem Equivalents
BOPs	Balance of Payments
BTAs	Bilateral Trade Agreements
CARIBCAN	Commonwealth Caribbean Countries Tariff
CBERA	Caribbean Basin Economic Recovery Act
CBI	Caribbean Basin Initiative
CBP	Customs and Border Protection
CBTPA	Caribbean basin Partnership Act
CCFTA	Canada-Chile Free Trade Agreement
CCRFTA	Canada-Costa Rica Free Trade Agreement
CET	Common External Tariff
CIFTA	Inter-American Convention Against Illicit Firearms Trafficking in the Americas
DDR	Doha Development Round
EBA	Everything But Arms
ECOWAS	Economic Community of West African States
EEA	European Economic Area
EEG	Exports Expansion Grant
EPA	Economic Partnership Agreement
ER	Exchange Rate
EU	European Union
FCDA	Foreign Currency Domicilliary Account
FDI	Foreign Direct Investment
FEM	Foreign Exchange Markets
FGN	Federal Government of Nigeria
FPE	Factor Price Equalization
FTAs	Free Trade Agreements
GATT	General Agreement on Trade and Tariff
GDP	Gross Domestic Product
GMM	Generalized Method of Moments
GPT	General Preferential Tariff
GSP	Generalized System of Preferences
GSTP	Global System of Trade and Preferences
LDCs	Least Developed Countries
LDCT	Least-Developed Country Tariff
MB	Manufacturing in Bond
MFN	Most Favoured Nation

MOU	Memorandum of Understanding
MTN	Multilateral Trade Negotiations
MTS	Multilateral Trade System
NAFTA	North American Free Trade Agreement
NAMA	Non-Agricultural Market Access
NAV	Non-ad-Valorem
NEEDS	National Economic Empowerment Development Strategy
NEPC	Nigeria Export Promotion Council
NTB	Non Trade Barriers
NTMs	Non-Tariff Border Measures
OECD	Organization of Economic Community Development
OLS	Ordinary Least Square
PIPRB	Protection of Intellectual Property Rights Bills
PTA	Preferential Trading Area
RRF	Refinancing and Rediscounting Facility
SAP	Structural Adjustment Programme
SCTMB	Safeguards and Contingency Trade Measures Bill
SFEM	Second Tier Foreign Exchange Market
SITC	Standard International Trade Classification
SPS	Sanitary and Phytosanitary Standard
SSA	Sub-Saharan Africa
TBT	Technical barriers to Trade
TG	Tradable Goods
UNCTAD	United Nations Conference on Trade and Development
UR	Uruguay Round
WA	West Africa
WA-EU	West Africa-European Union
WTO	World Trade Organization

CHAPTER ONE

INTRODUCTION

1.1   Preamble

The relationship between bilateral trade and migration has been receiving much attention among the researchers for over two decades now. Although research is still scarce, trade theories have articulated the possible link between trade and migration. For instance, the comparative advantage theories posit that if countries differ in factor endowment or factor productivity, it is mutually beneficial for each country to produce and export goods for which it is factor endowed or for which it commands high factor productivity. Thus, if a country is labour abundant, it either produces and exports labour intensive goods or allow some of its labour to migrate. In this case, trade and migration are substitutes. Observably, if there is a reasonable modification to the assumptions underlying comparative advantage theories, trade and factor mobility can be complements. Specifically, in a world characterised by policy and natural barriers to trade, or where there exists production efficiency characterized by economies of scale, factor flows and trade can be complements (Mundell, 1957, Purvis, 1972, Markusen and Svenson, 1985, Schiff, 2006).

Also, the response of exchange rate to trade flow can lead to migration. Specifically, slow response of exchange rate to changes in exports and/or inelastic import demand tends to create incentive for migration (Faini and Grether, 1997). In another development, countries gain from trade through network and information effect arising from emigration (Gould, 1994, Kohli, 1999).   The   information   effect   works   through   the   provision   of   vital information by the immigrants about their home countries which is considered useful to increase exports in the destination country. The preference effect works through the interest that immigrants have for their home goods, leading to demand for such goods from the home country (Gould, 1994).

The channel through which migration and trade take place simultaneously between the source and the destination countries include but not limited to

rapid development in the source countries[1], large wage and unemployment gaps between the source and the destination, and the availability of special jobs for immigrants in the destination countries[2].

Available data shows that there has been and still a wide divergence of average income between the developing and developed countries to the extent that free trade may not be sufficient to close the gap[3]. Further, there exist high unemployment rate and notable dependency ratio in the source countries and these raise tendency to migrate despite a strong bilateral trade between Nigeria and its trading partners. Prichett (2006) evidently showed that at least ten million people from developing countries apply for the US 50,000 available visas yearly in spite of series of North-South trade agreement.

In Nigeria, the growth rate of unemployment is greater than the growth rate of labour force. In 1981, when labour force grew at around 1.6%, unemployment growth rate was 3%. When labour force growth fell to 2% and 1% in 1985 and 1990 respectively, unemployment growth rate hovered around 3% in the same period. In 2005, when labour force grew by 3%, unemployment grew by 20%.

In most OECD countries, apart from the fact that over half of the population are in the labour force, the unemployment growth rate was falling until recently. For instance, unemployment growth rate in the US fell from 3.52% to -2.02% between 1981 and 1985. In Canada and UK, the growth rate of

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[1] Source countries are the countries of emigration, that is, the countries where movement of workers from a country from their country of origin. In this thesis, source countries are the developing countries

[2] Destination countries are the countries of immigration, that is, countries that receive workers coming from other countries. They can also be called the host country. for the purpose of this thesis, destination countries are the developed countries.

[3] The monthly minimum take home wage in Nigeria was 7,339.08 naira in 2000, while in the US it was 122,364 naira in the same year.

unemployment fell from 3.95% to -4.42% and -5.35% to -2.82 respectively between 1990 and 1995. Hence, as unemployment rate was rising in Nigeria, it was falling in the developed countries. This large discrepancy in unemployment rate coupled with high dependency ratio and large wage differentials raised the tendency to migrate despite a strong bilateral trade between Nigeria and these countries.

Meanwhile, the developed countries tend to make migration relatively possible through expansionary migration and trade policies. World Bank (2006) reported that developed countries require the services of immigrants in some sectors for two purposes: to work in some sectors that are demanding but are not attractive to native workers because the job is perceived to be dirty and dangerous. Second, migrants are needed to work in agriculture and manufacturing sectors not only to make domestic production affordable but also to produce tradable raw materials required to grow developing countries' manufacturing sector and also to produce and export varieties of final goods at cheaper prices[4]. It was reported that migrants are instrumental to reducing tariff-inclusive price of imported goods in developing countries (Gould, 1994; Martin, 1992). Not only that, some protected sectors like agriculture and textile & clothing in the developed countries are migrant-dependent and high tariff creates supply push and demand pull for migration. Due to large wage differentials and persistent unemployment, growth expansion may not curb migration because while developed countries are experiencing ageing, with growing labour-intensive and migrant-dependent exportables, increased income may spur migration (Martin, 1992) [5]

Apart from all these, the presence of migrants in the destination countries produces two additional effects that further create a linkage between migration and trade. First, remittances, defined as the share of migrants' salary sent to relatives at home, are allocated between consumption and saving. The one allocated to consumption can be used to consume tradable and non-tradable

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[4] Orozco (2006) shows that migrants are mostly concentrated in the manufacturing sector, followed by services and then agriculture in the US.
[5] Migrant-dependent exportables include agriculture and textile. Despite the rapid economic development in Asia before the financial crisis of the 1990s, the four Asian tigers' countries (Singapore, Hong Kong, Taiwan and Korea) still migrate to the developed countries.

goods and services. In the case of Nigeria, though the share of remittances in imports is unknown, it can be conjectured that given the inelastic demand for imports, a significant share of remittances will be allocated to consumption of imported products. The other allocated to saving increases bank deposits often turned to investment in tradeable sectors. The second effect is that migrants tend to develop preferences for home products and also possess important information useful for strengthening trade link among partners (Head and Reis, 1998)[6].

Unfortunately, in spite of the seemingly link between trade and factor flow, concomitant with available evidence of the link between trade and capital flows, scanty evidence exists in the case of migration and trade[7]. This study therefore seeks to examine this link in Nigeria.

1.2   Problem Statement

Nigeria enjoys strong bilateral trade relations with North America and Europe. For instance, both account for over 70% of Nigeria export and around 80% of imports. Despite the trade relations, some products for which Nigeria can enjoy comparative exports advantage, most especially in the non-oil sector, are contending with policy barriers[8] (Anderson and Winter, 2008). Besides, exportable products, respond slowly to exchange rate changes probably due to the fact that the country constitutes a small market in the world or as a result of supply response capacity constraints (Ajakaiye and Oyejide, 2005; Oyejide, 1990; World Bank, 2006).

In 2006, the government rolled out trade policy called 'commerce 44'. This policy was meant to develop and promote duty-free export in eleven agricultural commodities, eleven manufacturing goods, and eleven solid minerals to eleven targeted markets. To make the policy workable, export

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[6] Adepoju (2007) reports that many Nigerians in Ireland, Italy and US demand for home products while some even migrate for the purpose of filling this preference effect gap.
[7] This has however been improved on in the late 2000s.
[8] Specifically, tariff on some agricultural products, textiles and food and beverages are not less than 50%. Non-tariff barriers include export subsidies, technical barriers and antidumping.

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subsidies were removed and replaced with common external tariff (CET), modified exports expansion grant (EEG) and manufacturing in bond (MB). The government vision 20: 2020 also has a chapter on trade and commerce. Some of the strategies identified included improving non-oil export performance, strengthening institution responsible for export promotion, promoting export culture and trade capacity building of the private sector.

The country signed bilateral trade agreements (BTAs). Notable among these are the BTAs between Nigeria and the USA, BOU with Chicago, USA in 2010, ITC USA and China in 2006. Nigeria is an active member of regional trade arrangement such as ECOWAS, Global System of Trade Preferences (GSTP) and the WA-EU EPA, meant to establish FTA between WA and the EU. However, due to the complexity of outstanding issues, Nigeria has been unable to benefit from the interim EPA arrangement and still remains in the GSP.

The AGOA in which Nigeria is a member has generated a lot of improvement in the agriculture production and the improvement has extended to textile, agriculture raw materials etc. Also, Nigeria is a foundation member of WTO since its inception in 1995 and has since been an active participant in the multilateral trading system (MTS) like the Uruguay Round (UR), and the Doha Development Round (DDR). In the course of its participation, the country is a member of African Group, the ACP Group and the G-90 Group. At the sectoral level such as G-20, G-33 and the NAMA the country's interest is in the area of tariff reduction, creation of market access and reduction in emigration (WTO, 2010).

While this policy has considerably enhanced trade, it has not, in any way, stem migration phenomenon, particularly among the educated and professional groups. For instance, Nigerians officially residing in OECD countries in 1990 were closed to one million. Of this, about 50% reside in North America while the rest reside in Europe. Between 1990 and 2000, it was reported that the number of Nigerians migrating to the OECD increased by 6% on average (OECD, 2005). In the US, UK and Canada, average growth rate of Nigerian

foreign-based are computed to be around 56%, 57% and 100% respectively from 1990 to 2006. In 2006 alone, Nigerian workers that migrated to the UK were 117,000 of which 60,000 were women. The country also issues about 26,000 visas to Nigerians annually of which 50% do not return to Nigeria. In the US, 6,000 green cards are issued to Nigerians each year and of the 187 countries that applied for US visa in 2007, Nigeria had the highest number of applicants and winners[9].

What is striking in this migration phenomenon is the rate at which skilled workers migrate abroad. Specifically, the ratio of unskilled to skilled migrants in the OECD countries in 1990 was 1:8. This ratio increased to 1:11 in 2000 and by 2007, it was 1:13 (Docquier and Marfouk, 2005; Iranzo and Peri, 2009). Nwajiuba (2005), Aboderin (2007), and Obialo and Museckaite (2008) have shown that skilled workers and professional workers migrate because of low salaries at home as against high salaries abroad, lack of job satisfaction, and low productivity. Other factors are underutilisation of resources in the country, lack of appropriate technology and equipment to work with, incessant power shortage/electricity outage, industrial strike actions and retrenchment and proliferation of inflow of commodity goods that can be produced in Nigeria (Nwajiuba, 2005). This suggests that the trade policy of the country appears weak to stem migration. What is unclear is whether some of the trade policy instruments actually contribute to the increased migration phenomenon given the reasons stated above.

To buttress this point, available data shows that as export from Canada, US and UK is rising, migration to the countries is also rising. For example, in 1991 to 2000, when the growth rate of export to Canada rose to 571% from -39% in 1981 to 1990, trade flows hovered around 14% but migration rose sharply to 200% from 59%. In the US, when export fell from 124% in 1991 to 2000 to 41% in 2001 to 2005, migration also fell from 90% to 16%. Similar scenario occurred in the UK, suggesting that the highest growth rate of both trade and migration was experienced during the period of expansionary migration policy and increased trade liberalisation.

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[9] See www.stat.oecd.org/wbos/index.aspx?datasetcode=MIG

Apart from the fact that there are trade and migration flows between Nigeria and developed countries, the gains from the latter, in this case, workers' remittances were not insignificant. Nigeria accounts for 2% of global remittances and 65% of Sub-Saharan Africa's (SSA) remittances (Hernandez-Coss and Bun, 2006). The World Bank (2010) reported that Nigeria ranked twentieth of the top twenty five world remittance receivers, second to Egypt in Africa and first in SSA in 2010. In 2008, Nigeria was the sixth highest remittance receiving country among developing nations[10] (Ratha, Mohapatra and Silwal, 2009).

The recognition of this important flow was well appreciated in the new economic reforms of Nigeria when yearly remittances were targeted at $3 billion[11]. Though the basic use of remittances in the country is not yet established, it is a fact that it increases Nigeria's foreign reserves, and by implication, increases the ease with which imported products (either intermediate goods or final goods or both) can be accessed on one hand and affects exchange rate on the other hand[12]. Besides, stylised facts indicate that remittances ease credit constraint in the real sector and can reduce constraints to export supply response capacity[13].

Unfortunately, the inherent connection between migration and remittances on one hand, and remittances and trade on the other hand are still not sufficiently studied in Nigerian. Besides, even with various trade preferences enjoyed by Nigeria, there exist high tariff and non-tariff barriers on labour-intensive exportable. A pertinent question with respect to this is does this type of trade policy instrument create a link between trade and migration? The present migration wave has extended to the low-skilled workers and hence increases the supply of low-skilled workers needed to produce low-skilled-intensive products in the destination countries and by implication, raises the production

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[10] Nigeria recorded ten billion dollars remittances in 2008 while it was approximately 9 billion dollars in Egypt these are the two countries from Africa that are among the top ten remittance receiving developing countries.
[11] Nigeria has been realising more than this amount ($3.3 billion) since 2005.
[12] It can however lead to informal dollarization and hence currency mismatch which can make monetary policy (currency control) difficult
[13] It can also lead to Dutch disease effect similar to the one created by natural resource boom.

of such goods and make it highly competitive in the world market. What is the implication of this on Nigeria's export sector?

The motive for emigration to the developed countries is different from the motive of immigration of foreigners in Nigeria. Two important motives for immigrants from advanced countries to Nigeria are resource-seeking and technological assistance. In the case of resource-seeking, Nigeria has been identified as one of the African countries blessed with natural resources (oil) that can be useful as raw materials in the developed countries. In 1994, oil consumption in the North America (US and Canada) was 19,461 of which the US accounted for more than 91% of the total. In 2004, oil consumption rose by 27% and 16% in Canada and the US respectively. It was reported that the US oil production cannot meet the huge consumption and therefore need more oil from countries like Nigeria. Given that Nigerian lacked the technological know-how to produce the ever increasing demand for oil by the foreigners, international oil companies from the developed countries, such as Exxon-Mobil, Royal-Dutch Shell, Chevron, BP, Total (France), ENI (Italy), Canadian Natural Resources and Woodside (Australia) have extended their coast to Nigeria and by implication, led to the inflow of expatriates (together with their families) to Nigeria.

In the case of technological assistance, expatriates are needed in the building and construction sector. Construction of road networks, office complexes, sea and airports are mainly handled by the foreign companies such as Strabag, Constain, Solel Boneh, and G. Cappa. Although, in recent times, indigenous contractors have emerged, they appear not to possess the technological know-how that will make them compete favourably with the foreign counterparts who settled in Nigeria not because of income differential but because the country needs their technical services.

These two motives also intensify trade between Nigeria and the advanced countries, particularly the US, Canada and the UK. On the other hand, good sea and airports, good and warehouse can facilitate trade through reduction of time and cost. Hence the presence of expatriates in Nigeria appears to depend

on the trade advantage between the country and its trading partners. This area of argument has not benefitted from research work in Nigeria.

With the trade agreements and immigration scheme of the developed countries, the existence of tariff and non-tariff barriers, coupled with the unemployment situation in Nigeria, the perceived large wage gaps between Nigeria and the developed countries, the rising figure of Nigerians moving to developed countries and the fact that remittances are perceived as important foreign financial inflow, what accounts for the increasing number of Nigerians in the countries where Nigeria bilateral trade is the strongest? Does ouflow of labour compensate for loss or gains from trade due to trade restriction? Does migration causes trade or does trade causes migration or is there a feedback process between migration and trade? Which of the tradeable products has a link with migration? Does trade reduce migration cost? Does migration reduce trade cost? Are remittances important in relieving credit constraints in the production of non-oil export as claimed in the literature? Can trade policy be established without considering migration issue? These are the questions that the present study seeks to answer.

1.3   Objectives of the thesis

The broad objective of this study is to evaluate the interdependence of international trade and migration in Nigeria. In specific terms, the study intends to:

a. establish the link between trade and migration with focus on Nigeria and selected trading partners as a group;
b. carry out a country-specific analysis on the link between trade and migration with focus on Nigeria and selected trading partners;
c. conduct a product level analysis of the link between trade and migration.

1.4   Hypotheses of the thesis

a. changes in trade do not have anything to do with changes in emigration.

b. there is no significant relationship between bilateral trade and emigration in Nigeria

c. changes in migration does not affect structure of trade in Nigeria.

1.5   Justification of the thesis

For about four decades, international migration is hardly an issue in Nigeria politics and there is no connection between migration and national development strategies. Where international migration was dealt with was in the area of the prospect of return migrants, how to curb human trafficking and how to prevent (legal) migration (Adepoju, 2007). The notion shared with other African countries is that migrants constitute a drain on the country's resources rather than a potential force for national development.

Observably, it will be difficult if not impossible to stem migration in the presence of trade flows. For instance, while some sectors being protected in the developed countries are migrant-dependent, expansionary migration policy provides access to labour supply that will fill the post. Hence high tariff creates supply push and demand pull for migrants. Further, the contribution of migrants to Nigeria export supply and availability of low-price imported raw materials may be significant. Thus the link between migration and trade should be understood and helpful to shape policy decision.

 Scholars that have theoretically demonstrated the link between migration and trade include Mundell (1957), Markusen (1983), Ethier (1985), Collins, O'Rouke and Williamson (1997), Wong (1986) and Srinivasan (1983). Those that empirically examined the effect of migration on trade include Bruder (2004), Collins *et al* (1999), Kohli (1999), Gould (1994), Head and Reis (1998), Mundra (2003), Bowen and Wu (2004), Collins (1994), Dayton-Johnson and Katseli (2006), and Xenogiani ((2006), Felbermayr and Toubal (2008), Foad (2009), Dunlevy and Hutchinson (1999), Hijzen and Wright (2006) and Hatzigeorgiou (2010). Results from the empirical findings showed that migration significantly affected trade[14]. However, the magnitude and

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[14] Most of these studies used information and preferences effects as explanatory variables.

direction of effect differ, depending on the theoretical underpinning, estimated model and the methodology adopted.

The only available study to the best knowledge of this researcher that considers the effect of trade on migration is Aguiar, Walmsley and Abrevaya (2007). These authors used gravity model of trade and migration to show that bilateral trade flows do not significantly explain migration flow even though it is positive. This study focused on transportation cost (proxy by distance), not tariff. Also, the study used trade index which cannot explain the effect on each category of trade (exports and imports). Specifically, none of these studies examined the case of Nigeria and its trading partners[15]. Further, most examined the effect of migration on trade but ignored the opposite[16].

Not only that, some researchers aggregated all output into a single composite good, which could either be absorbed at home, or exported to the rest of the world thereby making export or import goods homogenous. Arguably, export and import goods are heterogenous and factors responsible for the link between migration and a particular export or import product may differ from the other. Thus, it is important to examine the link between migration and product varieties[17].

This does not imply that there are no studies on migration in Nigeria. In fact many authors such as Adepoju (1991), Adepoju (1996), Afolayan (2001), Afolayan (2004), Afolayan *et al* (2008), Afolayan *et al* (2009) have investigated migration experience in Nigeria in their various capacities. All these studies were based on the trend, pattern and evolution of Nigeria emigrants both within and outside African countries. Only Afolayan *et al* (2009) marginally touched migration and trade. They focused on how, where and the process by which the Nigeria businessmen purchase imported products

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[15] At best, some of the studies (including Aguiar *et al*, 2007) included Nigeria in their panel
study not because they are interested in the case of Nigeria per se but probably to increase their data points and perhaps to fulfil requirement for degree of freedom
[16] The study of Aguiar *et al* (2007) try to fill this gap but also stumbles on another problem by treating trade as a pure exogenous variable in gravity model of migration.
[17] Notably, some export/import goods are final goods while some are capital or intermediate goods. The motive for demand for each category tends to differ. For instance preference and information effect tend to play important role in the link between trade of final goods and migration. Also, if one is to argue that imports require further processing before they are ready to meet final demand, then the same must be true for exports which are an input to the foreign technology.

such as electronic, electrical appliances, and automobile spare parts from China and Dubai.

Clearly their study is different from the present study because first, the migrants in this case are temporary migrants as they do not stay and work in the destination country. Second, there was no basic theoretical framework upon which their analysis rests and also, they do not investigate the direction and magnitude of the effect of these migrant traders on Nigeria export or imports.

Generally, there is limited evidence on studies that have simultaneously solved for the determinants of trade and migration on one hand and the interconnectedness between migration and tradeable product varieties on the other hand. This creates a serious gap in the literature. This gap is important because it shows that a complete picture of international linkages may be misleading when the degree of openness as a proxy for international linkages is measured by trade while ignoring the role played by international factor flows, or when tradeable outputs are aggregated in the face of migration while neglecting the motive for which each product is required in the destination country and hence, its connection with migration.

Specifically, this study is different from the existing studies on Nigeria in particular and on the trade literature in general in several ways. In the case of Nigeria, the first contribution is in the area of policy. This study supplied vivid empirical evidence that will show the implication of migration control on trade liberalisation and also assist policymakers in making the right choice in their attempt to stem migration. Second, the study demonstrates that the way migration and trade interrelates depends on the type of product being traded. For some products, it could be substitutes while for others it could be complements. The result could be used as a vehicle for both long run and short run strategy of realising the benefits of globalisation. Third, the study seeks to document how trade and migration interrelates in Nigeria. In virtually all the studies available, Nigeria appears as part of the panel data. Meanwhile, in Morgenroth and O'Brien (2008), a separate panel data on

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Africa shows that immigrants from African countries significantly affected trade between them and the developed countries. Given the fact that Nigeria is one of the top five suppliers of migrants from Africa to these countries, it is important to dig deeper into the received generalised evidence in order to draw specific conclusion.

Generally, the contribution of this study is in the area of methodology and theoretical framework. Almost all available empirical studies ignored the importance of tariff in their gravity model of trade-migration nexus. Although some used distance as proxy for trade cost which implicitly include tariff, it is important to separate tariff from distance it is one of the important variables that drives migration and trade particularly between developed and developing countries[18]. Second, unlike it appears virtually in all the empirical evidence, this study treats migration and trade as endogenous in the sense that it appears the outcome of one depends on the situation of the other.

Except for the study of Morgenroth and O'Brien (2008) who used instrumental variable in their study to correct for this simulateneity problem, we are not aware of any other study that has done it this way. However, these author not correct for possible distributed lagged dependent variable which may be one of the explanatory variables. Further, their study omitted the role of remittances in the migration-trade nexus, thereby it suffers from omitted variable. The present study filled these gaps by using three alternative techniques namely the OLS, 2SLS and GMM[19]. Also, this study recognises the role of remittances in the migration-trade nexus.

In the area of theoretical framework, most received evidence rely on the use of information and network theory. Although this theory may be applicable in the case of Nigeria and developed countries, the one that may likely be appropriate is the classical factor endowment theory extended to incorporate

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[18] The inclusion of tariff in gravity model of trade-migration nexus was first mentioned by ARNet (2008). Tariff tends to feature in the trade gravity model but not in trade-migration model. Prominent among those who modeled tariff as a separate trade cost in the gravity trade equation include Heliwell (1999), Deardoff (1995), Freeman (2006).

[19] Clarke and Hillberry (2009) adopted GMM for the case of Australia using Commonwealth of the developed countries as trading partner.

trade and migration cost. It is in the attempt to fill these gaps that this study seeks to contribute to the existing knowledge of trade and migration in Nigeria in particular and in the whole world in general.

1.5   Scope of the study

This study focuses on the economic globalisation (trade and migration). This is not only because most analyses on migration point towards economic implication, but also that the central focus is the interaction between migration and trade. Migration in this study implies outflow of Nigerians to developed countries. Such migration is essentially official in nature. Thus, this study excludes illegal migration and migration through asylum, and focus mainly on voluntary migration through legal channels. The study covers from1980 to 2010 as guided by data availability.

The destination countries are the United Kingdom (UK), Canada, Italy, Sweden and the United States (US). The selection of these countries is justified by three main reasons. First, data on migration are relatively easily accessible. Second, Nigerians are highly concentrated in these countries relative to other OECD countries and third, these countries appear to be some of Nigeria's major trading partners. The selected products are agriculture, agricultural production/raw materials, food, chemicals, other manufactured goods, textile and crude petroleum.

1.6   Organisation of the thesis

Following this introductory chapter is chapter two which presents some stylised facts about migration and trade in Nigeria. The chapter discusses trade and migration policies and how they have enhanced trade and migration flow between Nigeria and its trading partners. The chapter also presents stylized facts on migration and trade with a view to giving first-hand information about the link between trade and migration.

Chapter three reviews some documented theoretical, methodological and empirical issues linking international migration with trade. It dwells on various theories of international migration that relate to trade. This is to appreciate theoretical works that have been done on the transmission mechanism through which international migration affects trade flow. Further, the chapter documents some trade theories that relate to migration. The chapter reviews some received methodological and empirical evidence with a view to establishing empirical gap which the present study seeks to fill. Chapter four is devoted to theoretical framework and methodology while chapter five presents empirical result. Chapter six provides the summary, conclusion, recommendations and limitations of the study.

CHAPTER TWO

REVIEW OF TRADE AND MIGRATION POLICY IN NIGERIA

AND PARTNER COUNTRIES

Nigeria is an open economy both in goods and factors. However, such openness is not without restrictions. Thus, there are policies guiding the inflow and outflow of goods and people from and into Nigeria. On the other hand, Nigeria's trading partners, particularly those from the OECD countries do not grant 100% inflow of Nigeria goods, services and people into their countries. As will be shown later, products like textile and agricultural materials that are labour-intensive and in which Nigeria has comparative advantage is faced with restrictive trade policy in the destination countries. The first section of this chapter reviews trade policies of Nigeria and the trading partners while the second reviews migration policies of the destination countries. Section three presents stylised facts on trade while section four presents emigration experience in Nigeria with special focus on selected destination countries.

2.1 Trade policies of Nigeria, Canada, the US and the European Union.

2.1.1 Trade Policies of Nigeria

Trade policy of Nigeria is meant to promote private sector-led growth, encourage production and distribution of goods and services for domestic and international markets, to direct and promote value addition in the various sectors especially where the country has comparative advantage.

Export policy in Nigeria is based on the improvement in product standards, effective institutional framework, establishment of backward linkages, encouragement of people to invest in exportables, the removal of regulatory bottlenecks and the use of CIT. It is guided by the need to diversify the country's export baskets and markets. Government is promoting non-oil

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exports in agriculture, solid minerals and manufactures where the potential is great. In order to achieve these objectives, the Nigeria Export Promotion

Council (NEPC) was commissioned in the 1970s. NEPC was designed to raise fund to assist exporters in defraying part of export promotional costs. The scheme also provided export adjustment to compensate export producers whose export goods prices fall on the international markets. Also, there is a provision for export expansion grant and supplementary allowance that will encourage private firms to be export-oriented and to provide additional opportunities to explore export-based firms.

During the SAP, Export Incentives and Miscellaneous Provision was promulgated with the use of Decree 18 in 1986. In addition, RRF were reintroduced while export licensing was abolished. Oil earnings from non-oil exports in was retained, tax holidays on earnings by banks from export credit were granted, duty draw-back scheme was introduced and capital allowance for export producing firms alongside liberalized and reduced documentation for exports were introduced.

To foster increase in export demand (and dampen import demand), the government abandoned the use of rigid foreign exchange regime rate to managed-floating exchange rate regime through the establishment of FEM and SFEM. Preliminary analysis showed that this individual but not mutually exclusive policy initiative actually increased non-oil exports from a low level of 4% share in 1985 GDP to 9% in 1988 but declined to 4% in 1992.

In 2006, the government rolled out trade policy called 'commerce 44'. This was meant to develop and promote duty-free export in eleven agricultural commodities, eleven manufacturing goods, and eleven solid minerals to eleven targeted markets. To make the policy workable, export subsidies was removed and replaced with CET, EEG and MB. The government vision 20: 2020 also has a chapter on trade and commerce. Some of the strategies identified included improving non-oil export performance, strengthening institution responsible for export promotion, promoting export culture and trade capacity building of the private sector among others.

Another bold step taken by the government to improve trade was the creation of national electronic window meant to create a competitive environment for cross-border trade by reducing and simplifying processing time and costs of doing business. Other priority programmes include transnational border, regional markets and one-product one-local government initiative aimed at promoting export through the adoption of universally acceptable best practices in agriculture, manufactures, and marketing of identified product in order to make each local government competitive in at least one products in the world market.

In the case of external policies, Nigeria engaged in bilateral, regional and multilateral trade arrangements. The country signed BTAs with some countries in order to secure favourable market access for some labour-intensive products. In the recent years, bilateral trade relation between Nigeria and Finland, USA, Ukraine and Iran were strengthened. Nigeria signed BOU with Chicago, USA in 2010, ITC, USA and China in 2006, an MOU on trade cooperation and facilitation between Nigeria and America.

Nigeria is an active member of regional trade arrangements under the PTA such as ECOWAS, G-8, and GSTP. The country has negotiated for a free trade agreement with the EU under the WA-EU EPA arrangement. The WA-EU EPA is meant to establish FTA between WA and the EU. However, due to the complexity of outstanding issues, Nigeria is unable to benefit from the interim EPA arrangement and so the country still remains in the GSP. Some of these outstanding issues include sensitive products to be excluded from liberalisation, application of the MFN clauses, ROo SPS, and TBT.

Nigeria signed the AGOA and this has generated a lot of improvement in the agriculture production. According World Bank (2011), Nigeria ranked 8th out of 40 beneficiaries of the non-reciprocal trade arrangement. This improvement has been extended to textiles and agriculture raw materials. This improvement is not unconnected with the government's effort to promote the sector where the country has potential export capacity. However, the impact

of this trade pact on Nigeria export is marginal given the dominant impact of the oil sector.

Nigeria became a member of GATT in 1960 and also a signatory to Tokyo Round MFN. In 1995, the country joined WTO after its ratification in 1994. Nigeria accorded MFN to all countries whether GATT parties or not except South Africa. The country is an active participant in the multilateral trading system like the UR and the DDR and has since continued to implement the UR agreement. It made 22 notifications covering agreements on agriculture, subsidies, countervailing measures, antidumping agreements, and state trading enterprises. Notably, due to outdated trade laws, the country is facing trade legislation challenges and to break them, a wide range of bills such as PIPRB and SCTMB were developed.

The import policy objectives were targeted at the elimination of quantitative restrictions but safeguard the genuine interest of domestic industry against unfavourable trade practices, especially in national reserve endowment. The objectives also include ensuring effective and transparent tax administration system, to take advantage of AGOA (signed in 2000) and AU-ACP (signed in 1997) to increase the country's economic performance by reversing adverse BOPs.

The basic policy instrument used to achieve these objectives was tariff. For instance, bound tariff line was 19.2% of all tariff lines in 1997 through 2003 and rose to 19.7 percent in 2011 (Figure 2.1). Duty free tariff lines accounted for 0.2 percent of all tariff lines while *non-ad valorem* tariffs were zero percent. The MFN tariff rates on agricultural and non-agricultural products averaged 50 percent and 25 percent respectively, implying that there was high tariff on agricultural goods. Also industries were protected through positive tariff escalation while some industries benefited from tariff exemption on imports of raw materials. MFN tariff on manufacturing products (capital and intermediate goods) ranged from 12% and 18.4%, with the minimum occurring in 2011. Thus, cost of importing import input would be downwardly affected.

Table 2.1   Structure of MFN Tariffs (1997-2011)

S/N	Tariff Structure	1997/98	1999/00	2001	2002	2003	2011	U.R.[a]
1	Bound tariff lines (% of all tariff lines)	19.2	19.2	19.2	19.2	19.2	19.7	19.2
2	Duty-free tariff lines (% of all tariff lines)	0.2	0.2	0.2	0	0	2.1	0
3	Non-*ad valorem* tariffs (% of all tariff lines)	0	0	0	0	0	0	0
4	Tariff quotas (% of all tariff lines)	0	0	0	0	0	0	0
5	Non-*ad valorem* tariffs with no AVEs (% of all tariff lines)	0	0	0	0	0	0	0
6	Simple average tariff rate	24.4	26	26	29	28.6	11.9	118.4
7	Agricultural products (WTO definition)[b]	32.8	32.1	32.1	50.4	50.2	15.6	150
8	Non-agricultural products (WTO definition)[c]	23.1	25.1	25.1	25.8	25.3	11.4	49.2
9	Agriculture, hunting, forestry and fishing (ISIC, Div. 1)	26.7	26.3	26.7	41.5	41.4	12.9	150
10	Mining and quarrying (ISIC, Div. 2)	18.3	18.4	18.4	18.4	17.9	5.3	n.a.
11	Manufacturing (ISIC, Div. 3)	24.4	26.1	26.2	28.5	28	12	109.1
13	Domestic tariff "spikes" (% of all tariff lines)[d]	0.5	0.5	0.5	5.2	5	0	0
14	International tariff "spikes" (% of all tariff lines)[e]	51.6	57.9	57.9	57.4	56.5	39.9	100
15	Overall standard deviation of applied rates	18	14.6	14.5	22	22.3	8	47.4
16	"Nuisance" applied rates (% of all tariff lines)[f]	0	0	0	0	0	0	0

n.a.   Not applicable.

a   Based on the total number of bound tariff lines.
b   WTO Agreement on Agriculture.
c   Exclude petroleum.
d   Domestic tariff spikes are defined as those exceeding three times the overall simple average applied rate (indicator 7).
e   International tariff peaks are defined as those exceeding 15%.
f   Nuisance rates are those greater than zero, but less than or equal to 2%.

Source: Trade Policy Review Various issues

In 2003, the average MFN rate on agricultural products (WTO definition) was 50.2%, compared to 32.8% in 1998; the sharp rise in tariffs mainly occurred in 2002, with the imposition of high tariff on several agricultural products like agricultural materials (diary products, coffee and tea, cocoa, sugar, grains etc) and beverages. The high tariff on these products was as a result of tariff amendments introduced in 2002 which led to 100% increase on several products (mainly agricultural products) relative to 5% tariff on non-agricultural products like chemical, machinery and electrical equipment.

In 2003, non-agricultural products (WTO definition) attracted an average applied MFN rate of 25.3%, up from 23.1% in 1998. Average applied MFN duties by product group range from 2.5% to 100%. The lowest average rates were on petroleum (11.3%) as well as chemicals and photographic imports (17.6%), while the highest were on textile and clothing (42.4%). In general, there appear to be a dispersion of tariffs within each product group. Tariff on agricultural products appear relatively high (50% compared to 25% for non-agricultural products). Observably, there has been a significant reduction in the maximum application tariffs as the maximum tariff rate was reduced from 150% (2005) to 35% (2010). The current average tariff rate is below the average for developing countries.

Other import policy instruments used are import prohibition of products like agricultural materials, food and beverages as well as miscellaneous. As at 2004, agricultural and non-agricultural goods under some HS four-digit codes were subject to import prohibition, mainly for the purpose of protecting domestic industries. This increased import prohibitions, and further distorted resource allocation in favour of uncompetitive domestic industries to the detriment of the exportable sector; raised prices paid by consumers, thereby undermining the government's efforts to reduce poverty; and provided further incentives for smuggling, concomitant with losses in customs revenue.

In addition to import bans to protect local industries, imports on the Absolute Import Prohibition list were banned on security, health, and morality grounds. These goods include: weapons, certain spirits, obscene articles, textile materials containing hazardous chemicals, and second-hand clothing. Further, the importation of vehicles, cement, drugs and pharmaceutical raw materials, and all containerised goods, through Nigeria's land borders, were prohibited.

It is clear that Nigeria government has established various measures and also has arranged for trade pact between the country and the rest of the world at the regional and world levels. It is also clear that such trade arrangements have improved exports of non-oil products, particularly the labour-intensive products. Of importance is the trade pact between Nigeria and the developed countries where the country's products (including non-oil) have the largest market. The government also imposed high tariff on the imports of some competing labour-intensive products coming from the developed countries in particular, in order to protect them from unfavourable competition. It is expected that this set of arrangements should reduce unemployment in the country and perhaps reduce tendency to migrate to the developed countries. The extent to which this can be done is contingent on the trade and migration policies of the trading partners particularly from America and Europe.

2.1.2   Trade policy of the EU in relation to Nigeria

The major trade policy instruments of the EU are tariff, NTB, and quota. Tariff on agricultural products, especially food was high, while it was low on industrial goods (5%). Until 2000, tariff on industrial goods was reduced to 3%. The high tariff on agricultural products was done to protect domestic producers against unfavourable trade practices. In 2000, EU trade relation with developing countries improved with 95% lines duty free. The GSP of preference was 54% lines duty free. The EU-ACP agreed on a successor to the 4th Lome Convention and the community offer preferences for mainly non-agricultural products while supplementary preferences are available to the least developed countries; that is, the EBA agreement.

Average MFN tariff on non-agricultural products was 3% in 2000, down from 4.2% in 1999 and 4.9% in 1996. The EU market for non-agricultural products was largely open except for textile and clothing. For this product, 20% of the products had 80% tariff bound. On non-agricultural products, the mid 2000s witnessed slight increase as the average tariff rose to 4.1%. In the case of agricultural products, simple average tariff was 16.1% (over 4 times that of non-agric). Tariff escalation remains mostly on processed products.

Table 2.2 presents a summary of the pre and post-Uruguay Round tariff preferences for Nigeria's exports to the EU and US. In the EU, tariffs on agriculture products and raw materials were lower than the one levied on textiles and clothing, while that levied on manufacture goods were the lowest. The post-Uruguay MFN shows slight reduction in tariff of these agriculture and manufacturing sectors with highest reduction taking place in the former.

This regulation relaxes and simplifies rules and procedures for developing countries wishing to access the EU's preferential trade arrangements, while ensuring the necessary controls are in place to prevent fraud. In addition, special provisions are included for LDCs which would allow them to claim origin for many more goods processed in their territories, even if the primary

Table 2.2: Pre and post-Uruguay Round tariff preferences for Nigeria's exports to the EU and US

tariff rates %

Market and product	pre-UR applied	Pos-UR applied	Pre-UR MFN	Post-UR reduction	MFN Margin
European Union					
Agriculture excl. fish	0	0	3.1	0.56	2.53
Textiles and clothing	0	0	7.88	5.83	2.04
Mineral products, precious stones and metals	0	0	4.63	2.74	1.9
Manufactured articles	0	0	0.11	0.05	0.06
United States					
Agriculture excl fish	0	0	0	0	0
Textile and clothing	9	8.91	9	8.91	0
Mineral products, precious stones and metals	0	0	3.71	1.81	1.91
Manufactured articles	0	0	0.28	0.06	0.22

Source: Extracted from Adenikinju, 2008

materials do not originate there. The new rules of origin are applied from 1 January 2011.

The EU has shown its willingness to make substantial cuts in its agricultural tariffs based on a tiered formula conditional on meaningful offers by EU's partners and a balanced outcome in all areas of the negotiations. Upon the successful conclusion of the DDR, the policy will lead to substantial tariffs cut and significantly reduce trade distorting subsidies. The policy was also targeted at eliminating export refunds, containing *inter alia* the parallel elimination of all forms of export subsidies and disciplines on all export measures with equivalent effect.

2.1.3   Trade policy of the U S in relation to Nigeria

The United States is the world's largest importing and exporting nation. It is also the largest investor worldwide and the largest recipient of FDI. Depending on the estimate, the US continues to account for 20 to 25 percent of real global production. As such, its economic performance and policies have a significant impact on the world economy, the global trading system in general and the economies of the developing countries in particular.

A central objective of US trade policy is to expand its markets for exporters. With this objective, the Export-Import Bank provides officially supported loans, guarantees and insurance. A large number of foreign trade zones operate in the US and a duty drawback programme is in place. The US views the relationship between trade and competition policy as of great importance. US federal antitrust legislation covers all types of activities, including foreign trade, as well as a wide range of business practices. Assistance to domestic producers includes tax exemptions, financial outlays and credit programmes. Many states offer investment incentives to attract businesses locally. In 1995, the US notified 13 state-trading entities to the WTO.

The US applies rules of origin to all products that enter the country. Rules of origin are applied by CBP to determine the origin of products. On the basis of this determination, products may qualify for country-specific tariff preferences or be considered eligible for government procurement contracts. In addition, it is the duty of the Department of Commerce to determine whether a particular product produced in the country is covered by a specific anti-dumping or countervailing duty order; its determinations may include different criteria than those used by the CBP. Country of origin marking and labelling regulations are also used to provide consumers with information regarding the origin of the product, and are mandatory for most imported manufactured products, and for many agricultural products (e.g. eggs, meat, and poultry). The determination of origin relies on self-certification, whereby the onus is on the importer to declare origin.

The country applies preferential and non-preferential rules of origin. While the substantial transformation criterion is central to all US rules of origin, its definition varies according to the product and the preferential arrangement. The basic non-preferential US rule of origin is that the product is considered to have been produced in a country when: the goods are wholly the growth, product, or manufacture of that country, or the goods have been, in that country "substantially transformed into a new or different article of commerce" with a name, character, or use distinct from that of the article or articles from which it was so transformed. In addition, the US maintains several sets of preferential rules under FTAs and unilateral tariff concessions. These rules are based on the principle of substantial transformation, implying a combination of local-content criteria, a tariff-shift system, or specific requirements applicable to a given product or group of products.

In the area of tariff, the US levies customs duties on imports on the basis of their fob value at the point of export. The tariff is of two types: "General", MFN rates, referred to in US provisions as normal trade relations tariff treatment; and the "special" rates applicable to imports under most preferential programmes. Further, chapter 98 of the Trade Policy Act of the US contains

172 tariff lines of special classification provisions, including eligibility conditions for duty-free treatment of otherwise dutiable items. Among other things, the chapter also contains tariff provisions for African and Caribbean countries under the AGOA and CBTPA.

Most imports enter the US duty free or are subject to very low tariffs, all except two of which are bound. Zero tariffs apply to nearly one third of national tariff lines and the simple average applied MFN tariff rate has declined from 6.4% in 1996 to 5.7% in 1999. As a result, developing countries, Nigeria inclusive, have the GSP scheme available for most of their exports to the US. Notwithstanding the low overall level of tariff protection, 5% of MFN tariffs involve rates exceeding three times the overall average; such tariff "peaks" affect some agricultural and food products as well as textiles, clothing and footwear.

The non-tariff border measures (NTMs) currently applied by the US involve some import prohibitions, import licensing and quantitative restrictions. The importation of certain goods may be prohibited or subject to licensing in order to ensure the security of the US, to safeguard consumer health and well-being, or to preserve domestic plant and animal life as well as the environment. In addition, some commodities, notably textiles and clothing, are subject to import quotas or restraints under bilateral trade agreements and arrangements.

The US, like other WTO members, has several types of contingency measures at its disposal, namely countervailing and anti-dumping duties as well as safeguards. These measures are designed to counteract trade practices such as export subsidies and the dumping of products onto the US market. Although still important, the use of such measures by the country has declined in recent years. In 1996 to 1998, the total number of anti-dumping investigations initiated declined to 72 (from 102 in 1993), while the number of duty orders issued fell from 82 to 25. Countervailing duty investigations initiated totalled 18, up from 14 in 1993 to 1995; nevertheless, the number of duty orders issued declined substantially. The number of safeguard investigation initiations

increased in 1996 to 1998, but their number and scope remains limited.   Since 2002, there have been no duty-free items as a minimum tariff rate of 2.5.

The simple average applied MFN tariff, including the AVEs of specific and compound rates, was 5.1% in 2002, down from 5.4% in 2000. The average applied tariff to agriculture in 2002 was 9.8%, down from 10.4% in 2000; the average for non-agricultural products was 4.2% in 2002, down from 4.5% in 2000. Since 2001, no new autonomous measures have been introduced to decrease US MFN tariffs.   Hence, the decline in the average of non-agricultural tariffs since 2000 mainly reflects the on-going implementation of WTO tariff reduction commitments in textiles and clothing and other products, as applied rates are being reduced in line with the staged reductions in bound rates.   Some 31% of all tariff items enter the United States duty-free.

Some 12% of tariffs are NAV, although this share is continuously declining. Most NAV tariffs are specific or compound (i.e an *ad valorem* duty plus a specific duty).   In general, the NAV tariffs applied result in higher protection than the *ad valorem* duties: in 2002, the average of NAVs was estimated to be 11.2%, compared with 4.3% for *ad valorem* duties. Specific and compound duties accounted for 77 of the 100 highest rates in 2002.   Specific and compound tariff rates apply mainly to agricultural products, footwear and headgear, as well as watches and certain precision instruments; a number of specific duties are also levied on chemicals and chemical products, textiles, and base metals.

The use of NAV duties makes it possible for tariff protection to increase when import prices decline, and vice versa.   In 1997, the average of the NAVs provided by the US authorities was about 14%; by 2002, average had declined to about 11%.   In the same year, some 6.6% of all tariff lines bore tariffs exceeding 15%, in some cases estimated on an AVE basis. These tariffs tend to be concentrated in a few "sensitive" sectors, which are often also of particular interest to exporters from Nigeria.   For example, tariffs reach *ad valorem* or *ad valorem* equivalent rates range from 132% to 350% for some

agricultural materials (although in some cases tariff quotas are not filled and the low in-quota rates may apply rather than these out-of-quota tariff rates). In the non-agricultural sectors, tariff protection peaks at 58.5% for certain footwear (NAV). Protection for textiles and clothing products is mainly in the 15 to 30% range.

Tariff preferences may be granted by the United States either unilaterally, or in the context of FTAs. The country grants unilateral preferential tariff treatment to countries qualifying under its GSP; the CBERA which facilitated the implementation of the CBI; the CBTPA, which builds on the CBERA; the ATPA as amended by the ATPDEA; and the AGOA. Further, the average tariff rates for CBPTA, ATPDEA, and AGOA do not include the provisions of chapter 98 of the US Tariff Schedule wherein, after meeting certain input requirement, textile and clothing articles are eligible for additional tariff preferences.

AGOA provides incentives to promote economic reform and trade expansion in eligible SSA countries, including duty-free access to the US market for over 1800 products beyond those eligible under the GSP programme. The additional products include value-added agricultural and manufactured goods such as processed food products, apparel, and footwear. Thirty-eight SSA countries are eligible for AGOA in 2010. Over 95 per cent of U.S. imports from these countries entered the United States duty-free in 2009. Thanks in part to AGOA, the US is the SSA's largest single-country market. AGOA and related GSP imports from AGOA-eligible countries were valued at $33.7 billion in 2009, down 49% from 2008 largely due to the downturn in the global economy. Petroleum products continued to account for the largest portion of AGOA imports, with a 90% share of overall AGOA/GSP imports. In 2009, AGOA/GSP non-oil imports from AGOA beneficiary countries fell 33% to $3.4 billion. Leading non-oil imports in 2009 included apparel, vehicles and parts, ferroalloys, citrus, chemicals, wine, nuts, and fruit juices.

Another trade policy instrument adopted by the US is tariff quotas. The country maintains tariff quotas on various types of product, including agricultural products. Tariff quotas cover 1.9% of the US tariff. High out-of-quota tariffs on agricultural products constituted one of the main forms of import protection for these products.

The review of US trade policy shows that tariffs are high for agricultural products but low for manufacturing. Meanwhile, due to GSP and recently AGOA, in which Nigeria is a signatory, one could expect Nigerian products to gain more access in the US market. However, one difficulty that may not guarantee increased market access is the imposition of product standard and lack of supply response capacity (Oyejide, 2008).

2.1.4 *Trade Policy of Canada in Relation to Nigeria*

Canada applies at least MFN tariff treatment to all WTO members. The simple average applied MFN tariff declined slightly, from 6.8% in 2002 to 6.5% in 2006. Around 53% of all tariff items entered Canada duty free in 2006. This same year, the average agricultural tariff (WTO definition) was 22.4%, compared with 3.8% on other products. Supply-managed agricultural products, which cover dairy products, chicken, turkey, eggs, and broiler hatching eggs, received the highest tariff protection. There was tariff escalation between semi-processed and fully processed products. Under remission orders, tariff reductions were granted on specific goods used for certain purposes.

Canada maintains both preferential and non-preferential rules of origin. MFN (non-preferential) rules of origin are in place to distinguish MFN imports from those under the GATT. Goods are deemed to originate in a country that is a beneficiary of the MFN tariff if not less than 50% of the cost of production of the goods is incurred by the industry of one or more countries that are beneficiaries of the MFN tariff or by the industry of Canada. No certificate of origin, however, is required. In addition, a separate rule that exists for

marking purposes applies to a limited number of imported goods. Canada maintains preferential rules of origin under FTAs and unilateral tariff concessions. Under Canada's FTAs with the United States and Mexico (NAFTA), Chile (CCFTA), Israel (CIFTA), and Costa Rica (CCRFTA), origin is based on a shift in tariff classification. In some cases, a regional value content requirement may apply in addition or as an alternate to a change in tariff classification.

For beneficiaries of the GPT, the LDCT and the CARIBCAN, origin of goods that incorporated non-originating materials is based upon a certain percentage of the ex-factory price of the goods originating in beneficiary countries or Canada. Under the GPT and CARIBCAN, at least 60% of the ex-factory price of the goods must have been incurred in one or more GPT or CARIBCAN beneficiary country or Canada. Except for certain textiles and apparel, under the LDCT, at least 40% of the ex-factory price of the goods must have been incurred in one or more LDCT beneficiary country or Canada; the 40% may include up to 20% of the ex-factory price of the goods from other GPT countries. Certain textiles and apparel, previously ineligible for the benefits of the LDCT, may receive duty-free tariff treatment under Canada's Market Access Initiative for least developed countries.

Canada levies customs duties on the fob value of imports at the point of direct shipment to Canada. The Customs Tariff was enacted in December 1997 and entered into force in January 1998. It is based on the Harmonised Commodity Description and Coding System (HS). The Canada Border Services Agency issues regular consolidated versions of the Customs Tariff incorporating previous amendments. The 2006 Customs tariff reflects the 2002 amendments to the HS. It comprises 8,455 tariff lines at the HS 8-digit level. Canada's Customs tariff contains provisions that automatically round down *ad valorem* MFN and preferential tariffs to the closest half percentage point (except for certain motor vehicles and chassis), and eliminate all tariff rates of less than 2%, both on an annual basis. Among non-members the Democratic People's Republic of Korea and Libya do not receive MFN tariff treatment; both are

subject to the General Tariff, levied at 35% on all goods except those subject to MFN rates exceeding 35%, in which case the MFN rate is applied.

The simple average applied MFN tariff declined from 6.8% in 2002 to 6.5% in 2006. The average applied tariff for agricultural products (WTO definition) in 2006 was 22.4% (up from 21.7% in 2002) and the average for non-agricultural products was 3.8% (down from 4.2% in 2002). This decline was driven by tariff reductions on 1,123 products following the implementation of WTO commitments, which resulted in a reduction of applied rates in tandem with bound rates. In 2006, duty-free lines represented 52.7% of all tariff lines.

The share of NAV tariff lines is virtually the same as in 2002. On average, NAV duties afforded significantly higher protection than *ad valorem* ones: in 2006, the simple average of *ad valorem* equivalents of NAV tariff rates was 72.1%, compared with 3.8% for *ad valorem* rates. About 96% of NAV tariff rates apply to agricultural products (WTO definition). In 2006, some 1.6% of tariff lines had MFN rates exceeding 20%, 6.5% had rates exceeding 15%, 13.5% exceeding 10%, 35.6% exceeding 5%, and 47.1% exceeding 0%. The products subject to the highest *ad valorem* or *ad valorem* equivalent rates were dried egg albumin (532.3%), prepared meals of fowl (377.8%), and fats derived from milk (313.5%). Milk and cream were subject to rates amounting to 292.5%. Tariff quotas cover around 2% of tariff lines; all tariff quotas correspond to agricultural products.

Tariff preferences may be granted by Canada either unilaterally or in the context of preferential trade agreements. Canada grants unilateral preferential tariff treatment under the GPT, LDCT and CARIBCAN. The GPT provides tariff preferences for most developing countries. Nigeria has been a beneficiary of GPT since its inception. Mongolia became a GPT beneficiary in June 2003, and Oman in May 2006. Canada withdrew GPT benefits for Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia in May 2004. Dairy products, poultry, eggs, refined sugar, and most textiles, clothing, and footwear are not eligible for

preferential tariff treatment. Around 67% of tariff lines benefit from duty-free treatment under the GPT. The simple average tariff under the GPT was 5.2% in 2006, roughly the same as in 2002. The GPT has been extended until June 2014.

Canada's licensing requirements and quantitative import restrictions are mostly in place for non-economic reasons. Licences are required to import agricultural products at the in-quota tariff rate. Under Canada's federal regime, the federal, provincial and territorial governments have the authority to promulgate technical regulations as well as Sanitary and Phytosanitary Standards. Canada made 119 notifications of technical regulations to the WTO between July 2002 and mid-August 2006. Around 52% of the notifications were from Health Canada, 22% from Transport Canada, 13% from Environment Canada, 8% from Industry Canada, and 6% from other authorities. Only one notification was of a technical regulation adopted for urgent problems. The vast majority of technical regulations notified were aimed at protecting human health, and safety or the environment.

It appears Nigeria may enjoy relatively strong trade relation with Canada due to the fact that Canada, like United States and EU (of which UK is a member), seems to have meaningful trade agreement with developing countries. However, the non-tariff barrier in this case through regulatory standards, appear to be more pronounced in the sector where Nigeria can have comparative export advantage. The implication of this is that apart from tight export advantage, there exists little market access opportunities for Nigerian products in Canada. This may lead to small export to this country.

The review of trade policies of the countries under study show that both in Nigeria and its trading partners, agriculture sector is highly protected relative to other sectors. Meanwhile, Nigeria can gain market access to United States, Canada and United Kingdom due to some favourable trade agreement like GSP, GPT and AGOA. Notably, Oyejide (2008) points out that despite the market access opportunities, there are obstacles to trade with these developed

countries. The first obstacle is the inability to increasingly integrate into the world trade. This is as a result of heavy dependence on primary commodities, export price volatility, declining terms of trade, tariff and non-tariff barriers, trade distortions like export subsidies and domestic support measures in these countries.

The second obstacle is the inability to respond to market access opportunities. The third obstacle is the constraints generated by lack of access to and inadequate volume of start-up and working capital (Oyejide, 2008). The implication of this is that this scenario may lead to outflow of labour from the sector that produces tradeable, thereby making export and migration to be substitutes. Meanwhile, if migration takes place and remittances flow in, it may ease credit constraint in the export sector so that export and migration becomes complements.

2.2 Immigration policies of the US, Canada and the EU

2.2.1 *Immigration policy of the US*

Prior to the 1965 amendments to the immigration and nationality act, immigration to the US was regulated by a system of numerical quotas allocating the limited number of potential visas among countries in the *Eastern Hemisphere*. The numerical limits for each country were established on the basis of the ethnic composition of the US population in 1920. Hence, this led to significant restrictions on migration from Asian and African countries and favoured immigration from European countries (Borjas, 1988). In 1964 for example, European countries were allocated a total of 158,161 visas, while Asian and African countries typically received 100 visas per country. In addition, the beneficiaries of the visa must possess occupational skills "that are urgently needed" in the US: at least half of quota visas were reserved for such individuals and their families. The remaining was then allocated on the basis of kinship relationships between the potential migrants and persons residing in the US.

The 1965 Amendments (and subsequent changes in the immigration law through the early 1980s) responded to the charges that the preference system discriminated on the basis of national origin by disposing of the country-specific numerical quotas. Instead, an annual limit of 20,000 visas per country was instituted, subject to a worldwide limit of 290,000 immigrants (which in the late 1970s was composed of a 120,000 limit for immigrants from the *Western Hemisphere*). The Amendments also institutionalised the concept of "family reunification" as a central goal of US immigration policy.

Two provisions in the law achieve this objective. First, close relatives of adult US citizens (parents, spouses, and children) can enter the country without having to qualify under the numerical restrictions specified in the Amendments. In fact, nearly 30 percent of all migrant in the 1980s qualified under this provision of the law. In addition, the preference system was revised so that at least 80 percent of the 290,000 numerically restricted visas were given to persons who were more distant relatives of U.S. citizens or residents. What this implies is that the 1965 Amendments led to a fundamental de-emphasis of occupational and skill requirements in the screens used to determine the immigrant pool. By 1980s, the combined impact of these two provisions in the 1965 Amendments was responsible for the fact that over 70 per cent of immigration to the US occurred under one of the two kinship provisions in the law.

In the mid-1980s, the chief preoccupation of American immigration policy was focused on how to control illegal migration, primarily but not restricted to Mexico. A torturous legislative process culminated in 1986 in the imposition of sanctions on employers hiring illegal migrants (Miller, 2005). The same law, however, included a generous amnesty provision for undocumented aliens already resident in the country. Indeed, the amnesty provision was essential to build political support for passage and, in retrospect, is the most important part of the law.

The 1990s witnessed an expansion of immigration into the US. The principal forces supporting immigration are agriculture, labour intensive and minimum wage businesses, the ethnic interest groups, and what may be called the humanitarian liberal lobby (Freeman, 1992). There is evidence of an emerging alliance, unlikely on its face, between interests and liberals favouring immigration (Bach, 1992). But there are also reasons to think that the business view of massive immigration of low-skilled labour may be turning less favourable and that the ethnic lobby may be breaking up.

In the mid-1990s it was recognised that the United States workforce was witnessing ageing phase, whereby there were more of aged workers than younger ones. Not only that, due to technological advancement, it was discovered that wages for certain tasks in the economy may not be commensurate with the level of skill. Hence, the H2-B was introduced as extension of coverage in H1-B (HI-B covers immigrants with certain skills and education). This programme extends the admission of migrants to all categories of workers with basic education. And the purpose was to meet up with ever-demanding services which cannot be offered to the home workers. These jobs are labelled dirty, dangerous and demanding. The job can be found in the industrial and agricultural sectors.

The immigration policy of the United States is purpose-based: that the reason for allowing foreigners in the country are generally one or a combination of response to labour market needs of a temporary or permanent nature, promoting economic links with other countries, and combating irregular migration.

2.2.2 *Immigration Policy of Canada*

Canadian immigration policy, until 1962, had a preferential treatment of immigrants originating in Western European countries. The 1962 Immigration Act (and further relatively minor changes in regulations and the statutes through the 1970s) removed the country-of-origin and racial restrictions, and shifted emphasis towards skills requirements. Under the new regulations,

immigrants were essentially grouped into three categories: sponsored immigrants (which included close relatives of Canadian residents or citizens; nominated relatives (which included more distant relatives of Canadian residents or citizens; and independent migrants (Borjas, 1988).

Applicants for visas in the last two categories were screened by means of a point system: potential migrants were graded and given up to 100 points. Points were awarded according to the applicant's education (a point per year of schooling, up to 20 points), occupational demand (up to 10 points if the applicant's occupation was in strong demand in Canada), age (up to 10 points for applicants under the age of 35, minus 1 point for each year over age 35), arranged employment (10 points if the applicant had a job offer from a Canadian employer, a personal "assessment" by the immigration officer based on the applicant's motivation and initiative (up to 15 points), etc. Generally, an applicant needed to obtain 50 points out of the 100 total points in order to receive permission to migrate into Canada.

Like it obtains in the US, Canada also regulates the total number of persons who could be granted entry into the country in any given year. The available number slots, unlike that of the US, were not determined by statute. Instead it is usually announced annually by the Minister of Employment and Immigration after a review of economic and political conditions in Canada. During the late 1970s, the annual limit on the number of immigrants was roughly 100,000.

In 1976, the Immigration Act was amended to incorporate the goal of family reunification as an important objective of Canadian immigration policy. Since the provisions in this Act did not go into effect until 1978, the impact of these changes on migration prior to the 1981 Census is likely to be minimal. Nevertheless, it is of interest to note that the fraction of migrants who belonged to the category of "independent migrants" had been declining even prior to the 1976 Amendments.

In the 1980s, Canada fashioned a programme that has a better articulated economic rationale, a larger skills component, and a more efficient and rigorously managed procedure for immigrants (legal and illegal). Specifically in 1985, the government authorised a gradual increase in the intake of immigrants by expanding the number of visas available to economic migrants selected by the point system. This system was later adjusted to emphasise training and employment related factors. The objective was to address the long-term demographic problems created by a dramatic decline in the birth rate and immigration levels, the latter due primarily to employment conditions.

At the same time, a House of Commons report recommended that "every effort should be made, beginning today and continuing for at least 30 years, to consider using immigration policy to smooth out the current age imbalance in the Canadian population". Hence immigration targets were set for 1986 and 1988 at 105,000 and 135, 000 respectively (Freeman, 1992).

In 1990, a five-year immigration plan covering 1991 to1995 was rolled out. Based on the extensive consultations with interested parties and groups, the plan was sharply expansionary, from 215,000 entries in 1991, the government intended to reach 250,000 for each of the years from 1993 to 1995. Among other innovations, the plan involved the designation of occupations with regional or national shortages so that applicants with those skills would be advantaged in the selection process (Employment and Immigration Canada, 1990). Based on the urgent need of workers for certain tasks in all the sectors of the Canadian economy, immigration quota has been expanded and extended. Currently, anybody with basic education is qualified to migrate to Canada basically from developing countries. Observably, the Canadian immigration policy is closely tied to labour market needs.

2.2.2 Immigration policy of the EU

An overwhelming majority of EU immigrants from Africa and Asia are unskilled. In contrast, 50 per cent of migrants to the US from these same regions are highly skilled. The EU Immigration Commission estimates that the

EU will need to attract 20 million skilled migrants over the next 20 years to address skill shortages in Europe's engineering and computer technology sectors. Commissioner Frattini's solution is an EU 'blue card' – a common working visa – to lure young, highly skilled workers to Europe.

Under the scheme, recipients would get a two-year residency in any member-state where they have a job offer. The job must be paid at three times the local minimum wage and be guaranteed for at least one year. For the migrant, the main benefit of the blue card would be the option to extend their stay after the initial contract and to work anywhere else in the EU.7. The Commission is not looking for the authority to decide how many workers a member-state should admit. National governments are reluctant to give this power away. But the Commission would set the criteria for granting a blue card and have the power to guarantee cardholders the same healthcare, tax and pension rights throughout the EU. An EU blue card would send a strong signal to European citizens that the Union can contribute to an effective migration policy. It would also fill an important gap in those countries that have no proper legal migration system of their own.

However, some member-states remain unenthusiastic about the idea. The UK, the most popular destination in Europe for non-EU workers, has just begun to use a separate 'points system' to manage legal migration and has therefore opted out. Since 1972, there has also been a significant flow of migrants who have been allowed to enter the UK on work permit schemes[20]. The aim of this policy has been to meet domestic shortfalls in labour supply and, under the scheme, employers apply for permits on behalf of a foreign worker in order to fill a job for which they are unable to find a suitable applicant from the EEA states. The number of work permits issued grew steadily from around 30,000 a year in 1951 to almost 70,000 a year in 1971. This rise was abated by the 1971 Immigration Act, which tightened the regulations governing the issuing of permits by placing Commonwealth citizens on the same footing as other non-EU applicants. As a consequence, the number of work permits fell to

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[20] See Hijzen and Wright (2006)

about 15,000 in the early 1980s. Since then, the number of permits issued has risen sharply, with more than 129,000 being issued in 2002 (Clarke and Salt, 2003). The vast majority of these were in higher skilled categories (managerial, professional, associate professional and technical occupations).

Meanwhile those allowed entry on work permits are only granted temporary leave to stay. Work permits are granted for a particular job, and for a limited period of time. Permits may be extended if the individual wishes to work longer for the same employer. However, if the individual wishes to change employment then they must apply for a new permit. Indeed, Rendall and Ball (2004) point out that most migration to the UK, from any country of the world, is of a temporary nature and they estimate that almost half of those entering the UK re-migrate within five years. Likewise, Glover *et al*. (2001) suggest that the balance of migration that was maintained throughout the 1980s and early mid1990s, net migration to the UK has increased significantly as entrants have outnumbered those returning. Net immigration has risen from around zero in the early 1990s to more than 150,000 a year in 2005. Thus migration is a more dynamic phenomenon than simple consideration.

The EU countries signed the Treaty of Lisbon in December 2007. If ratified, it will switch all remaining EU decisions on asylum, immigration and integration to qualified majority voting after 2009. (This includes new laws on entry requirements for non-EU nationals). However, the treaty also makes clear that member-states have an exclusive right to determine the number of foreign nationals admitted to their territory and that cooperation on integration is supplementary and not about the harmonisation of laws. The European Parliament already has an equal say with national ministers in most EU legislation dealing with immigration, border and visa issues. But under the treaty it will gain a stronger say in both legal and illegal migration measures. Britain, Ireland and Denmark opted out of many migration-related policies at present, and this will not change under the new treaty.

Many European countries have no proper system for attracting legal migrants. Of those that do, most operate quota systems to issue work visas based on the country's need for migrant labour, according to information provided by local bodies, employment and social affairs ministries and employers' associations. For example, from 2004 to 2006, Italy was expected to admit 79,500 foreign workers. So it allocated quotas to countries that had signed cooperation agreements with Italy on immigration, such as Albania, Egypt, Morocco and Tunisia. The Czech Republic, Germany and the Netherlands have used 'greencard' or work permit systems, in partnership with employers, to attract and select highly skilled workers. In 2008, the UK became the first European country to introduce a 'points-based' system, modeled on those in Australia and Canada. Under the new system, the UK will allocate work visas depending on the skills and qualifications lacking in its labour market. Those accumulating the highest points will not even require a job offer to secure a visa. Some economists have criticised points system as ineffective and bureaucratic. But advocates argue such schemes are a much more sophisticated method than quotas for identifying, attracting, and retaining workers.

Things to note about the migration characteristics in the EU are that first, these migrants are young in comparison with the EU-born population. Specifically, Hijzen and Wright (2006) noted that about three-quarters of the overseas-born population were of working age in 2001, compared to only about three-fifths of those native born. Second, migrants are more diverse than the native population in terms of their educational qualifications, reflecting the diverse background and educational systems of migrants (Glover et al, 2001).

It is important to note that the relatively liberal policies on migration and the fact that the UK has never operated a 'points' system, which in other OECD countries excludes people with 'undesirable' socio-economic characteristics, might suggest that the UK would not attract workers with relatively poor levels of skill and education. In fact, immigrants to the UK actually have higher levels of education than the native population (Hijzen and Wright,

2006). Bell (1997) showed that the average number of years of schooling for the native population between 1973 and 1996 is more than a year less than that for immigrants. Further, the average level of education of immigrants is increasing with each new arrival cohort.

While the OECD (2005) study notes that there has been little empirical or analytical work on bilateral labour agreement and even less on assessing their effectiveness, some preliminary conclusions can be drawn. For receiving countries, the reason for entering into bilateral labour agreement are generally one or a combination of the following: to respond to labour market needs of a temporary or permanent nature, to promote economic links with other countries, to combat irregular migration and to preserve or to strengthen ties between countries sharing historical and cultural links (IOM, 2004a).

2.3   Bilateral Trade between Nigeria and the Trading Partners

Given the various trade policy schemes embarked upon and the market access opportunities granted by the developed countries, Table 2.3 presents how trade has fared in Nigeria between 1980 and 2010. As indicated in the table, the average growth rate of export was alternating in sign beginning with negative. The table shows that the rate at which export peaked was higher than the rate at which it fell (except for 1980-1985).

In the case of import, the growth rate was negative from 1980 to 1990, but began to rise in the succeeding periods. The decadal trend shows that between 1980 and 1990, average growth rate of export fell by 8.4%, while that of import fell by 15%. From 2000 to 2005, the growth rate of both export and import rose, with import rising faster. What this implies is that though the growth rate appeared not to follow a steady pattern, Nigeria was more open (in terms of goods) in the 2000 when AGOA, GPT and EU-ACP agreements were implemented and when immigration policies of the developed countries were relaxed.

The share of Nigeria's trade in the selected countries of OECD is presented in Table 2.4. Nigeria's export share in the world total was below 0.05%. Specifically, the highest share was recorded in 1981 with 0.03%. In the early 1980s, Nigeria experienced continuous decline but in the middle 1980s to 2005, there was an upturn in the export activities except for a couple of years when it declined. This suggests that the trade policy of the SAP period appeared to improve exports even though its share from world total was very small. Column 4 (Table 2.4) shows the share of Nigeria export in the America aggregate import. The highest share was recorded in 1981, with 1.85%, followed by 1.43% in 1983 while 1999 experienced the lowest share (0.35%). Nigeria's export share from America import was very small and did not follow a particular pattern.

Table 2.3: Five-year average growth rate of Nigeria trade

PERIOD	EXPORT	IMPORT
1980 – 1985	-12.81	-15.32
1985 – 1990	4.16	-5.91
1990 – 1995	-2.30	1.65
1995 – 2000	8.56	3.28
2000 – 2005	16.48	22.55
2005 – 2010	6.93	8.27

Source: Computed.   Underlying data from the Handbook of Statistics (UNCTAD, 2011)

Table 2.4: Nigeria trade share in America, Europe and World (1980-2010)

YEAR	NIG IMP/AME EXP	NIG IMP/ERP EXP	NIG EXP/AME IMP	NIG EXP/ERP IMP	NIG EXP/WORLD
1981	0.74%	1.32%	1.85%	0.81%	0.32%
1982	0.60%	1.19%	1.43%	0.86%	0.24%
1983	0.39%	0.89%	0.75%	0.89%	0.14%
1984	0.25%	0.45%	0.43%	1.04%	0.09%
1985	0.29%	0.45%	0.59%	1.04%	0.13%
1986	0.13%	0.22%	0.41%	0.28%	0.09%
1987	0.14%	0.21%	0.53%	0.33%	0.11%
1988	0.10%	0.18%	0.57%	0.21%	0.11%
1989	0.09%	0.16%	0.71%	0.21%	0.14%
1990	0.08%	0.17%	0.89%	0.22%	0.16%
1991	0.11%	0.20%	0.58%	0.18%	0.10%
1992	0.20%	0.30%	0.76%	0.29%	0.14%
1993	0.17%	0.25%	0.75%	0.24%	0.15%
1994	0.08%	0.16%	0.56%	0.25%	0.11%
1995	0.09%	0.13%	0.53%	0.19%	0.10%
1996	0.11%	0.14%	0.58%	0.26%	0.11%
1997	0.10%	0.14%	0.59%	0.22%	0.12%
1998	0.10%	0.15%	0.38%	0.13%	0.08%
1999	0.08%	0.15%	0.35%	0.12%	0.08%
2000	0.07%	0.11%	0.80%	0.24%	0.19%
2001	0.09%	0.14%	0.55%	0.17%	0.12%
2002	0.12%	0.13%	0.42%	0.16%	0.09%
2003	0.24%	0.16%	0.64%	0.16%	0.13%
2004	0.16%	0.19%	0.86%	0.16%	0.17%
2005	0.15%	0.20%	1.11%	0.23%	0.22%
2006	0.16%	0.20%	0.99%	0.20%	0.20%
2007	0.20%	0.20%	1.15%	0.31%	0.31%
2008	0.18%	0.21%	1.07%	0.26%	0.26%
2009	0.19%	0.21%	1.12%	0.30%	0.29%
2010	0.18%	0.22%	1.10%	0.29%	0.29%

Source: Computed by the author from the Handbook of Statistics (UNCTAD, 2011)
Note: NIG, AME and ERP mean Nigeria, America and Europe respectively; IMP and EXP
mean value of import and export measured in million US dollars.

It appears the number of times when Nigeria had high share was more than when it recorded low share. In the case of Europe, the highest share of Nigeria's export was 1.04% in 1984 while the lowest was in 1999 with 0.12%. In the 1990s, there was continuous increase in the share of Nigeria export except for a couple of years before it fell. Comparatively, the share of Nigeria export in the America's import was relatively higher than that from Europe's import. This suggests that Nigeria appears to be more open to the American economy than EU.

Nigeria's share of import in America's total export recorded the highest in 1981 (0.74%) followed by 0.60% in 1982. In the 1990s, the highest share was recorded in 1992 with 0.2% while in the 2000s, the highest share was in 2000. Also, in the case of Nigeria-Europe trade pact, the highest share of Nigeria import from Europe export total was 1.32% in 1981 and it continued to fall until 1991 when it recorded almost the same share as in 1987. As from 1991 to 2005, there was no specific trend pattern that such share followed. Most striking is that fact that except in 1981 and 1982, the share of Nigeria's exports in Europe's imports was less than 1%.

The low share of Nigeria's trade in world trade and also with each of the partners establishes the fact that Nigeria constitute a small market in the world and by implication, the country does not have control over the price for which its products are sold in the world market. Meanwhile, given the fact that these countries are major trading partners of Nigeria, it is not unsafe to suggest that trade policies at national and international levels will play some roles in improving export goods.

Table 2.5 presents trade between Nigeria and the selected countries based on product pattern (oil and non-oil). The summary is that on average, oil export to Canada and UK grew more than non-oil (more than six times for Canada), while in the US, the growth rate of non-oil was relatively higher. In the case of import, the growth rate of non-oil import from UK and US was higher than that of oil import. Meanwhile, it seems the Table suppresses some information about non-oil trade.

Table 2.5: Average growth rate of trade between Nigeria and selected trading partners countries (1980-2010)

Growth rate	Canada	Italy	Sweden	United Kingdom	United States
Total Exports	3.68	2.29	6.60	1.45	4.86
Total Imports	19.30	3.81	-5.52	5.54	3.36
Oil Exports	5.12	1.01	25.58	8.89	11.44
Oil Imports	10.34	3.85	-5.71	9.52	3.38
Nonoil Exports	3.74	2.36	5.95	1.00	4.64
Nonoil Imports	11.43	3.57	-0.55	-2.42	1.52

Source: computed. Underlying data from the Direction of Trade and World Integrated Trade Solution (WITS) published by UNCTAD (2011)

For instance, it is not clear whether this is the true situation of each sector producing non-oil products or whether some of them did grow even more than oil products. It is in view of this that Tables 2.6 to 2.8 present sectoral trade analysis between Nigeria and its trading partners.

2.3.1   Sectoral Analysis

The analysis under this section is based on the product classification SITC 1 comprising agricultural materials, agricultural final goods, chemicals, manufactures, food and beverages, textile and petrol. To facilitate understanding, the average growth rate within a five-year period was analysed while the year-on-year was contained in the appendix.

The sectoral growth rate of trade with UK is presented in Table 2.6. Starting with imports, petroleum was the highest growing sector between 1980 and1984 with average growth rate of 0.35, followed by agricultural raw materials having 0.10 average growth rates in the period. The situation changed between 1985 and 1989. In this period, agricultural raw materials had the highest growth rate with 0.37 followed by textile with 0.09, while petroleum recorded average growth decline of - 0.09 in that period.

From 1990 to 2006, petroleum maintained its highest growth rate for the three while agricultural raw materials came second with 0.26 in 1990 to 1994, and 0.23 in 2000 to 2010 (Table 2.6). Between 1995 and 1999, food and beverages had the second highest growth rate while chemicals and other manufactured products were not doing. In fact, close observation reveals that the two sectors were not doing fine. The whole analysis reveals that agriculture imports from the UK benefitted from trade liberalisation than manufacture products.

In the case of exports, the 1980 to1985 appeared to be a period of crisis for all the products as they all experienced growth decay with the lowest occurring in food and beverages (-0.06) and the highest occurring in chemicals (-0.18).

Table 2.6: Five-Year average growth rates of trade between Nigeria and UK

Direction	Products	1980-1984	1985-1989	1990-1994	1995-1999	2000-2010
IMPORTS	Agricultural Materials	-0.04	-0.01	0.07	0.18	0.04
	Agricultural Raw Materials	0.1	0.37	0.26	-0.05	0.23
	Chemicals	0.02	0	-0.07	0.01	0.04
	Food and Beverages	-0.05	-0.06	0.1	0.23	0.04
	Manufactures	0.02	-0.02	0.01	0.02	0.13
	Petroleum Products	0.35	-0.09	0.4	0.42	0.83
	Textiles	-0.05	0.09	0.18	-0.06	-0.03
EXPORTS	Agricultural Materials	-0.07	-0.09	0.08	-0.01	0
	Agricultural Raw Materials	-0.1	0.15	0.1	-0.03	0.1
	Chemicals	-0.18	2.1	0.25	0.33	0.29
	Food	-0.06	-0.13	0.09	0.04	0.01
	Manufactures	-0.1	0.17	0.11	0.05	0.14
	Petroleum Products	5.65	465.15	702.45	-0.19	1534.37
	Textiles	-0.13	12.26	3.16	0.61	0.09

Source: computed by the author using trade data from the World Integrated Trade Solutions (WITS) published by UNCTAD (2011)

Between 1985 and 1989, growth rate re-occurred for all the sectors except agricultural materials that further declined (-0.09) compared to -0.07 of 1980 to 1984. During that period, textile came second with 12.26 followed by chemicals with 2.10 and then other manufacture products with 0.17. Textile maintained its second position in 1990 to 1994 period and overtook petroleum to attain the sector with the highest growth rate in 1995 to 1999 period. Chemicals became the third highest growth performer in 1985 to 1989 and the second highest in 1990-1994. It maintained this second position till 2000 to 2006.

What can be learnt from this is that manufacturing products tend to benefit from trade liberalisation. Perhaps the relevant part of the analysis to this study is that the labour-intensive agriculture sector tends to experience low export growth to the UK and high import growth from the country, while capital-intensive manufacturing sector experienced the converse. The implication of this is that such situation may lead to decrease in wages and/or increase in the pool of unemployed labour, which, in any case, may create incentive for migration to take place.

The behaviour of imports from the US reveals that petroleum maintained the lead but with growth oscillation, rising from 0.97 in 1980 to 1984 to 2.25 in 1985 to 1985, then fell to 0.4 in 1990 to 1994 and later rose to 2.12 in 1995 to 199 but fell later to 0.55 in 2000 to 2010. The second fastest growing export product to the US in the 1980 to 1984 was agricultural materials with 0.78. However, in the period that follows, there was a drastic reverse in the growth experience of the product. Though textile was able to maintain the third fastest growing export products for 1980 to 1984 and 1985 to 1989, there was a slight decline in the latter period. In fact, the sector continued to experience decline and the situation was so terrible that in the 1995 to 1999 period, the growth rate was negative.

Table 2.7: Five-Year average growth rates of structure of trade between Nigeria and US

Direction	Products	1980-1984	1985-1989	1990-1994	1995-1999	2000-2010
IMPORTS	Agricultural Materials	0.16	-0.31	0.33	0.26	0.18
	Agricultural Raw Materials	0.78	-0.19	0.03	0.24	0.11
	Chemicals	-0.04	0.18	-0.13	0.18	0.22
	Food and Beverages	0.15	-0.3	0.36	0.27	0.18
	Manufactures	0.01	0.18	0.04	0.02	0.23
	Petroleum Products	0.97	2.25	0.4	2.12	0.55
	Textiles	0.25	0.05	0.02	-0.03	0.03
EXPORTS	Agricultural Materials	-0.1	0.64	-0.01	-0.26	0.64
	Agricultural Raw Materials	0.21	0.48	0.27	-0.25	0.57
	Chemicals	0.3	2.98	5.59	-0.23	4.49
	Food and Beverages	-0.1	0.84	-0.01	-0.21	0.95
	Manufactures	1.42	0.7	0.31	0.02	0
	Petroleum Products	0.11	0.17	0.4	0.24	0.2
	Textiles	16.59	10.22	-0.13	0.19	0.03

Source: computed by the author using trade data from the World Integrated Trade Solutions (WITS) published by UNCTAD (2011)

The analysis suggests that manufactured imports appeared to be greater than agriculture exports. It turns out that human capital-intensive products from the US tend to benefit from trade policy of Nigeria. The implication of this is that wages in this sector may rise and if employment is tight such that request for foreign workers will be necessary then migration may take place. Thus, making migration being complement to trade

The period 1980 to 1984 saw a rebound of textile, recording an average growth rate of 16.59 followed by manufactured products growing at an average of 1.42 (an improvement compared to the earlier period), while chemicals fell to third position with growth rate of 0.3. Textile maintained its first position but with slight decline in 1985 to 1989. Chemicals grew at the rate of 2.98 placing it in the second position while manufactured products maintained its third position, even though it had a low growth compared to the earlier period.

All through, it can be observed that import of manufactured products grew faster than agricultural products. What this implies is that like it occurred in the UK-Nigeria trade situation, US-Nigeria trade tends to be skewed towards manufacturing sector where it is capital-intensive in Nigeria and human capital-intensive in the US. The implication of this is that this situation may worsen unemployment. Notably, the possibility of forward linkage, in which case, sectors like food and beverages as well as textiles sourced some of their raw materials from agriculture sector, cannot be ignored. But the situation of employment could have improved more if the growth rate of labour-intensive agricultural products also experienced continuous growth rate.

The behaviour of Nigeria-Canada trade appeared to be similar to those analysed earlier. Starting from imports the 1980 to 1984 saw manufactured product leading with an average growth rate of 0.63. Chemical products and agricultural material was in the second (0.47) and third (0.42) position respectively. In 1985 to 1989, it was discovered that textile grew by 11.18 on

average, while chemicals grew by 0.93 on average. The period also witnessed a decreasing growth rate of manufactured products as it grew at an average of 0.18 compared to 0.63 of the earlier period. Petroleum led the growth rate table in 1990 to 1994, leaving agricultural materials and food and beverages in that order.

Comparatively, agricultural materials, agricultural raw materials, as well as and food and beverages performed relatively better in terms of average growth, while chemicals and other manufactured products performed woefully. In 1995 to 1999, it was shown that food and beverages performed very well as it recorded 4.32 average growth rates, the highest among the sectors under review. Meanwhile almost all the sectors performed relatively well compared to the earlier period. This may be as a result of soft trade liberalisation policy of the two trading partners. From 2000 to 2006, petroleum recorded 61.59 average growth, the highest among the sectors. This was followed by textile with 2.40 average growth and then agricultural raw materials with 1.45 growth rate. What can be said about Canada export to Nigeria is that between 1980 and 2006, export of manufactured products seemed to be more pronounced than export of agricultural products, while before 1980, it was more of agricultural products than manufactured products.

Table 2.8: Five-Year average growth rates of structure of trade between Nigeria and Canada

Direction	Products	1980-1984	1985-1989	1990-1994	1995-1999	2000-2010
IMPORTS	Agricultural Materials	0.42	-0.27	0.95	2.71	0.69
	Agricultural Raw Materials	0.08	-0.01	1.09	-0.61	1.45
	Chemicals	0.47	0.93	0.14	0.15	0.14
	Food and Beverages	0.44	-0.02	0.93	4.32	0.82
	Manufactures	0.63	0.18	0.01	0.29	0.51
	Petroleum Products	-0.4	-0.4	7.55	-0.4	61.59
	Textiles	0.05	11.18	0.08	-0.03	2.4
EXPORTS	Agricultural Materials	-0.09	2.48	0.97	1.08	1.04
	Agricultural Raw Materials	0	0	3.06	-0.14	6.13
	Chemicals	-0.02	43.97	72.14	0.3	0.38
	Food and Beverages	-0.09	2.48	0.95	1.58	0.85
	Manufactures	0.46	43.94	14.14	0.14	0.5
	Petroleum Products	0	0	0	1.42	312.1
	Textiles	0	0	0	0.32	2.86

Source: computed by the author using trade data from the World Integrated Trade Solutions (WITS) published by UNCTAD (2011)

Following the analysis presented in Table 2.8, it is clear that agricultural exports experienced the fastest growth while petrol export had the slowest growth. This scenario may not be unexpected in the sense that the trade policy of Canada tends to favour agricultural materials and raw materials but not product such as food and beverages, textile and so on. The relevance of this trade situation for the study is that unlike in the UK and US, the growth rate of export from Nigeria to Canada was more pronounced in the labour-intensive agriculture sector than capital-intensive manufactured sector. The implication of this is that if trade and migration were substitutes, this situation should tend to reduce migration to Canada. However, this may not be the case because it is also possible to think of import of agricultural products from Canada to Nigeria to be foreign workers embodied, in which case such trade situation will create pull effect and hence require migration to take place.

2.4 Stylised facts about migration experience of Nigeria with the selected destination countries

Figure 2.1 shows the stock of Nigeria emigrants in some selected OECD countries (Canada, Italy, UK, US, and Sweden). As can be verified, emigration to these countries was rising systematically from 1980 to 2005. The available data shows that Nigerians migrated to Italy more than other countries. Nigerians in Italy were less than 20,000 in 1980 to 1985 but increased to more than 60,000 in 1995 to 2000 and in 2000 to 2005, Nigerians who are working in Italy was computed to be around 120,000. In the case of the US, Nigerians was also less than 10,000 in the late 1980s but rose to around 37,000 in 1990 to 1995 while it increased to around 50,000 in 2000-2005 period. Nigerians in the UK were not many compared to the first two destination countries. Emigration of Nigerians to the UK began to increase quite substantially from 1985 to 1990 when it was around 6,000. By 1995 to 2000, the figure was close to 20,000 and by 2000-2005, it was around 40,000.
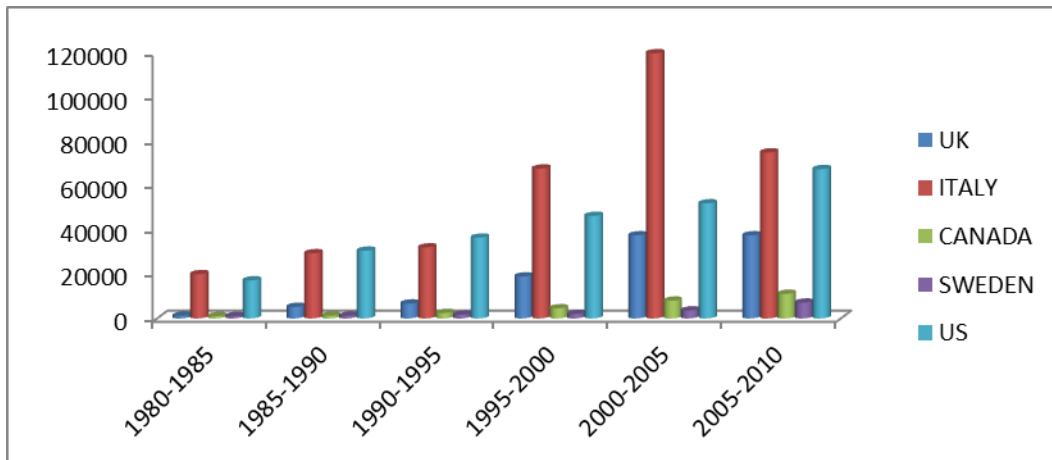
**Figure 2.1: Stock of Nigeria emigrants in selected Developed Countries
        (1980-2010).**

*Source: Computed. Underlying data from immigration statistics yearbooks of Canada, Italy,
Sweden, UK, and US Statistical Abstract and World Bank (2010).*

However, in 2005 to 2010, outflow of Nigerians to the US and UK fell sharply. Nigerians in Sweden were very small as they were not up to 10,000 in any period but they tend to increase over time. It turns out that the rate at which Nigerians migrated to Canada was higher than the rate at which they migrated to US or UK even though the stock of Nigerian in the US at a particular year is substantially greater than that of Canada. Perhaps the reason for this is that Canada appears to be a country that is beginning to attract workers from Africa.

Workers' remittances are considered to be important foreign capital inflows that reduce credit constraint for consumption and investment. Remittances sent by Nigeria emigrants, particularly from the developed countries are significant and have since been increasing. As Figure 2.2 revealed, inflow of remittances was less than one billion dollars in 1980 but rose steadily to US$1.4 billion in 2000. Six years later, the flow climbed to US$16.9 billion and by 2010, the country recorded a sum of US$19.8 billion.

The reasons for the sudden jump from US$1.3 billion in 2000 to US$16.89 billion in 2006 were improved ways of recording remittances and large flow of Nigerians to the advanced countries. This large flow was encouraged not only by expansionary migration policy of the West but also as a result of migration network that reduced migration cost. Other reasons include large unemployed skilled graduates, spate of insecurity in the country, lack of sound economic environment and perhaps, trade liberalisation. Given the upward trend, it seems the case that remittances will continue to increase in Nigeria and will challenge crude oil inflows and probably overtakes as done in the case of direct investment.
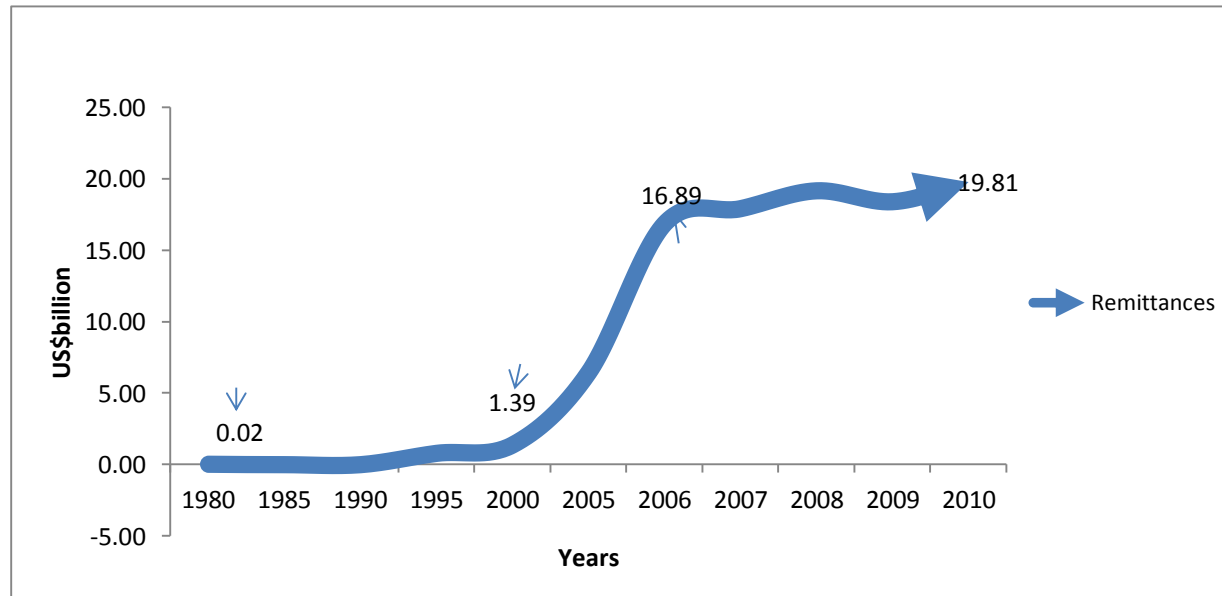
Figure 2.2: Trend of workers' remittances between 1980 and 2010
Source: computed.

Note: data for2005 to 2010 were extracted from CBN annual abstract and statement of accounts while data for other years were from IMF Balance of Payments Yearbook various issues)[21]

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[21] CBN started to compute and release workers' remittances in the Statistical Bulletins and Statement of Accounts starting from 2005. If such data were available before 2005, they were not readily accessible.

The growth rate of official workers' remittances presented in Figure 2.3 reveals that, on average, growth rate of remittances had never been positive and more than 10 per cent per five-year period. Second, in 1991 to 1995, remittances grew at the rate of 375.3 per cent annually. This growth could not be maintained as it fell sharply to the extent that annual average growth rate 1996 to 2000 was just 18.4 per cent. Incidentally, remittances experienced increased growth rate in the period of economic downturn while it experienced reduced growth rate in the period of boom[22]. This suggests that remittances appear to be countercyclical. Meanwhile, the sharp increase may be as a result of improved way of reporting remittances officially. What can be observed in this pattern of growth rate is that it does not follow a particular trend.

Also, the growth rate of remittances grew more rapidly than that of GDP for some years. Not only that, it is observed that for so many years, official remittances and trade (total export and total import) appear to follow the same trend.

When compared with other foreign private inflows such FDI and portfolio investments and crude oil proceed. Table 2.9 shows that in 2005, remittances was about 6% of GDP while direct investment and portfolio investment was 4.4% and around 1% respectively and crude oil inflow was almost half of the GDP. In 2006, while direct investment's share in GDP fell to 3.34 and that of crude oil fell to 38.4%, remittances rose to around 12% while portfolio investment rose slightly to 1.9%. In 2006, the share of remittances in GDP were almost double the share of government expenditure in GDP. Both remittances and portfolio investment experienced a slight downward trend in 2007 and 2008, perhaps due to the global financial crisis that affected financial and other foreign inflows[23]. In 2009, the flow picked up again but was not sustained in 2010. Meanwhile, oil revenue fell from 40.2% in 2008 to 31.9% in 2009, this again was the aftermath of global economic crisis.

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[22] Remittances rose from 56.3% in 1986 to 1990 to 375.3% in 1991 to 1995 when the growth rate of GDP fell from 5.4% to 2.5% in the same period.

[23] A comprehensive effect of financial crisis on remittances can be accessed in NOMRA 2010.
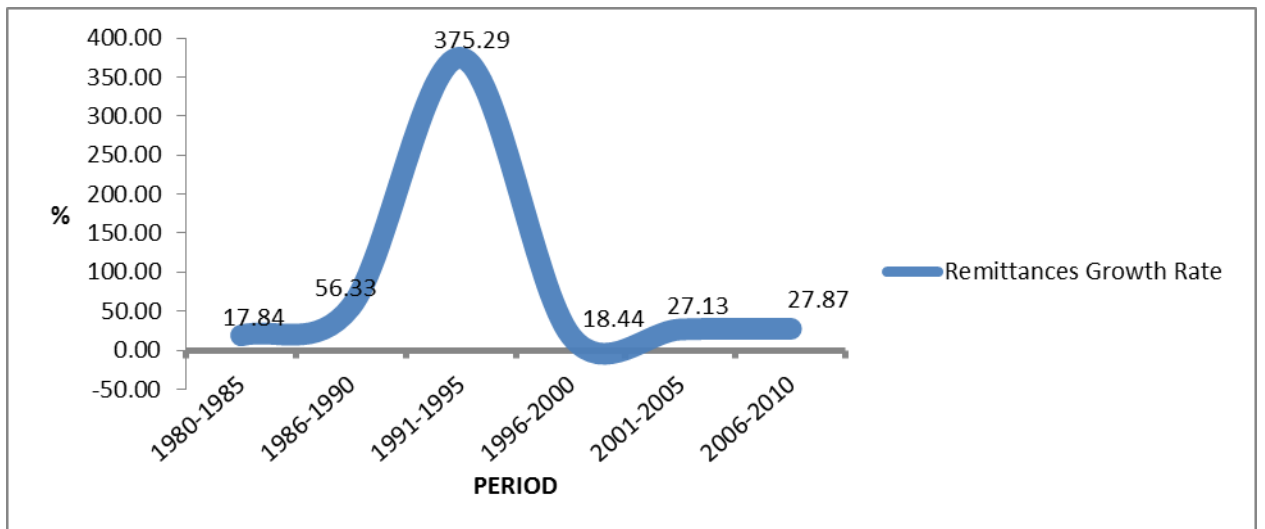
Figure 2.3   Growth rate of official workers' remittances to Nigeria

*Source: Computed. Underlying data from Balance of Payments Yearbook,
      published by IMF, various issues*

Clearly, remittances were the second largest foreign inflows in Nigeria. Although, its share in GDP was three times lower than that of crude oil inflow, it was more persistent than crude oil inflow. Notably, while the oil revenue is under the control of the government, remittances are under the control of the private recipients and given its seeming increased share in GDP, some will be spent on imports while some can be used to produce export products. Thus, this indirect effect of emigration on trade is important to examine. What the present study seeks to examine is the extent to which remittances are able to alleviate financial constraint in export production and import consumption.

Table 2.10 presents the growth rate of trade and migration from 1980 to 2010. A close look at this table reveals the fact that the period of increase in export was consistent with the period of migration while the period of decrease in trade (export and imports) occurred when migration was falling. Notably, the decline in exports and migration occurred during the post-Uruguay round (see Table 2.1). The sharp fall in the growth rate may not be unconnected with natural barriers that stifled export opportunities from Nigeria (Oyejide, 2008).

Meanwhile, the highest growth rates of both trade and migration was experienced during the period of expansionary migration policy and increased trade liberalisation. Meanwhile, the rate at which migration rose was faster than the rate at which imports fell. This implies that imports did not fall as much as to stem migration, suggesting that expansionary migration policy appear to be stronger than import policy. This may be as a result of strong preference for imported products in the face of expansionary migration policy. Observably, the perceived co-movement of migration and trade may not be as a result of trade or migration policy.

Table 2.9 Share of selected foreign inflows in GDP

Years	Workers' Remittances	Direct investment	Portfolio investment	Foreign inflow from crude oil
2005	5.78	4.44	0.79	48.46
2006	11.51	3.34	1.93	38.43
2007	10.69	3.63	1.59	38.73
2008	9.17	3.94	0.64	40.19
2009	10.76	5.05	0.28	31.98
2010	9.98	3.07	1.89	36.07

*Source: computed using CBN Annual Report and Statement of Accounts
      (various issues)*

Table 2.10: Growth rate of Trade and Migration

Reporting Countries	Period	Growth rate of exports	Growth rate of total imports	Growth rate of emigration
CANADA	1980-1985	1.73	6.26	4.49
	1986-1990	59.66	-21.96	22.64
	1991-1995	9.12	-1.00	9.51
	1996-2000	-10.74	18.49	17.93
	2001-2005	-13.45	11.18	12.51
	2006-2010	32.44	11.31	-0.93
ITALY	1980-1985	-4.03	-20.05	4.67
	1986-1990	-6.34	32.19	8.73
	1991-1995	-2.76	15.15	-9.00
	1996-2000	12.67	-17.12	30.47
	2001-2005	10.34	11.80	-0.22
	2006-2010	4.61	2.35	0.11
SWEDEN	1980-1985	-75.13	-5.02	1.16
	1986-1990	34.29	-12.43	3.25
	1991-1995	9.52	4.99	5.58
	1996-2000	-45.77	3.07	5.80
	2001-2005	36.39	39.96	18.94
	2006-2010	8.06	-1.67	8.90
UNITED KINGDOM	1980-1985	-7.48	-3.70	23.74
	1986-1990	-5.44	-3.68	21.57
	1991-1995	5.18	-5.89	11.83
	1996-2000	-22.08	3.79	22.91
	2001-2005	8.23	10.24	3.36
	2006-2010	-1.01	0.39	-13.33
UNITED STATES	1980-1985	-5.43	1.89	9.35
	1986-1990	8.26	-8.49	18.10
	1991-1995	0.66	3.54	-5.20
	1996-2000	8.35	3.44	2.77
	2001-2005	23.75	16.97	6.05
	2006-2010	-4.12	3.22	3.25

Source: Computed. Underlying data from WITS, immigration statistics of Canada, Italy, US, UK and Sweden.

CHAPTER THREE
LITERATURE REVIEW

The chapter begins by discussing various theoretical frameworks of migration and their implication for trade. While some of the theories predict complementary relationship, some predict substitutes. Followed by this is the discussion on the theoretical issues surrounding trade-migration nexus. Received theoretical evidence of trade shows the mechanism through which gains from trade can be fully achieved by considering migration phenomenon. Section three reviews methodological issues relating to the link between migration and trade while section four documents some received empirical evidence.

3.2   Theoretical issues on mechanisms through which migration affect Trade

3.2.1   *Microeconomic theory of international migration*

Microeconomic theory of migration was derived from microeconomic theory (Sjaastad 1962). The individual-level migration decisions are explained by treating migration as an investment in human capital; and based on a rational cost-benefit analysis. According to this theory, migrants choose the destinations that miximises the net present value of their expected future income less various explicit and implicit costs of migration. Letting ER(0) be the expected returns from migration at the moment 0, the determinants of migration is provided in equation 1:

$$ER(0) = \int_0^n [(P_{1(t)} P_{2(t)} Y_{d(t)} - P_{3(t)} Y_{0(t)})^{-rt}] dt - C_{(0)} \quad \text{........................ 1}$$

Where n is the time horizon of the decision-making process, P_1 is the probability of not being deported ($P_1 < 1$ for irregular migrants). Y_0 and Y_d are earnings at the origin and destination countries respectively, while P_2 and

P$_3$ denote the respective probabilities of finding a job. Further, *r* is the subjective discount rate and *c*(0) represents the sum of all costs of migration. The intending migrant decide to migrate if ER(0) is positive.

Dejong and Fawcett (1981) generalized the microeconomic decision framework in the value expectancy concept of migration. The underlying model of motivation to migrate (MM) is shown in equation 2:

$$MM = \sum P_i E_i \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.\dots\dots.. \ 2$$

Where P$_i$ refers to the preferred outcome of migration and E$_i$ is expectations of their realisation through migration which are held by a potential migrant and can thus be perceived as subjective probabilities. The index *i* represents the desires of individuals, that is, various dimensions of the decision-making problem. This theory appears to be comprehensive and may cover different aspects of human decisions in that migration context not only limited to economics but also to social and psychological spheres of life.

An extension of the microeconomic theory of migration is *the new economic theory of migration*. The neoclassical theory assumes that immigration stems from international disequilibria in labour markets that produce gaps in expected wages across national borders with the assumption that other national markets are well functioning and play no role in the migration decision. The new economics of migration posits that international migration exists because these other markets, most especially capital market, is not well functioning. Market imperfection denies easy access to credit, insurance and properties and to circumvent this problem, households decide to send one or more members to the foreign countries in search for jobs. The attractiveness of high wages in the foreign country represents a risk-minimization strategy and a way of overcoming financial constraints. It has been demonstrated that this framework has the capacity of explaining North-South migration (Bray, 1984; Portes and Guarnizo, 1990).

In addition, the framework shows that migration takes place because of relative deprivation (Stark and Taylor, 1989). In this case, migration is triggered not only by absolute, but also by relative income differential towards the reference group of potential migrants. Relative deprivation depends on where a household is located in the income distribution: the greater the share of income earned by households above it, the greater the sense of relative deprivation. As a result, households located toward the bottom of the income distribution are more likely to migrate than those situated toward the top. Additional income therefore provides more of an incentive to migrate for poor households located in skewed income distributions than for poor households in equal distributions (Stark and Taylor, 1989; Massey et al, 1994).

The framework also shows that although wage differentials may provide an incentive for international migration, stylized facts about migration suggests that wage gaps are not the only factor driving international labour movements. Holding constant the effect of expected income, international migration reduces the risks faced by households, the credit constraints they face in augmenting production and consumption, and offers a way of ameliorating feelings of being relatively deprived.

If access to credit is a binding constraint to production of export goods, and for the consumption of imported commodities, then this framework has implication for trade. In the case of export, as remittances flow in, credit becomes less binding for the production of export goods and this may increase the volume of export products, generate more employment in the export sector, and raises the income of capitalists in the sector (Massey et al, 1994). For import, remittances allow for consumption of some imported goods, which would not have been otherwise possible, had migration did not take place. Hence this framework posits that migration and trade is complement.

One weakness of this framework and the previous one is that they fail to give explanation on why there is income differential. If deprivation causes lack of

credit accessibility, then, migration could be stemmed by using appropriate policies to alleviate deprivation (Stark and Taylor, 1989).

In summary, the neoclassical microeconomic theory posits that migration leads to trade in at least two ways. First, if trade is allowed, the expected returns to migration will lead to a downward pressure on migration. If trade is hampered, may be due to tariff and non-tariff barriers, the gap in wages widens and this petrifies decision to migrate. Thus, trade and migration is substitute. Second, if the differences in average income is very large, and the cost of migration is unbearable, the new theory of migration version predicts that trade liberalization will lead to increase in migration and this will continue until the difference in income is the cost of migration. In this case, trade and migration are complements.

3.2.2 Macroeconomic theories of migration

The macroeconomic theory of migration was initially articulated in Lewis (1954) and later modified by Massey et al (1994). This theory explains how factor endowment differentials between countries leads to productivity differentials, which in turn leads to wage differentials. When there are two countries where one is labour-endowed and the other is capital-endowed, the latter country will experience high labour productivity and the former will experience low labour productivity. If factor returns reflect productivity, then wages in labour-abundant country will be lower than wages in labour-scarce country. Labour-abundant economy may also experience high unemployment rate relative to the other economy. This wage and unemployment differentials create a "push" effect. The flows of both production factors in opposite direction exert downward pressure on wages in the destination country and an upward pressure in the source country and this process continues until the markets converge to equilibrium. At equilibrium, the only seemingly difference in wage will be the cost of migration.

Thus this framework predicts that in the presence of factor abundance above factor content requirement in a given country leads to unemployment and low wage, which in turn, forces the affected labour to migrate to labour-scarce countries. Hence migration is perceived as a disequilibrium phenomenon, which ceases as soon as the equilibrium is reached (Harris and Todaro, 1970).

However, if the labour-abundant country produces labour-intensive goods and free trade is allowed, then part of the labour-intensive goods can be exported. This will increase employment and possibly increase wages. As more labour-intensive goods are produced and exported, unemployment tends to fall and wages tends to rise. The process continues until equilibrium is reached (it is assumed that the capital-abundant economy produces and exports capital-intensive goods). Thus allowing migration to take place is as good as allowing free trade to take place. Therefore, the Lewis model predicts that international migration is a substitute for international trade.

Observably, does not explain the phenomenon of return migration or population flows in the absence of wage differentials (Stark, 2003). Furthermore, Jennissen (2004) points to the fact that there exists an alternative Keynesian view on migration-induced labour market adjustments equilibrium, through the elimination of differences in unemployment, not in wages. Besides, the framework has not been subjected to rigorous empirical and it may not be able to explain the importance of expected wages.

Harris and Todaro (1970) incorporated expected wage in the macroeconomic theory of migration framework. They formulated their model in terms of expected income, taking into account the possibility that labour migration from the labour-abundant sector (v) in the home country (h) find jobs in the labour-scarce sector (z) of the foreign country (f), the latter characterized by minimum wages (W_z^*) and unemployment. The equilibrium condition to which the system should optimally converge requires that

$$\frac{dN_f}{d} = \Omega \frac{\overline{W_z} N_z}{N_f} - P \frac{P dX_V}{dN_V} \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots..3$$

where N_f is the total foreign labour supply (both migrants and natives), N_z is the number of active labour in a given labour-scarce sector (that is also labour-intensive) of the foreign country, P is the terms of trade of the reference country, that is, the price of export goods divided by the price of import goods. $\overline{W}$ is the mean wage in the f country and $X_v = X_v(N_v)$ is the monotonously increasing and concave production function of the agricultural sector output defined in terms of the goods produced by the labour-intensive sector of h. The expected wage in the f country are equal to the mean wage adjusted for the chances of being employed, $W*_z N_z/N_f$. The function $\Omega(x)$ is such that:

$\Omega' > 0$.

One major difference between this framework and the first one is that wages and unemployment interact in the migration decision equation. That is wages and unemployment enters multiplicatively as opposed to the previous model in which they enter additively. Another major contribution, and which is relevant to this study is the recognition of terms of trade. If terms of trade improve, expected income from migration will fall. If labour-intensive export sector of h country rises relative to imports, terms of trade will rise and expected income from migration will fall. Conversely, if the terms of trade worsen, expected income will rise and labour will migrate. Thus, this framework predicts that migration takes place because expected income from migration is caused by worsening terms of trade, unemployment and low mean income.

3.2.3   Dual Labour/Segmented labour market theory

In contrast to the neoclassical and new economic theory, that view international migration as originating from rational calculations made by individuals and families responding to market forces, segmented labour

market theory sees migration as demand-driven, built into the economic structure of advanced industrial societies (Piore, 1979). Inherent tendencies in modern capitalism lead to a bifurcated labour market, creating a primary sector that produces jobs with secure tenure, high pay, generous benefits, and good working conditions; and a secondary sector typified by instability, low pay, limited benefits, and unpleasant or hazardous working conditions[24].

Inherent tendencies within the developed countries also tend to produce a shortage of workers willing to take jobs in the secondary sector, since there are few economic returns to experience, skill, or education. As a result, employers seek to recruit immigrants to fill secondary positions rejected by natives. Since wages offered by this sector is greater than the mean wage obtained in the source country, the demand creates a "pull" effect because the relatively high wage (even though low, relative to the wages in the host country) acts as a magnet that draws migrants to such sector. In addition, immigrants trade low wages upon arrival because they perceive a greater chance of advancement and independence as time goes on (Portes and Manning, 1986; Portes and Rumbaut, 1990).

Social networks and contact with other entrepreneurs launch new immigrants on independent careers in small business, and, once established, these new entrepreneurs are expected to help and promote other immigrants in turn. Since the enclave formed by the immigrants requires a steady stream of new immigrant workers willing to trade low initial wages for the possibility of later mobility, immigrant enclaves constitute another source of demand for immigrants stemming from labour market segmentation.

The relevance of this theory is apparent. If the goods imported from the source country is labour-intensive, then it will be advisable for workers to migrate. Even if the bulk of imported goods consumed is capital-intensive, migration will still take place to enhance increase in consumption space. The reason being that in the absence of migration, wages in the 3Ds sector will be very high or non-existent or change form to capital intensive.

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[24] this type of job was named dirty, dangerous and demanding, or simply the 3Ds sector (Piore, 1979;Bijak, 2006)

It follows that the capital-intensive (manufacturing) sector will experience high wages thereby causing an increase in the price of capital-intensive goods. Imposition of tariff may intensify smuggling practice, more so if the cost of doing so much as to increase the price of smuggled products above the import competing counterpart in the source economy. Therefore, this framework predicts that international migration complements trade in goods in order to capture more gains from trade.

3.2.4 World System Theory (WST)

The WST argues that international migration follows directly from globalisation of the market economy (Wallerstein, 1974; Portes and Walton, 1981). That is international migration is associated with the advances of the capitalist system and global markets, not only in the world's economic 'core' but also in semi-peripheral regions. As capitalism extends outwards from core nations in Europe, North America and Japan and as market relations penetrate, developing countries and non-capitalist patterns of social and economic organisations are disrupted and transformed. In the, large numbers of people such as peasant farmers, artisans and employee of state owned industries are displaced from securing livelihood. The situation creates a mobilized population prone to migrate, both internally and internationally (Massey, 1988). The globalisation of production thus put downward pressure on wages, working conditions, and employment level among some set of workers.

The discovery and expansion of new capital-intensive or skill-intensive production increases returns to highly skilled workers. Managing a global economy generates a strong demand for expertise in manufacturing sector (electronics, communication, science, food and beverages) and services sector (banking, finance, insurance and automobile sector). This process motivates highly skilled to migrate to global cities. The congregation of high-income workers and wealthy capitalists in global cities create a demand for ancillary

workers in non-tradeable sectors (restaurants, hotels, hospitals, construction, maintenance and personal services) which is filled by the immigrants. Once migrants established themselves in the host country, they create their own jobs that further accentuate the demand for migrant labour and possibly native goods. Lines of transportation and communication that arise to connect global cities to production sites and markets overseas further facilitate this movement. Thus, the process of international trade creates a pool of mobile workers in developing countries and simultaneously connects them to labour markets in particular country where there services are demanded.

This theory provides further justification for the complementarity of trade and migration. The core (developed countries) penetrates into the periphery (the developing countries) in search of market access and raw materials. The inflow of foreign goods lead to displacement of workers, but this is compensated for in three ways. First, the demand for raw materials used to produce imported goods increases export of the periphery. Second, in the core country, innovation requires highly skilled labour and this can be sourced for both from the core and the periphery thereby generating employment for highly skilled immigrants (but probably causes brain drain in the periphery). Third, the "old products" or the nontradable services that are demanded for by highly paid workers increases, thereby creating employment for low-skilled immigrants. Part of immigrants' income can also be sent in form of remittances back home, and this creates another source of credit for investment and further production of exportables.

It turns out that trade liberalisation according to the framework, will lead to displacement of labour, increases export of primary products, and generates upward pressure on the migration of both highly-skilled and low-skilled labour. It follows that once an economy joins globalisation race, migration and trade occurs simultaneously. Unfortunately, these key propositions have not been subjected to systematic tests against competing hypothesis (Massey et al, 1994).

Observably, some factors driving migration are identified from the review of migration theories. The factors are differentials in income and unemployment, differential in domestic social hierarchy, lack of access to credit and the exposure of a country to the world economic activities. The theories demonstrate that the absence of tariff and non-tariff barriers tends to reduce wage and unemployment differentials, thereby lowering tendency to migrate. Conversely, the presence of tariff, or non-tariff barriers on some goods for which LDCs have comparative cost advantage increases the gap and create tendency to migrate. In this case, migration and trade may be substitute.

On the other hand, if financial constraint is binding, then it is profitable to use a mix of migration and trade to increase gains from trade. In the case of world trade system, migration and trade must occur simultaneously. If tariff is targeted at reducing imports, consumers' choice space is hampered, unemployment will increase, particularly if the protected industries are capital-intensive, and illegal trade will arise.

3.3   Theoretical issues of the mechanism through which trade affects migration

The observed link between trade flows and international migration have not exhibited a consistent pattern up till now. The literature in this area is divided into three. On the one hand, migration and trade are substitutes while on the other hand, migration and trade are complements. Yet the third version of the theory articulated that that the link could be substitutes, complements or no link at all. This section discusses some received theoretical frameworks of international trade that generate testable hypotheses about the possible link between trade and migration.

3.3.1 *The Classic Vintage theory/Classical factor endowment theory*

The first theoretical framework applied to the essence of trade, and hence trade and migration was the classic vintage theory. This theory unambiguously predicts that trade and migration are everywhere substitutes. The basic assumption is that countries differ in their comparative goods and services. Therefore, it is mutually profitable if each country concentrates on, and exports the products for which it has comparative advantage.

Comparative advantage exists when there are differences in relative prices of goods across countries in autarky.[25] Relative commodity price differentials occur when there are technology differences (labour productivity) across countries, or differences in endowment of labour and capital. The latter was the workhorse of the classic trade, and it is usually referred to as Heckscher-Ohlin (H-O) model. The H-O model submits that under perfectly competitive market, constant returns to scale and similar technology across countries, if there are differences in factor endowments, then, country will export those goods that are relatively intensive in using the factors of production with which they are endowed relatively generously.

Under trade liberalisation, a labour abundant economy is expected to produce and export labour-intensive commodities to a labour-scarce (capital-abundant) economy, while a capital-abundant do the reverse. Let h be capital-scarce but labour-abundant and f is capital abundant. Let Y be capital-intensive and X be labour-intensive in production. The H-O says that X should be produced and exported by h while Y should be produced and exported by f. If the government of country h imposes tariff on import competing product, the price of Y in h will be relatively higher than the world price and also higher than the price of X. Less capital are available to produce Y in h while the price of Y rises, thus capital will flow from f to h and labour will flow from h to f. This further causes factor ratio K/L to converge and reduces commodity trade but

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[25] If there are 2 regions, say, DC and LDC, each capable of producing good MNF and AGR. If the relative price of AGR were lower in LDC region, then countries in LDC definitionally has a comparative advantage in producing AGR, while DC region has comparative advantage in poroducing MNF

tariff affects commodity prices and this in turn determines the factor price differences.

Hence factor trade continues until all commodity trade costs are eliminated or all tariffs are eliminated. In the case of returns to factor, as migration takes place, wages in the labour-intensive economy rises, while rental income falls until factor prices equalise after which there is no incentive for factor to flow. Hence, this framework proposes that gains from trade can be completely captured either through free trade or free factor mobility.

It must be noted that the assumptions upon which factor endowment or the vintage theory predicts substitution are that demand conditions are the same in all trading countries, production functions may differ among sectors but are identical in all countries, all production functions are homogeneous of the first degree and concave, there exist a competitive equilibrium markets in all countries and finally, factor endowment differ considerably among countries.

It is straight forward to observe that all the assumptions cannot hold in real life. Furthermore, it is not always the case that prohibitive tariff leads to complete outflow of labour. On the other hand, free trade does not completely lead to FPE and as a result, it cannot completely substitute for migration. Further, when factor abundance is defined in terms of factor prices, input requirement may be price-dependent and not quantity dependent. Therefore, in many other situations, gains from trade cannot be fully captured by trading only goods or factors. Thus trade liberalization may not lead to increase in relative price of factors and hence the prediction of FPE and substitutability breaks down.

Giubilaro (1997) further argued that demographic imbalance may overwhelm economic factor in the link between migration and trade. In the same vein, Dayton-Johnson and Katseli (2006) point out three reasons why substitution between trade and migration may fail in the H-O world. First, the long-run

over which the adjustment occurs might last a long time indeed[26] during which time of emigration flows might continue to be large. Second, the theory does not address the reality of surplus labour in sending countries: even if trade links foster specialization, substantial unemployment might persist in developing countries. Third, factor equalization does not address the issue of underutilization of skilled workers in developing countries or the lack of sufficient incentives or finances provided for them to stay and work in their countries.

Notably, where there is technological ranking, this framework best explains trade-migration link (Markusen et al, 1995). Also the definition of factor endowment is perceived in terms of input requirement in production. That is, production of factor-intensive commodities depends on how abundant that factor is.

The issue of technological differential as a channel through which migration and trade interrelate was articulated in the new trade theory. The key message from the theory is that in the world of technological differentials, the link between migration and trade is ambiguous.[27] The framework begins with production functions of two different products specified in equations 4 and 5:

$$Y_i = Z(L_i^y, K_i^y) \ \text{……………………………………………..………} 4$$
$$X_i = \Omega F(L_i^x, K_i^x) \ \text{………………………………..…………….} 5$$
$$L = L_i^y + L_i^x$$
$$K = K_i^y + K_i^x$$
$$i = h, f$$
$$\Omega^f > \Omega^h$$

where Z, F, L and K are assumed to be identical across countries. Y and X are two commodities while L and K are factor inputs. Letters h and f represent home and foreign countries respectively. The last statement of the equation states that technology in the production of X_i exhibits Hicksian neutral superior technology in favour of foreign. With h and f having the same

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[26] Recent analysts put it at 35 years (Bruker and Boeri, 2005).
[27] The seminal paper on this theory was credited to Markusen (1983), Markusen and Svensson (1985).

isoquant for the production of X, f is producing more of X than h. Figure 3.1 provides a clearer picture of the influence of technology differential on the relationship between trade and migration.

Country f's X isoquants have the same shape as the X isoquant of country h, but the former are renumbered so that more output (Q) is produced from the same input. That is although the two countries have similar Edgworth-Bowley boxes and identical contract curve but their production frontiers differ.   In particular, $\tilde{Y}$ and X^f gives the production frontier of country F while $\tilde{Y}$ and X^h gives the production frontier of country H.

Points Q^h and Q^f give countries H and F production in free trade equilibrium. If f allocated factors in the same way as h, then country f would be at point A, producing the same amount of Y but more X. This is not equilibrium for f because the marginal cost of X (MC_X) is less than the marginal cost of Y (MC_Y) relative to h.   This is so because fewer factors are needed for an additional unit of X in country f than in country h. Thus if the price of good X in country h, P_X^h is equal to a given marginal cost of X (MC_{x*}), then the price of good X in country f (P_x^f) will be greater than MC_{x*} at Q^h.

 It turns out that the superior technology of country f allows it to produce less of output Y (due to substitution effect) and more of X (technology effect). Thus country f must be exporting X and importing Y. Also the wage-rental income must be higher in f country because the capital-labour ratio (K/L) is high there, and factors reflect their value marginal product in both countries and this could create a pull effect for migration to occur. Therefore, if factors are allowed to move, labour will migrate from h to f as long as X is labour-intensive.
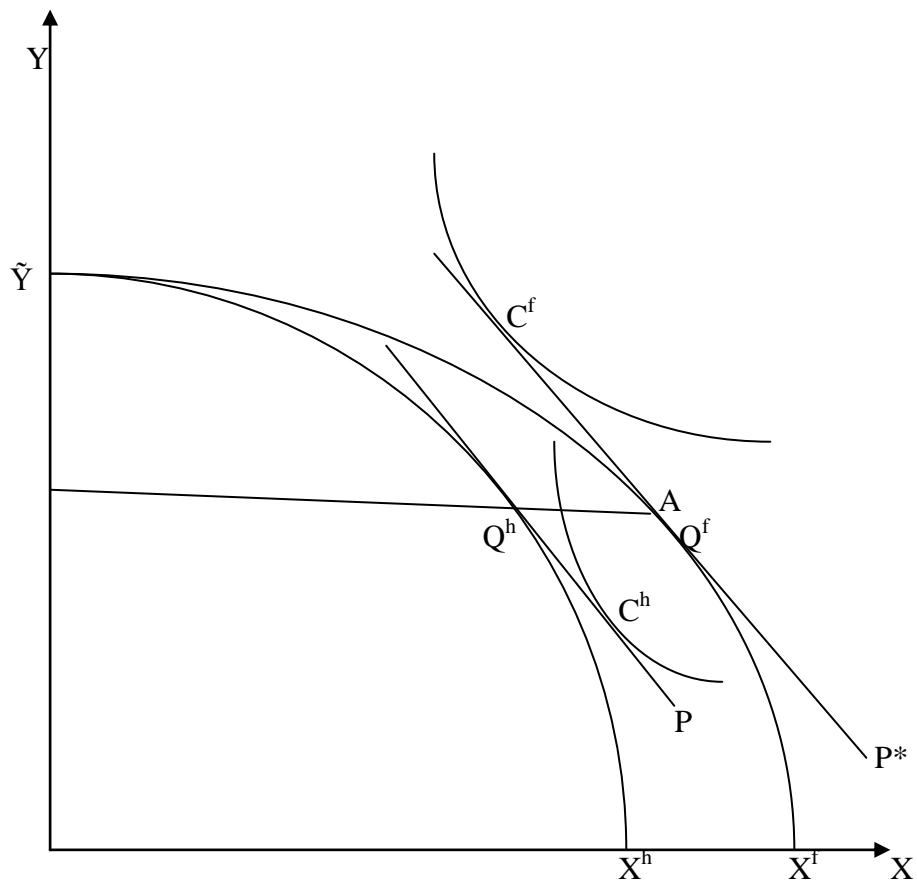
Fig 3.1: Country f with technology superiority
Source: Adapted from Markusen et al, 1995

The result from this framework is that if technology differential is the basis for trade, and if the export sector of the foreign economy has superior technology, trade liberalization will lead to outflow of labour from developing countries and the country becomes relatively better-endowed with the factor used intensively in its export industry. This adds to the H-O or factor proportion basis for trade which tends to reinforce the basis for trade caused by differences in technology. Factor mobility can then lead to increase in the volume of commodity trade. Country f will export X not only because it has superior technology, but it is now well endowed with labour to produce the commodities.

This framework may be used to analyse the relationship between manufactured export of the developed countries and brain-drain (migration of skilled labour) in the developing countries.[28] However, the theory may not fully capture this scenario if there exists factor intensity reversal or a situation whereby what is perceived as skilled-labour in the developing countries is perceived to be semi-skilled in the developed countries.[29]

3.3.2   Specific Factor Theory

The specific factor model posits that if trade between countries is caused by factor specificity, the link between trade and migration will be ambiguous. In this framework, there are two factors of production and two countries. Out of the two factors, labour is mobile while the other, say capital, is specific to a particular sector. It is shown that the migration effect of trade liberalisation depends on how trade drives real wages of labour on one hand, and the real wage effect of import elasticity of income on the other. For instance, if the weight of consumption of importable in the consumption basket is very high, and if capital and labour are complement, then trade and migration may be complementary. Hence, trade liberalization will be accompanied by increased incentives for migration.

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[28] Markusen and Svensson (1985) arrived at the same result when they consider product augmenting technology

[29] See Markusen and Zahniser (1997) in the case of the US and Mexico NAFTA agreement.

An extension of the specific factor framework developed recently produces similar indeterminate results. In this case, the factor that is specific to a given sector is assumed to be the tradeable factor while other factors are non-tradable. If the import competing sector is labour-specific and if labour is the tradeable factor, then imports and migration will be complements following trade liberalisation while export and migration will be substitute. Conversely, if imports competing products are restricted, factor and import will be complements while factor and export will be substitutes.

The contribution of this extension to factor-specific framework is very useful in that it demonstrates how migration relates to each component of aggregate trade. The framework is usually used to explain what may likely be the consequence of migration when trade is liberalised and capital and unskilled labour are sector-specific while skilled labour are internationally mobile. Also some researchers have used this framework to explain migration of skilled labour from developing nations to developed nations.[30]

In the late 1990s, specific factor theory was extended by incorporating the role of exchange rate in the decision to trade and migrate. With the use of Ricardo-Viner migration model, Faini and Grether (1997) demonstrate that trade and migration can be substitutes or complements depending on the type of goods referred to and the speed with which export responds to trade liberalisation through exchange rate. Starting with Ricardo-Viner migration model, the model specifies a two-stage decision process. The first decision process take place when household decide the amount of labour to supply and the second stage takes place when labour is allocated between home and foreign. The household utility maximization problem is set up in equation 3.6:

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[30] An example of a specific factor of this type could be highly skilled information service workers or medical personnel. US migration policy explicitly accounts for the importation of highly trained labour both as non-migrants and permanent migrants. In the US, due to perceived shortage of nurses, foreign nurses are highly sought for and as a result, benefit from special visa treatment under the scheme called Nursing Relief for Disadvantaged Areas Act (NRDAA) of 1999.

Max

$$U^h(.) = \prod(c_i, h - \delta_i, h)^{\beta, h} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 6$$

subject to $Y_h = L_{sh,w}^- + \sum \gamma_i HK_i, h + s_h[GR - CA - ER]$

Where $\sum \gamma_i, h = 1; \quad c_i = leisure$

The optimal labour labour supply, after simplification yields equation 7

$$L_{s,h} = MH_h - (\beta_0, h/\varpi_h)\{Y_h - \phi_h)/(1 - \beta, h)\}, \phi = \sum P_i h\delta_i, h \dots\dots\dots\dots 7$$

In the second stage, household determines the allocation of labour between home and foreign. The model applies Constant Elasticity of Transformation (CET) function on the ground that the function is empirically tractable and can be calibrated numerically with only one parameter. The labour supply CET function is given by

$$L_{s,h} = B_h \left[(1 - v_h)^{-\pi h}(L_h)^{1+\pi h} + (V_h)^{\pi h}(L^*h)^{1+\pi h}\right]^{\frac{1}{1+\pi h}} \dots\dots\dots\dots\dots\dots\dots 8$$
$$\psi h(L_h, L_h^*, \pi_h) = \psi_h(.)$$

B_h and v_h are positive parameters while π_h is elasticity of transformation. The CET concave implying increasing costs to labour relocation. The optimal wage income is determined by the variables and parameters in equation 9:

$$\varpi_h = \frac{1}{\beta_h}\left[(1 - V_h)^{-\pi h}(w_h)^{1+\pi h} + (V_h)^{-\pi h}(\varpi_h * ER)^{1+\pi h}\right]^{\frac{1}{1+\pi h}} \dots\dots\dots\dots 9$$

Wage income is maximised subject to the fact that relocation between home and foreign takes place under increasing costs, that is

$$Max \quad L[L_h, L_h^*, \lambda] = w_h L_h + ER_h^* L_h^* - \lambda_h \psi_h(.) \dots\dots\dots\dots\dots\dots\dots 10$$

Where λ is the LaGrange multiplier, ER is the conversion factor of foreign currency units to domestic currency unit, w_h is domestic wage, ϖ_h^* is foreign wage and it is exogenous, meaning that demand for foreign labour is elastic. The result of the maximisation gives labour allocation condition is given in equation 11

$$L_h = \left(\frac{1}{\beta_h}\right)^{1+\pi h} \left\{(1 - V_h)\varpi_h / w_h)^{-\pi h}\right\} L_{s,h} \quad .... 11$$

$$L_h^* = \left(\frac{1}{\beta_h}\right)^{1+\pi h} \left\{(V_h \varpi_h / \varpi_h * ER)^{-\pi h}\right\} L_{s,h} ....12$$

Wage income maximisation from equations 9 and 10 give solution to equations 11 and 12. What this implies is that labour supply responds to a change in wage rates and real exchange rate. Hence the model assume that household makes its labour allocation decision on the basis of the purchasing power of foreign wages in terms of home goods so that labour allocation responds to a change in domestic wage or to a change in the value of the real exchange rate.

The production sector is divided into 2: traded good and non-traded good sectors. Real exchange rate adjusts to maintain internal and external balances and as a result, it affects both the allocation of labour and the value of remittances. Capital is specific to each sector while labour is mobile. The tradable goods (TG) are further classified into competing import substitution such as light manufacturing and non-competing import substitution such as heavy manufacturing.

The TG exhibits H-O labour-intensive technology of production. Due to the structural pattern of the economy in the developing countries, the TG does not respond faster to trade liberalisation thereby causing real exchange rate depreciation. Since real exchange rate (ER) is related to allocation of labour, depreciation will lead to increase in labour supply and hence, tendency to migrate. In the foreign country, trade liberalisation causes demand for middle-skill and low-skill workers needed to in the light manufacturing and agricultural sector. Hence trade liberalisation causes push effect due to real exchange rate depreciation. Thus trade and migration becomes complement.

If ER responds faster to trade liberalisation, then tendency to migrate will reduce due to real exchange rate appreciation. In this case, trade and migration are substitutes. It follows therefore that trade and migration can be

complement or substitute depending on the type of goods traded and the speed with which export responds to trade liberalization. Further, trade liberalisation may benefit low skill and penalize middle-skill labour, leading to migration of middle-skill workers. Clearly, this model predicts that the connection between migration and trade is informed by real exchange rate behaviour.

3.3.3 New World Trade System Theory

The new world trade system is a recent theory that relaxes the assumption of constant returns to scale alongside perfect competition. According to this theory, there are new forces driving factor returns and hence the incentives to migrate. In particular, absolute and relative factor endowments matter in determining comparative advantage. Also, firms tend to locate in areas characterized by large expenditures because of intra-industry trade and scale effects. This leads to agglomeration effect, that is, there are exploitable gains from cumulatively moving factors of production to larger economies. Factor immobility in this context can inhibit complete agglomeration, and can lead instead to accentuation of differences between countries. Hence, if country size is allowed to feed into lower costs via increasing returns to scale, then factor mobility can be destabilizing and can lead to concentration of economic activity in the "core" economy around which there is a "periphery" of economic satellites. The implication of this is that trade liberalisation will be accompanied by increased migration to the core country, that is, trade and migration are complements. If the movement is composed of skilled labour, then this theory can explain the link between trade and migration of skilled workers.

Further extension of the literature builds the link between migration and trade squarely on the stylized facts about migrants' characteristics and the host-country economic environment. The stylized facts include imperfect substitute between migrants and native labour, acceptance of unpredictable variations in employment condition by the migrants (but not by the native workers), the existence of abundant labour in the source, and the possibility of

capital and labour mobility across countries. With these stylised facts, it was demonstrated that trade and migration can be substitute or complement. This model identified three factors that provide useful insight into migration-trade nexus. These are first, the elasticity of substitution between migrant and native workers in production; second the world elasticity of demand for exports and third, the correlation between the conditions in the export market and in the migrant labour market. For instance, if the elasticity of substitution between migrants and native workers is very high, and the consumption of tradeable goods is very large in the sending country (that is, the source country's income elasticity of import is very high), then migration and trade are complements.

Generally, the model concludes that complementarity or substitutability will dominate according to the extent to which the elasticity of demand for export is greater than the elasticity of substituting migrants for native workers. This framework better explains the case of imports and migration. Furthermore, the framework may be useful analyse the implication of relatively lower elasticity of demand for exports to the elasticity of substitution between migrants and native workers[31]. It must be noted that this framework is an extension of standard factor-endowment theory, where individual country produces goods for which it is intensive in its abundant factor. One problem associated with this framework is its indeterminate result and the array of possibilities.

3.3.4   Financial Constraint and Network Theory

This theory was develop in the middle 1990s and extended in 2000s. It considers the importance of credit constraint and migrant networks as channels through which migration and trade is associated.[32] The source country is labour abundant and a considerable portion of labour are potential migrants because they perceive their present wage very low compared to the foreign

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[31] This can occur if developing countries' exportables are faced with both tariff and non-tariff barriers, or when the preferences for such products are very low

[32] Schiff (2006) and Gould (1994)

counterpart, but they are faced with transportation (and other) costs problem. If trade liberalisation is allowed and it raises workers' income sufficiently to pay for migration cost, but not to the point where migration is unattractive, trade and migration may be complement.

Alternatively, if credit constraint is binding for unskilled labour, trade liberalisation in the host or source (or both) country raises wages of unskilled labour, thereby making it possible for people to cover migration costs. Thus introducing migration cost and financing constraints in the factor endowment framework, there may be a complementarity link between trade and migration. The recognition of migration network further magnifies trade liberalisation effect by lowering financial constraints. Further, when the immigrants have strong preferences for their native products, the complementarity of trade and migration becomes stronger. It is in this respect that the theory was branded "financial constraint and network theory" (Faini, De-Melo and Zemmermann, 1999).

Observably, substitution may not occur if liberalisation serves to raise the incomes of people who are potential migrants (say a household member is employed in a dynamic export industry), because they may use the increase incomes to finance migration (Lucas, 2005). It may also be the case that trade liberalisation reduces information costs about employment opportunities, thus encouraging migration as trade expands. Schiff (1992) extends this argument by submitting that migration pressure will rise in the long-run following trade liberalization, while the short-run effect is ambiguous. His model is based on migration cost and capital market imperfections rather than technological differences or economies of scale. He points out that given the high cost of migration, liquidity constraints and imperfect credit markets reduces tendency to migrate. Therefore, in a low income country, if migration cost is high and there exists potential emigrants, trade liberalisation tends to reduce liquidity constraints and market imperfection constraints, thereby causing complementarity link between trade and migation.

3.3.5 The Production Theory Approach

Due to inconclusive outcome of the link between trade and migration found in the trade literature, Kohli (1992) adopted production theory approach in the context of open economy and incorporate migration phenomenon into the model. Production theory was first introduced to trade by Grossman (1982) while its extension to migration was done by Kohli (1992). The theory treats migration as an input to production technology, while imports were treated as intermediate products, so that factor inputs are four: import (M), non-resident labour (N), resident labour (L) and capital (K). The aggregate technology is presented by the production function of the form:

$$y = f(x) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots. \quad 13$$

where y is gross output and $x \equiv (x_j)$; (j $\in$ M, N, L, K) is the vector of input. The unit cost function is given by

$$c(w) \equiv \min\{w_j x_j : f(x) \geq 1\}\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \quad 14$$

where $w \equiv w_j$ is the vector of input prices. With the aid of Shepherd's unit output cost, the behaviour of each input depends on the input prices of the four inputs. For instance, a change in the price of import affects the demand for foreign labour. With the aid of Allen-Uzawa elasticities of substitution, there are substitution possibilities between input j and input i (i $\neq$ j), σ_{ji}. This Allen-Uzawa elasticities is given by:

$$\sigma_{ij} = \frac{c(w)c_{ij}(w)}{c_j(w)c_{ij}(w)}; \quad j, i \in \{ M, N, L, K\}\dots\dots\dots\dots\dots\dots\dots\dots .15$$

Where $c_i(w) = \frac{\partial c(w)}{\partial w_i}$; $\qquad c_{ij}(w) = \frac{\partial^2 c(w)}{\partial w_j \partial w_i}$

Thus given inputs j and i, import and foreign labour services are substitute if σ_{ji} is greater than zero and complement if σ_{ji} is less than zero. Specifically, in Allen-Uzawa's world, these elasticities are used to examine the impact of a change in the price of an input on own demand and the demand for other inputs. For instance, if σ_{LN} is positive, it means a reduction in the wage paid to immigrants will reduce the demand for native labour services.

Another elasticities used is the one that pertains to input quantities. For a known production function, the elasticities of complementarity can be obtained directly with the use of Hicksian elasticity given in the form of

$$\varphi_{ji} = \frac{f(x)f_{ji}(x)}{f_j(x)f_i(x)} \quad ; j, i \in \{ M, N, L, K\} \dots\dots\dots\dots\dots\dots\dots\dots 16$$

where $f_j(w) \equiv \dfrac{\partial f(x)}{\partial x_j}$; $f_{ji}(x) \equiv \dfrac{\partial^2 f_{ji}(x)}{\partial x_j \partial x_i}$

The sign of φ is important to determine whether an increase in migration raises or reduces the return to domestic labour.

Kohli (1992) noticed that labour is not perfectly mobile and that movement is subject to migration policy. In this case, foreign labour is treated as constant, so that there are three, rather than two fixed factor input. Therefore, from Allen-Uzawa's price elasticity and Hicksian input elasticity, migration and trade may be complement or substitute depending on the sign of the elasticity.

One problem with this theory is that it does not give a consistent systematic link between trade and migration. Another problem is that it treats cost of migration as given and assumes that the only variable that causes migration is migration policy. Once migration policy is favourable, host countries will get as many migrants as they wish, an assumption that is not plausible[33]. Observably, the contribution of this theory to the existing one is that it is based on comparative static unlike others that were static in nature.

Based on the review of theories of trade, it is clear that economic analyses do not unequivocally pin down the direction of trade-migration relationship. Early competitive models predict that the relationship is substitute, but more complex situation can result once some of the assumptions upon which this framework is built are relaxed. Notably, the models embodying factor endowment may be more applicable to the migration-trade nexus between developed and developing countries. But the appropriate model in the family

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[33] The migration theory demonstrates that cost of migration is an important variable in migrants' decision.

of factor-endowment framework capable of explaining the direction may not be easily discernible

3.4   Methodological Review

The earlier methodology used was the basic time-series cross-section regression equation. Most authors estimated this equation at first difference to correct for possible autocorrelation and simultaneity problems. Later, Taylor (1996) develops a two-country general equilibrium model with many goods and multiple mobile and fixed factors. This is a four-factor, two-country fashion of the H-O framework.

 The model was used to examine the link between trade and migration. Using historical data, he finds that factor flows and trade are actually substitutes. Cognean and Tapinos (2000) developed a short-run and long-run model of trade-migration link using the H-O theory with the aim of examining which of the terms supports substitutability and which supports complementarity. Their models support the short-run complementarity.

Faini and DeMelo (1995) developed a simple macroeconometrics model calibrated for a particular year and used it to examine the effects of trade liberalization on employment of the sending countries and the fundamental determinants of migration. Comb, Lafourcade and Mayer (2005) propounded a structural specification of monopolistic competition, biased preference, information and transport costs. They considered financial structure and location of firms as well as bilateral stocks of migrants to proxy network effect of migration.

In an attempt to examine the effect of openness on income convergence and hence migration, Ben-David and Kimhi (1996) adopted two methods. The first one compares openness index with income index and the second one compares intra-group trade and intra-group income. They find that the latter gives more robust empirical result than the former. But the two methods show

that trade liberalisation leads to income convergence, hence reduction in migration.

Kohli (1999) developed a single model that incorporates migration and trade using production function approach. He specified a Translog functional form which is used to examine the effect of higher immigration when resident labour together with imports and gross output are treated as endogenous variable. Furthermore, price and quantity elasticities of factors are defined for a given output, import, labour prices, quantities of non-resident labour and capital. A negative import elasticity of non-resident labour indicates that immigration and trade are substitutes, in the sense that access to a larger pool of non-resident workers would tend to reduce the demand for imports, given variable domestic employment.

Foad (2009) adopted a sample splitting and threshold estimate technique developed by Hansen (2000). The splitting was done based on income and migration in order to deal with the problem of endogeneity. In particular, to estimate the immigration level or income level at which a structural change occurs, he defines $X_{i,j}$ as a vector containing all the right hands side variables affecting trade and $T_{i,j}$ as log of trade and generate the following equation:

$$T_{i,j} = X_{i,j}\,\psi_1, j \text{ if } q_{i,j} \leq \lambda \ \text{.. 17}$$

$$T_{i,j} = X_{i,j}\,\psi_2 + u_i \text{ if } q_{i,j} = \lambda \ \text{...18}$$

Where trade elasticity is a component of ψ and it may differ depending on whether or not q_{ij} which is the migrant stock from country j residing in country i is above or below a threshold λ. However, Foad (2009) extended the methodology by estimating the threshold λ and also ψ_2. To do this he defined $\Delta = \psi_1 - \psi_2$ and call it the threshold effect. He further defined a dummy variable $d_{i,j}(\lambda) = 1$ if $q_{i,j} \leq \lambda$. He later used OLS to estimate ψ_2, Δ and λ using the following equation:

$$S(\psi_2, \Delta, \lambda) = [T_{i,j} - X_i, \psi - X_{i,j}(\lambda)\Delta]'[T_{i,j} - X_i, \psi - X_{i,j}(\lambda)\Delta] \quad \dots\dots\dots\dots 19$$

Recently, trade analysts have applied gravity equation to empirically examine the link between trade and migration. Gravity model predicts that trade is proportionate to each trading partner's economic weight (usually measured by GDP) and negatively correlated trade cost (ARTNet, 2008). Heads, Reis and Wagner (1998) extended the methodology by considering the proportion of potential trade in GDP, based on the fact that the parameters of the model should equal unity. The advantage of this extension is that first, it prevents measurement error in GDP from biasing the estimate of the parameters of the gravity model; second, it prevents possible simultaneity problem arising from the dependency of GDP on trade; and finally, it has the ability to capture policy barriers (tariffs and non-tariffs) and natural barriers (transportation costs, and communication).

3.5   Review of empirical literature

Table 3.1 contains a summary of received evidence on the link between trade and migration with respect to theories used, methodology adopted and technique of estimation employed. As the table reveals, there are fifty three (53) available empirical papers. Out of these eighteen used Social network theory while nine used classical comparative advantage theory and two employed production theory. As much as twenty four did not specify the type of theory used. In the case of methodology, forty chose gravity equation, five adopted translog functional from. One paper used splitting threshold method while six papers did not specify the type of methodology adopted.

Concerning technique of estimation, forty two papers made use of gravity panel with country specific dummy, four papers adopted translog while three used ordinary lest square. Two papers used error correction mechanism while only one used generalized method of moment. This brief analysis shows that most papers did not specify the type of theory adopted. Gravity equation was the most used methodology while gravity panel was the technique of estimation mostly employed.

Table 3.1. Categorization of empirical evidence based on theories, methodologies and technique of estimation

Theories	*Methodologies*	*Techniques of estimation*
18 papers used Social Network Theory **9** papers used Classical Comparative Advantage theory of trade **2** paper used Production Theory **24** papers do not specify theories used	**40** papers adopted gravity equation **5** adopted tranlog functional form **1** used computable general equilibrium **1** adopted splitting threshold **6** did not specify the methodology used	**42** adopted gravity panel with country dummy (fixed effect) **4** adopted tranlog **3** adopted Ordinary Least Square (OLS) **2** adopted Error Correction Mechanism **2** adopted GMM

The review of empirical evidence, while not exhaustive (Table 3.2), it provides divergence result of the link between migration and trade. Some studies shows that the link between the two are substitutes (Assous, 2000; Nyberg, 2004; and Faini and DeMelo, 1995) and some arrived at complementarity link (Byrant, Genc and Law, 2005; Heads and Reis, 1998; Rauch and Trinidade, 2002; Combes, Lafourcade and Mayer, 2005; Kohli, 1999 and Helliwell, 1997). Studies such as Wagner *et al* (2002), Foad (2009), and Bardhan and Guhathakurta (2004) showed that the link between migration and trade depends on the type of product traded and pattern of migration (skilled, semi-skilled and unskilled). Notably, some of these papers found that export of manufactured goods, textile and food complement migration while imports of the goods substitute migration.

Girma and Yu (2000) examined the effect of migration trade in the UK. They collected data on bilateral trade of UK with 48 trading partners between 1981 and 1993. Using Gravity equation, they found that migration and exports are complements while migration and imports are substitutes. In particular, a 1 percent increase in migration to the UK leads to 0.02 percent increase on exports and 0.004 percent decrease in imports.

Ching and Chen (2000) explored the link between trade and migration in the Taiwan. They were interested in finding out whether trade and migration are complement or substitute between Taiwan and Canada. With the aid of OLS (estimated at levels), they found that a 1 percentage increase in emigration reduces exports by 0.06 percent but increases imports by 0.3 percent. Therefore in the case of Taiwan-Canada, migration and export are substitute, while migration and import are complement.

Table 3.2: Summary of empirical evidence

S/N	Author(s)	Framework/methodology adopted	Countries & Period covered	Result
1	Faini and Venturini (1993	Neoclassical H-O/Gravity Equation	North and South	Substitutes
2	Assous, 2000	Neoclassical Specific Factor/gravity equation	America and the developing countries	Subsititutes
3	Faini and DeMelo, 1994	Neoclassical/Translog	Developed versus Developing countries	Substitutes
4	Nyberg, 2004	Error Correction Mechanism	Morocco and EU	Substitutes
5	Faini and DeMelo, 1995	Neoclassical/Translog	Morroco and EU	Substitutes
6	Ben-David 1996	Modified Neoclassical/Gravity equation	World Bilateral trade (127 pairs for exports and 134 pairs for imports), also collapsed into rich and poor countries.	Substitutes
8	Blanes-Castobal, 2003	Gravity equation	Spain and trading partners	Complements
9	Collins et al.,1999	Gravity equation	EU and overseas countries	Complements
10	Bowen and WU, 2004	Gravity equation	OECD countries	Complements

S/N	Author(s)	Framework/methodology adopted	Countries & Period covered	Result
11	Byrant, Genc and Law, 2005	Gravity equation	Newzealand and trading partners	Complements
12	Febermyr and Toubal, 2008	Network theory/gravity equation	World Trading partners	Complements
13	Heads and Reis, 1998	Network theory/augmented gravity equation	Switzerland and trading partners	Complements
14	Rauch and Trinidade, 2002	Gravity model/gravity equation	China and trading partners	Complements
15	Combes, Lafourcade and Mayer, 2005	Social Network/OLS	France and trading partners	Complements
S/N	Author(s)	Framework/methodology adopted	Countries & Period covered	Result
16	Kohli, 1999	Credit constraints	Switzerland and trading partners	Complements
17	Collins, O'Rouke and Williams, 1999	Neoclassical/Panel Data	Atlantic Economies	Complements
18	Gould 1994	Network theory/Gravity equation	US with 47 trading partners	Complements

S/N	Author(s)	Framework/methodology adopted	Countries & Period covered	Result
19	Helliwell 1997	Neoclassical/gravity equation	Canadian provinces and US	Complements
20	Dunlevy and Hutchinson 1999	Gravity equation	US and 17 trading partners (1870-1910)	Complements
21	Wagner et al 2002	Gravity equation	5 Canadian regions and 160 countries (1992-1995)	Complements
22	Foad 2009	Gravity equation/ Splitting threshold method	29 OECD countries and 163 destination countries (1990 and 2000)	Complements for import and export with export elasticity higher than that of import elasticity
23	Bardhan and Guhathakurta 2004	Gravity equation	US and 51 countries 1994-1996	Complement for export but no relationship with import
24	Co, Euzent and Martin 2004	Gravity equation	51 US states and 28 countries collapsed into commonwealth and non-commonwealth countries	Complements for export and no effect on imports, Complements for non-commonwealth and no relationship for commonwealth countries
25	Herander and Saavedra 2005	Gravity equation	51 US states and 36 countries (1993-1996)	Complements for export and no effect on imports
26	Golberg and Klein, 1998	Gravity equation	Japan and trading partners from Southern Asian countries	Complements for manufactured products, substitutes for services and primary products
27	Golberg and Klein, 1999	Factor-specific theory// Panel fixed effect	US and 8 Latin American countries (1973-1994)	Complements for some (light) manufactured products and substitutes for some other manufactured products and primary goods

S/N	Author(s)	Framework/methodology adopted	Countries & Period covered	Result
28	Mundra, 2003	Gravity equation	US and trading partners	Substitutes for intermediate exports and complements for finished goods exports and imports
29	Abowd and Freeman, 1991	Gravity equation	US and Advanced countries of the North	Substitutes for industrial goods but complements for textile imports
30	Faini and Venturini, 1993	Translog/translog	Europe and developed countries	Substitutes for industrial goods but complements for textile imports
31	Ching and Cheng, 2000	OLS/ECM	Taiwan and Canada	Complements for exports and substitutes for imports
32	Bandyopadhyay, Coughlin and Wall, 2006	Network theory/Gravity equation	US and 29 trading partners	Network (fixed) effect is positively siginificant for some countries, while it is siginificant for all country when country-specific is considered.
33	Dolman 2008	Network theory/Gravity equation (separate the effect of immigrants from effects of expartriate community	28 OECD countries and 162 trading partners	Complements with different magnitude. Without the inclusion of the effects of the expartriate, import rises by 0.15% with 1% increase in immigration while export rises with 0.18%. With the inclusion of expartiate community, import and export rises with 0.99% with 1% increase in the expartriates.
34	Bacarreza, Javier and Laura 2006	Augmented gravity equation (total trade and intra-industry trade	Bolivia with 30 trading partners	Complements for both total trade and intra-industry trade

S/N	Author(s)	Framework/methodology adopted	Countries & Period covered	Result
35	Ghatak and Piperakis 2006	Augmented gravity equation (to include both intercept and dummy)	UK and Central Eastern European Countries (CEEC) (1991-2001)	Complements for import but no effect on exports
36	Aguiar, Walmsley and Abrevaya (2007)	Gravity Equation/Cross Section and Panel Estimates. Use Trade Index to proxy for trade (focus on the effect of trade on migration)	US and 175 (including developed, developing and less-developed countries) trading partners.	Complement but insignificant
37	Partrdige and Furtan (2006	Network and Information theory/Gravity equation	Canada and trading partners (1961 and 2000). They further collapsed the data to 10-year basis	Complements for imports and exports. It takes 5 to 10 years before such effect is manifested
38	Morgenroth and O'Brien (2008)	Network and Information theory/Gravity equation	26 countries for which migration and trade data are available (1999-2003)	Complements for exports and imports. Migrants from Africa were most attractive for exports and imports
39	Kohli (2002)	Production-Theory approach/Translog functional form	Switzerland and trading parners (1950-1986)	Complements for imports.

S/N	Author(s)	Framework/methodology adopted	Countries & Period covered	Result
40	Iranzo and Peri, (2009)	A CGE of R-H-O theory/computable	East and West Europe countries (1989-2004)	Trade and skilled migrants are complements
41	Laura, C (2009)	Network Theory/Gravity model	17 EU member states and 10 extra partners and EU-27 (1997-2006)	Export and immigration are complements while in the case of imports, they are either substitutes or complements depending on the type of good
42	Ghatak,S; M. Silghi and V. Daly (2007)	Augmented Gravity equation (to include intercept and dummy)	UK and Central & Eastern Europe: 6 countries (1996-2003)	Migration and export from home to host is complements, while migration and import are substitutes but not significant.
43	White, R (2008)	Preference/Information effect. Gravity model	US and 70 trading partners (1980-1997)	Immigration and trade vary with degree of product differentiation and by home country's PCI. Immigration and US imports of differentiated goods from both HIC and LIC are complements, but the magnitude of the latter is greater than the former. The same result is got for export
44	Parson, C (2007)	Gravity model using information and preference effect theory	Eastern Europe & Western Europe and EU-15	Trade and migration are complements for export and import. The preference effect overweighs the information effect

S/N	Author(s)	Framework/methodology adopted	Countries & Period covered	Result
45	Girma, S and Z. Yu (2002)	Gravity Model	UK and trading partners from Commonwealth and noncommonwealth	Immigration and export and imports between UK and noncommonwealth are significantly complements, while in the case of commonwealth, it is insignificantly negative. Thus, information and preference effects is important
46	Insel, A; N. Sungur and A. Okten (2010)	Preference and Information effect/Least Square Fixed Effect	Turkey and European Coutries (14) (1980-2007)	Immigration and export and imports are complements. The elasticities of imports increased more than that of export, indicating that preference effect is outweighed by information effect for product type like capital good, intermediate goods and consumption goods
47	Peri, G and F. Requena (2009)	Gravity model	Spain and trading partners (1996-2008)	Trade and migration are complements in favour of information effect.
48	Konečný (2009)	Preference and information effect /Gravity model	OECD (21) countries and Developing (137) countries	Trade and migration are complements in favour of the sending (developing) country.
49	Clarke and Hillberry (2009)	Gravity model/GMM	Australia-and the Commonwealth coutries (1981-2006)	Shows complementarity sign for both export and imports but not significant.

S/N	Author(s)	Framework/methodology adopted	Countries & Period covered	Result
50	Hatzigeorgiou (2010)	Gravity model/preference and information theory	75 developed and developing economies (with 15 African countries including Nigeria) (1995-200)	there is complementary link with higher magnitude in favour of differentiated goods.
51	Hijzen and Wright (2006)	GNP production theory/translog functional form	UK and trading partners (1975-1996)	Distinguished between skilled and unskilled migrants. Unskilled migrants and UK imports from the source country are substitutes. Skilled migrants and UK exports to the source country are complements.
52	Lung (2008)	Information/Network theory embedded in extended H-O model/ Gravity ECM model	Australia and 10 major Asian trading partners (1963-2000)	Australia exports increase as immigration increases. Australia imports increase as immigration increases but the coefficient is not significant.
53	Parsons (2009)	Information and Network Theory/Gravity model	EU-15 and Trading partners from East-West European countries (1990-2006)	Eastern European migrants increases EU-15 imports and exports. Thus migration and trade are complements

Tapinos (2000) asks whether the benefits from trade extend to the group of population most likely to decide to migrate. He finds out an affirmative result in that trade liberalisation (in the developing countries) is more likely to affect agricultural sector, but not the public sector nor private sector or formal and informal employment where the propensity to migrate is very high. Meanwhile, he finds complementarity result. Hence he concludes that trade-migration nexus is sector-specific.

Cognean and Tapinos (2000) developed short-run and long-run models of trade-migration link rooted in H-O theory, in order to examine which of the terms supports substitutability and which supports complementarity. Their models support the short-run complementarity. Also, Collins et al (1999) analyses trade and factor movements between overseas countries and Europe for the time period from 1870 to 1940. Separate OLS regressions were run for the pre-war years 1919-1939. The result showed that there was only a weak economic link between factor and trade flows.

Dunlevy and Hutchison (1999, 2001) carried out a product-specific analysis for the US and 17 trade partners between 1870-1910 to examine the interdependence of trade and migration. Their empirical model is a modified gravity equation, in which exports and imports are a function of: per capita income and population in the source country, US per capita income, US population, distance between the two, migrant stock from country j, English language dummy, relative income indicator (to capture taste effects), US terms of trade and other relevant variables. Their estimated coefficients on imports are two and half times the size of that on exports. Specifically, they found that a 10 percent increase in migration causes import to rise by 2.9 percent. At the product-level analysis, they collapsed 78 commodities into five groups: food stuffs, processed food stuff, raw materials, semi manufacture goods and manufactured final goods. an increase of 10 percent in migration causes 4.1 percent increase in the imports of processed goods, 3.4 percent increase in semi manufactured goods will increase and 4.1 percent in manufactured final goods. The authors did not find any significant effect of migration on the

imports of raw materials and food stuff even though complementarity relationship was observed.

Blanes-Castobal (2003) examined the case of Spain with 40 trading partners between 1991 and 1998. Using panel data analysis, he discovered that for a one percentage increase in migration, export from increased by 0.08 percent, while import increased by 0.25 percent. Golberg and Klein (1998) provided evidence of relatively strong and significant effects of overall bilateral factor flows from Japan on the overall bilateral trade of South-Asian countries. However, since the data were not disaggregated, it provided implicit result. They later corrected for this in Golberg and Klein (1999). They employed factor specific theory and found that manufacturing products are complements while services and primary products are substitutes.

Konečný (2009) derived a simple gravity model of trade that differentiates between native agents and immigrants and allows for shifts in bilateral trade flows due to immigrant links. He calculate the share of total trade between the OECD and non-OECD countries attributable to immigrant links and find that immigrant-driven trade accounts for as much as 10.9 percent of aggregate OECD exports to and 9.99 percent of aggregate OECD imports from the non-OECD source countries. He claimed that part of immigrants' contribution might be offset by less trade with other trade partners.

Nyberg (2004) examined the impact of free trade between Morocco and the EU in 2000, on migration pressure. He found that there was a large increase in labour intensive goods exports, which may likely reduce migration pressure. However, this relation was not determined in the study. Kohli (1999) modeled migration and trade in the framework of a production theory approach. In his model, foreign labour and imports were viewed as input to technology. The model was used to investigate the trade-migration link in Switzerland from 1950 to 1986. He found that import and immigration are complements.

Mundra (2003) focused on the bilateral trade of the US with 47 trading partners from 1973 to 1980. Using semiparametric dynamic panel model, he found that immigrants promote imports regarding finished and intermediate goods. One striking result from his findings was that the higher the proportion

of skilled immigrants, the stronger the trade enhancing effect. Regarding export, a positive effect of immigration shows the link with finished goods. What this finding suggests is that the link between trade and migration is better investigated at sector level. Bowen and Wu (2004) analysed changes in exports in relation to changes in total immigration and alternatively net immigration in four OECD countries from 1980 to 2001. The results indicated a complementary relationship. In New Zealand, Byant, Genc and Law (2005) found that trade and migration were complements.

Foad (2009) adopted network and preference theory to examine trade-migration nexus across different level of migration and economic development. He compiled a dataset with 29 destination OECD countries and 163 developing and developed source countries from the dataset generated by Docquier and Marfouk (2005). The author considered two potential regime changes: differences in the level of migration and the economic conditions of the sending countries. The threshold at which there is a regime change was estimated to be 231.4 migrants. That is, migration stock was low and this has an implication for the migration-trade elasticities.

The result shows that 10 percent increase in immigration will raise UK exports by 3 percent when migration is less than 809. When immigrants were greater than 809, export will rise by 4.2 percent for a 10 percent increase in immigration. If GDP per capita income is less than $2,904, and migration is an endogenous variable, migration-trade elasticities will be 0.44 percent while when export/import is endogenous variable, the threshold of income is $7682 for import and $16033 for exports. Below this threshold (that is if income level is below $7682 per year), 10 percent increase in migration will raise imports and exports by 2.8 and 2.7 percent respectively. Above this threshold, 10 percent increase in migration will lead to a 1.3 and a 0.2 percentage in import and export respectively.

The author concluded that there were non-linearities in the trade-migration relationship. Migration from poor to rich countries has a larger effect on trade than migration from rich to rich countries due to weaker assimilation of

immigrants from poor countries or weaker institutions in the poor countries. Looking within the income group, the marginal effect of migration is stronger at high levels of migration from poor countries than from rich countries.

The result further revealed that migration from poor countries to rich countries has a larger effect on trade than migration from rich to rich. This suggests that source country's income level tend to drive the degree of effectiveness of migration on trade. Also, a certain level of threshold is required for migration from the poor countries to significantly affect trade (in the case of the UK, it must be greater than one).

Head and Ries (1998) tested the hypothesis that immigrants increase trade with country of origin because of the better knowledge of market opportunities. They looked at Canadian trade data with 136 partners for the period 1980 and 1992. Adopting an augmented gravity model[34], they discovered that a 10 percent increase in immigrants is associated with a 1 percent increase in exports and 3 percent increase in imports from the immigrants' country[35]. Wagner, Head and Ries (2002) used a specification that allows decreasing marginal returns to immigration along with a random encounter model to examine the link between trade and migration. The study finds a strong effect of migration on imports rather than exports and the information they offer affected products differently.

Co et al (2004) used US state level data to explore the link between trade and immigration. They argue that their paper is an extension of received evidence because it distinguished among destination states rather than assuming that all the destination states are homogeneous. They distinguished between two types of immigrants: those from the Commonwealth and those from non-

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[34] They estimated a model of imports of Canada from country j as a function of population of immigrants from country i residing in Canada, GDP of the two partners, distance between the two countries, a dummy for adjacency, an annual measure of openness, relative prices if there are trade barriers (lnP_jP_i). They use two alternative specifications for the error term and also added years and regional dummies. They use cumulative immigrant inflows for measure of immigrants and later control for attrition.

[35] They argued that if there are high transaction costs in international trade, then immigrants serve as trade intermediaries.

Commonwealth countries. They found that the second group had a significant enhancing effect on exports, whereas the first group did not. Hence they concluded that the impact of Commonwealth immigrants on trade may be nill since they do not bring along new information about their home country above what is already known.

Rauch and Trinidade (2002) also used an extended gravity model to examine trade patterns in 1980 to 1990 and found that the cross product of ethnic Chinese population shares in each trading partner's pair is positively related to trade volumes. Most importantly, they examined these effects for different types of goods distinguishing mainly between homogenous and heterogeneous products.

Recently, Combs, Lafourcade and Mayer (2004) examined the role of business and social networks on trade in the French regions. Financial structure and location of firms as well as the bilateral stocks of migrants were used as proxy for social network effect. The estimated model was a structural specification based on trade with monopolistic competition, biased preference, information and transport costs. It was established that business and social networks have a positive and significant impact on trade flows.

Collins, O'Rouke and Willamson (1997) used historical data of the Atlantic economy between 1870 and 1940. They found that in the long-run time-series, factor flow and trade are complements. In particular, the complementarity of trade and migration was stronger than capital flows and trade in the short-run and long-run. They therefore concluded that policy makers never acted as if they view trade and migration to be substitute. Hence the hypothesis that trade and migration are substitute is rejected.

Dolman (2008) carried out an empirical investigation on the effect of foreign immigrants on the OECD country members. He collected data on gravity variables for 162 trading partners across the world. He found that exports to the OECD would increase by 1.5 percent for a 10 percentage increase in

emigrants from any of the trading partners while imports would increase by 1.8%.

Hijzen and Wright (2006) examined the case of UK and trading partners between 1975 and 1996. The authors investigated how migration is associated with aggregate and disaggregated trade. They employed production function theory alongside gravity with the argument that migrants should not enter as homogenous factor because they differ in skills and age. Their argument was that the trade effects of skilled and unskilled migrants differ. Following this argument, they separated skilled immigrants from the unskilled ones and carried out two basic regression analyses. The first version treats migrants as purely exogenous in production. By treating migrants exogenous implies that even if migrants are attracted by economic gains in the destination country or are pushed by economic downturn in own country, the tendency to eventually migrate depends on the favourable immigration policy of the receiving country. If migrants are treated as exogenous in the production function, skilled migrants will impact on the UK imports from the source country while increase in unskilled migrants impact negatively on the UK imports.

According to the author, this relationship can be explained by the Rybczinsky elasticities or the Stolper-Samuelson elasticities. The Rybczsinsky elasticities shows that skilled migration increases the demand for imports, suggesting that skilled migration and imports are complements. By contrast, an increase in the supply of low migrant workers, leads to a reduction of imports, but this effect is statistically insignificant. This result suggests that an increase in the supply of low skilled migrants leads firms to substitute immigrants for imports in the production process. In the case of Stolper-Samuelson effect, a similar picture emerged.

Specifically, a 1 percent reduction in the price of imports increased the wages of skilled migrant workers by about 0.6 to 0.7 percent, suggesting that they are complements in production. An increase in the price of imports has a positive, but statistically insignificant impact on the wage of unskilled emigrants. An

indication that unskilled emigrants' wage are not affected by changes in the price of import.

Lung (2008) carried out an empirical investigation in the case of Australia and 10 major Asian trading partners between 1963 and 2000. With the aid information and network theory and gravity equation, his ECM result shows that Australia's export increases with increase in immigration while her imports increases but not significant.

Lewer (2006) utilized comprehensive OECD data on migration to individual member countries to quantify the relationship and found a positive link at the cross-country level. Using a similar sample, Felbermayr and Toubal (2008) confirmed this finding and provided additional insight by presenting some evidence of the underlying channels through which migration is predicted to spur bilateral trade. Based on their findings, Felbermayr and Toubal inferred that the positive impact of migration on total trade works mainly through the demand channel, whereas the actual lowering of trade transaction costs was important for trade in differentiated goods. The trade cost channel tends to be stronger for trade in differentiated goods than for bilateral trade more generally.

The work of Bettin and Lo Turco (2008) was centered on the cross-country approach to OECD data. Their results confirmed the general positive link and they also highlighted important variations in the magnitude of the association across different types of sectors and goods. Focusing on 16 OECD countries and migrant source countries to the OECD during 1991 to 2000, Bodvarsson and Berg (2009) estimated a 4.5 percentage increase in trade for a 10 percentage increase in immigration. Jansen and Piermartini (2009) also found a positive and statistically significant effect of immigration on US foreign trade, but their findings suggested that the impact was greater for temporary migrants than for permanent migrants.

Recently, Hatzigeorgiou (2009) carried out an empirical investigation of the link between migration and trade flows for Sweden. The study found a statistically strong, positive and robust link between and increased bilateral trade with migrant source countries. Hatzigeorgiou (2010) investigated the link between migrants and trade using a wide sample of developed and developing economies in 75 countries using gravity model built on the information and network theoretical framework. The data allowed inference to be drawn about whether migration has a positive impact on trade due to reductions of trade costs or because migrants inject additional demand for home country products. The paper sought to examine the effect of migration on trade facilitation between the country of birth and the country of residence.

The estimation results suggested a very strong association between the total number of immigrants and the level of imports from those immigrants' home countries. In particular, a 10 percent increase in the total number of migrants is associated with an import increase of no less than 0.7 to 0.8 percent. The paper further provided answer to whether migration-trade nexus is sector specific. He estimated the impact of migration on trade on differentiated goods and homogenous goods. He found that that migration tend to improve trade in differentiated goods due to the fact that migrants tend to possess inside knowledge about business practices in their county of birth. Thus, the pro-trade effect of immigration is considerably larger for differentiated goods than for homogenous goods.

The review of literature, while not exhaustive, provides some stylized evidence about migration and trade. First, if the source and destination countries have similar technology and productivity, and if economies of scale exist in the two countries, migration cannot explain trade between them. Second, if there is technological difference but without bias towards factor endowment, then trade may substitute for migration. Third, if the source countries are endowed with labour skill and if migration cost is not binding, trade may likely facilitate migration. Fourth, migration leads to increase in commodity flows across country most especially if there are endowment

differentials and the existence of information network. Finally, the way trade affects migration whether in the panel data or time-series is diverse, although evidence is bias towards complementarity.

Observably, there was scarce country-specific evidence from Africa (except for Morocco). In most of the panel data analyses, some African countries were included as trading partners. To the best of the researcher's knowledge, there was no evidence of trade-migration nexus in Nigeria and so, it is not clear whether trade and migration were substitutes like in the case of Morocco or complements in the case of developed countries.

3.5.1 *The existing gasp in the empirical literature*

Most of the empirical studies were based on the developed-emerging markets or developed-developing countries at the aggregated level. The few that considered country-specific analysis focused on the countries from Asia and East-West European countries. There was little empirical evidence in the case of developed-Africa country, except those included in pooled data analyses. To the best of the researcher's knowledge, the only empirical evidence from Africa was Morroco and the EU carried out by two separate researchers in two different periods. Notably, the work employed network/information theory. Thus in Africa, there appear to be very few available empirical evidence of the link between trade and migration using the H-O theory.

Another gap is that most of the received evidence made use of aggregate trade. This may not give a true picture of the link in the case of Nigeria given the fact that oil, which is resource and capital intensive, dominate the export sector. Although some authors recognize this homogeneity problem, the disaggregation does not follow a uniform pattern. While some disaggregated total trade to homogenous and differentiated goods, some disaggregated it to capital goods, intermediate good and final goods. This type of disaggregation still paints a wrong picture about how migration can affect each product in each group. For instance, agriculture and agriculture raw materials will be in

raw materials goods while food and manufactured (of finished) goods could be classified as final goods. But the way migration affects these various products differ considerable. If manufactured trade overwhelms food and beverages for instance, food and beverage effect of migration may not be established and policy decision on food may be misdirected. These are the gaps that present thesis attempted to fill.

CHAPTER FOUR

THEORETICAL FRAMEWORK AND METHODOLOGY

This chapter is devoted for theoretical framework and methodology adopted for the thesis. The theoretical framework employed is an extension of one of the theories discussed earlier, that is, the H-O theory. However, little modifications are introduced in order to incorporate some peculiarities of Nigerian economy.

4.1   Theoretical Framework

This study adopts the factor endowment framework developed by Mundell (1957) and extended by Markusen (1983) and Norman and Venables (1995). The reason for choosing this framework is that first, it best explains the basis for trade and/or migration between the developed and the developing countries. Second, it is capable of showing the interconnectedness of trade and migration in a single analysis.

The basic assumptions of the model are: (1) two factors, 1 and 2; two goods, 1 and 2; and two countries, h and f; (2) Country h is labour-endowed and capital-scarce while country f is capital endowed and labour-scarce; (3) the goods are produced in a perfectly competitive market; (4) technologies are characterized by unit costs of factor b_1 and b_2; (5)   Good 1 is relatively intensive in usage of factor 1 and good 2 is treated as numeriere; and (6) preferences are homothetic.

Given assumption 3, the price of each good is equal to its unit cost such that

$$P_k = b_k(w_1^i, w_2^i); \ i = h, \ f \ \ldots\ldots\ldots\ldots\ldots\text{................}\ldots\ldots\ldots\ldots\ldots\ldots\ldots \ \ 20$$

where P_k is the unit price of good k; w_1^i, w_2^i are prices of factors 1 and 2 in country i. Base on assumption 5,

$$w_1^i = w_1^i(P_1^i); \quad \frac{\partial w_1^h}{\partial P_1^h} > 0 \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \text{21}$$

$$w_2^i = w_2^i(P_2^i); \quad \frac{\partial w_2^h}{\partial P_2^h} < 0 \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \text{22}$$

base on assumption 2,

$$\frac{w_1^h}{w_2^h} < \frac{w_1^f}{w_2^f} \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \text{23}$$

that is by Stolper-Samuelson theorem, the autarky factor price of good 1 is lower in country h than in country f[36]. Let V_j^i be defined as factor endowment j (j = 1, 2) in country i (i = h, f). Thus the output level determined by the market clearing for each factor in each country is given by

$$V_j^i = x_1^i \frac{\partial b_1(w_1^i, w_2^i)}{\partial w_j^i} + x_2^i \frac{\partial b_2(w_1^i, w_2^i)}{\partial w_j^i} \dots \dots \dots \dots \dots \dots \text{24}$$

Where x_1 and x_2 are volumes of goods 1 and 2 produced in country i. Denote ω^i as the ratio of factor 1 to factor 2 in country i, ω^w as the ratio with which the world is endowed with factors 1 and 2, and λ as the home country share of the world endowment of factor 2. The world endowment ratio can be inferred from each country's share of world endowment as follows

$$\omega^h \equiv \frac{V_1^h}{V_2^h}, \omega^f \equiv \frac{V_1^f}{V_2^f}, \omega^w \equiv \frac{V_1^h + V_1^f}{V_2^h + V_2^f} \dots \dots \dots \dots \dots \dots \text{25}$$

and

$$\lambda \omega^h + (1-\lambda)\omega^f = \omega^w; \lambda \equiv \frac{V_2^h}{V_2^w} \dots \dots \dots \dots \dots \dots \dots \dots \text{26}$$

that is the world endowment ratio is the weighted sum of endowment ratio, the weight depending on λ. Using equations 5 and 6, each country's supply of good 1 relative to its supply of good 2 can be expressed as a function S of the good's price and the factor endowment ratio,:

$$\left(\frac{x_1}{x_2}\right)^i = S(P_1^i, \omega^i) \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \text{27}$$

$$\frac{\partial S(P_1^i \omega^i)}{\partial P_1^i} \geq 0$$

$$\frac{\partial S(P_1^i \omega^i)}{\partial \omega^i} \geq 0$$

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[36] Stolper-Samuelson effect occurs when, under constant returns to trade, if the two countries countinue to produce the two goods, increase in the commodity price for which a factor is intensive leads to disproportionate increase in factor price of that good.

the last two rows of equation 27 is informed by relative intensity assumption and the Rybcynski effect. Equation 27 says that relative supply depends on the price of good 1 and endowments.

From the demand side, consumers' utility level is U^i and expenditure function is given in per unit utility as $e(P^i)$. The budget constraint is of the form:

$$e(P_1^i)U^i = w_1^i V_1^i + w_2^i V_2^i$$ ……………………………………………… …..28

the right hand side (RHS) of equation 28 is the economy's total factor income. With the assumption of homotheticity, the ratio of consumption of good 1 to consumption of good 2 can be expressed as a function of the price of good 1

$$\frac{c_1}{c_2} = D(P_1^i) ; \quad \frac{\partial D(P_1^i)}{\partial P_1^i} < 0$$ …………………………………………….29

Equating equations 27 and 29, the autarky equilibrium becomes

$$\frac{c_1}{c_2} = \left(\frac{x_1}{x_2}\right)^i = D(P_1^i) = S(P_1^i, \omega^i)$$ …………………………………….……..30

That is in autarky, equilibrium requires that relative consumption is equal to relative output, and this depends on the price of good 1 and endowment. With the assumption of factor price differentials, good 1 may be produced in excess such that equation 30 becomes

$$\frac{c_1}{c_2} < \left(\frac{x_1}{x_2}\right)^i ; D(P_1^i) < S(P_1^i, \omega^i)$$ …………………………………….……….31

If trade is costlessly allowed, country h will export the excess of supply over demand to foreign. As export continues, factor price contracts and less incentive is available for trade. Thus equation 31 is a case of frictionless trade.

4.1.2   *The effect of trade cost (Tariff)*

Trade cost can be taught of as anything that can hamper free flow of goods and services across national boundary or free movement of factor (labour). One of such costs is tariff. The effects of trade cost are of two forms: it prevents international factor price equalization; second, it creates demand for factors of production. Let t denote the volume of transaction undertaken by consumers in country i so that the unit cost function of transaction, as well as unit expenditure is evaluated at the source country. If trade is allowed, this cannot equate good prices, but places a bound on the difference between them, this bound being

$$e(P_1^h)t \geq P_1^f - P_1^h \geq e(P_1^f)t \ \text{...32}$$

Thus if good 1 is exported from h to f, then it must be the case that

$$P_1^f = P_1^h + e(P_1^h)t \ \text{...33}$$

By assumption of endowment differential, and factor intensity, country h will produce more of good 1 relative to good 2 as demonstrated in equation 31. Without trade, $P_1^f > P_1^h$. It turns out that in equation 31, if trade cost is greater than the difference between prices, trading will be very costly, if low, it will be profitable. Thus for trade to occur, trade cost must be significantly low, or factor endowment must be largely different.

Let the home country share of world endowment ω^w of factor 2 be λ. The economies will be on the boundary of between trade and no trade if national factor endowment ω^h and ω^f and equilibrium prices P_1^h and P_1^f satisfy the following:

$$S(P_1^h, \omega^h) = D(P_1^h) \ \text{...33}$$

$$S(P_1^f, \omega^f) = D(P_1^f) \ \text{...34}$$

$$P_1^h + e(P_1^f)t = P_1^f \ \text{...35}$$

$$\lambda\omega^h + (1-\lambda)\omega^f = \omega^w \ \text{...36}$$

Equations 33-34 say that in autarky, demand equals supply. Equation 35 says that the share of individual country add up to world endowment. By varying λ, we can trace the locus of trade and no trade boundary in factor endowment space. Let ϖ^i be the trade boundary derived from equations 33-34 by varying λ, so that the shape of the goods trade boundary can be established by inverting equations 33-34 to give:

$$P_1^h = \psi(\varpi^h), \; P_1^f = \psi(\varpi^f) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \ldots\ldots 37$$
$$\psi' < 0$$

The function ψ gives the autarky price ratio as a function of the endowment ratio. The condition $\psi' < 0$ is informed by the factor intensity assumption and it implies that an increase in factor 1 reduces price of factor 1. Using equations 37 and 35, the gap between prices can be expressed as follows:

$$\psi(\varpi^h) + e[\psi(\varpi^h)]t = \psi(\varpi^f) \quad \ldots\ldots\ldots\ldots\ldots\ldots..\ldots\ldots\ldots\ldots\ldots\ldots. \; 38$$
$$\text{since } \psi' < 0, \text{ then } \varpi^h > \varpi^f$$

Totally differentiating equations 36 and 38 and eliminating $d\varpi^f$ produces equation 39

$$\psi'(\varpi^h)\frac{(1+e't)+\psi'(\varpi^f)\lambda}{(1-\lambda)}d\varpi^h + \psi'(\varpi^f)\frac{(\varpi^h-\varpi^f)}{(1-\lambda)}d\lambda = 0 \ldots\ldots\ldots\ldots..39$$

Thus,

$$\frac{\partial \varpi^h}{\partial \lambda} < 0; \quad \frac{\partial \varpi^f}{\partial \lambda} > 0$$

as λ increases to unity, ω^h decreases monotonically to ϖ^w. Thus, equation 39 says imposition of tariff reduces gains from trade by reducing good 1 trade volume. It also indicates that the higher the endowment, the higher the production of good 1 in h. In effect, tariff hampers trade but the pattern of trade would be for country h to export good 1 and import good 2.

4.1.3   *A case of migration cost*

Suppose migration is permitted at a cost of $e(P_1^i)\tau$. Assume also that migrants can either consume in their host country or have preferences for home goods or both. Let the parameter β takes value 0 if consumption is in the destination country or 1 if in the country of origin. If consumption takes place in both countries, then β will lie between 0 and 1. Finally, let the synthetic measure of the return that migrants earn in country i be defined by the function $y(P_1^i; \alpha, \beta)$, so that

$$y(P_1^i; \alpha, \beta) = w_1 \frac{P_1^i}{e(P_1^i)}$$

Where α is the share of factor 1 in the composite factor[37]. Define the condition for the possibility of factor movements between home and foreign values of y by

$$\tau e \frac{(P_1^h)}{[\beta + (1-\beta)e(P_1^h)]} \geq y(P_1^f; \alpha, \beta) - y(P_1^h; \alpha, \beta) \geq -\tau e \frac{(P_1^f)}{[\beta + 1 - \beta)e(P_1^f)]} \quad .....40$$

If both inequalities are satisfied with strict inequality, then the real migration cost is greater than the different between earnings and therefore migration is costly. In this case, there is no basis for migration even though factor prices differ and tariff exists. If the LHS inequality holds with equality, then migration will take place and it is of the form of labour migrating from h to f. If the RHS holds, factor will move from f to h. Suppose the second condition holds and suppose migrants consume their income in the destination country, then $\alpha = 1$, $\beta = 0$. In this case, equation 40 becomes

$$\tau \geq w_1 \frac{(P_1^f)}{e(P_1^f)} - w_1 \frac{(P_1^h)}{e(P_1^h)} \geq -\tau \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.41^{38}$$

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[37] The term α is called bundled international mobility (Ethier, 1985).
[38] This equation is expressed in utility units and adjusts income by the expenditure function in the country where income is spent.

Equation 41 says that whether migration takes place or not depends on whether $y(P_1^i; \alpha, \beta)$ is increasing in P_1^i [39]. Using Stolper-Samuelson effect in equations 2 and 3, there are two cases that emerge. Case 1 is when α is close to unity, so that $y(P_1^i; \alpha, \beta)$ is increasing in P_1^i. Case 2 is when α is close to zero, so that $y(P_1^i; \alpha, \beta)$ is decreasing in P_1^i. The exact dividing line between cases 1 and 2 (the value of α at which $\partial y / \partial P_1^i = 0$) depends on technology, preferences and the value of β.

Case 1can be taught of as when labour migration takes place. By the assumption of factor endowment and intensity, $P_1^f > P_1^h$, so that $y(P_1^f; \alpha, \beta) - y(P_1^h; \alpha, \beta) \geq 0$. In this case, it is less costly for workers to migrate to country f because

$$\tau e \frac{(P_1^h)}{[\beta + (1-\beta)e(P_1^h)]} = y(P_1^f; \alpha, \beta) - y(P_1^h; \alpha, \beta) \quad \dots\dots\dots\dots\dots\dots\dots\dots 42$$

that is, real migration equal to the difference between returns. Equations 40 and 42 define the boundary of the region in which there is factor trade in a manner similar to equations 33-34. It turns out that the possibility for goods trade or factor trade depends on the relative positions of goods trade boundary and factor trade boundary. If migration cost is easily affordable while tariff is unbearable, then, it is advisable to allow migration to substitute for trade such that at equilibrium, the production and consumption in each country becomes

$$S(P_1^h, \rho \omega^h) = D(P_1^h) \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 43$$

$$S(P_1^f, (1-\rho)\omega^h) = D(P_1^f) \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 44$$

$$\lambda\omega^f + (1-\lambda)\omega^f = \omega^w \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 45$$

That is, a share (1-ρ) of h endowment migrates to f and there is no justification for trade in good due to high tariff rate. However, the weighted sum of endowments must add up to world endowment as shown in 45. Thus equations

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[39] This is due to the factor endowments and factor intensities assumptions, which give rise to $P_1^f > P_1^h$

43-45 define the boundary of the region in which the effect of factor trade is similar to goods trade: substitute. Between the boundaries, trade in factor and goods can take place. This possibility is demonstrated with the aid of Edgeworth-Bowley box in Figure 4.1. The box measures the world endowment of factors 1 and 2 and the shape of the diagonal is $1/\omega^w$. The gg line defines the commodity goods curve while ff line is the factor movement curve. The closer the gg line to the diagonal, the more unprofitable trade becomes because there is small endowment differentials between the two countries. Part of money remitted back home by the emigrants is sometimes used to finance some potential migrants. Therefore, remittances provide easy way of overcoming migration cost in the face of high tariff thereby strengthening the complementarity/substitutability of trade and migration. Thus there is a connection among the three and they are all endogenous.
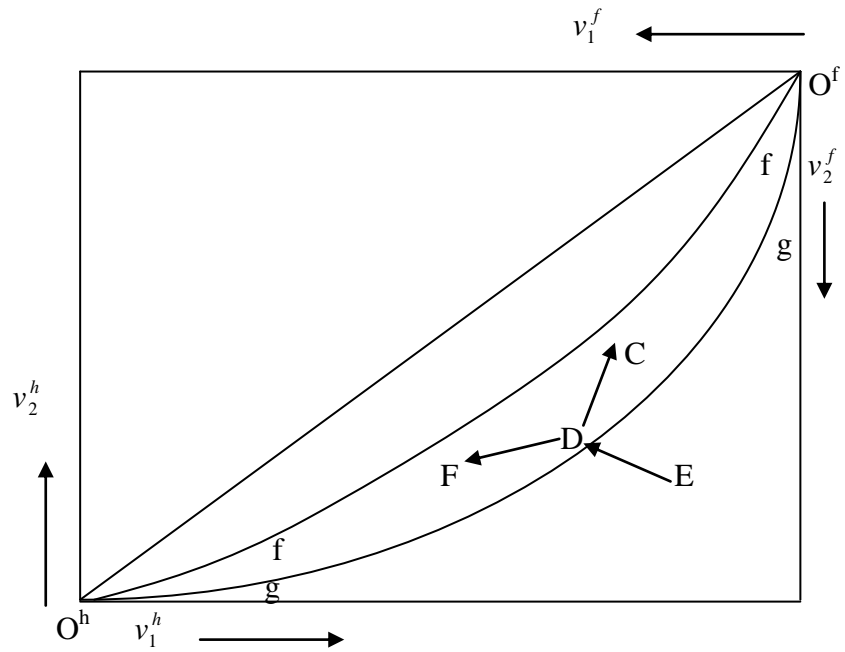
Figure 4.1: The Edgworth-Bowly Curve showing factor and trade Boundary.

When gg line is above ff line but not close to unity (the case of low tariff), goods trade dominates factor trade because the difference in good price is not large enough to cause large factor price differentials, hence the equilibrium is established as shown in equation 31. The case shown in Figure 4.1 is when gg line lies below ff line. This may be the case of relatively high tariff and low migration cost. When $\beta = 1$, factor content of consumption of good 1 will be at point like C for country f and at point D for country h, while point E is the factor endowment. Country h therefore export D-E amount of factor together with F-D amount of goods, while it imports C-D amount of commodity good, so that the only way to capture more gains from trade is to allow both trade in goods and in factor

As the graph shows, migration and trade appears to be complementary for gains from trade to be fully captured due to the fact that tariff is unavoidable while migration cost can be relatively accommodated. In particular, the framework shows that in a globalizing economy, if tariff is very low, migration may not increase gains from trade. If tariff is very high, and migration cost is very low, gains from globalisation will be captured through migration only. But when tariff is not so high and migration cost can be accommodated, both trade and migration take place. Notably, not all intending migrants will migrate at once because some of them will be financially constrained. When those who could afford cost of migration eventually migrate, they send remittances back home probably to assist the potential migrants.

4.2   Methodology

4.2. 1 *Model specification*

One of the empirical models that have received success in explaining bilateral trade using classical factor proportion model is the gravity equation (Deardoff, 1995). The empirical implementation of the above theoretical framework is rooted in the gravity model[40]   The traditional gravity model shows that

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[40] Gravity model have been popularly used in explaining bilateral trade in the context of classical factor proportion model (Deardoff, 1995).

bilateral flows are a function of economic mass (size) and distance. Thus, bilateral flows such as trade and investment are a function of population of each nation, GDP and distance between them. This model has been modified over time to include other variables such as trade policy and migration.

4.2.2 *The origin of gravity model*[41]

The underlying principle of gravity model are derived from Newton's (1687) 'Law of Universal Gravitation', that was not invented, but instead discovered; since it is a binding law that governs nature. This model was applied in international economics after more than one hundred years that it was discovered even though it has been used in other disciplines. Early academic synthesises of the 'gravity principles' and migration include: Carey (1858), who observed the influence of gravitational forces in the social sciences; and the geographer Ravenstein (1885) who formulated a number of 'laws of migration' having first categorised migrants according to their various motivations for seeking alternative residence. These laws laid the foundations for his gravity principles that still largely hold true today.

Early applications include Zipf (1946) who brought Newton's gravitational principles into the realm of the social sciences by successfully testing the underlying predictions of the gravity model in relation to migration between major cities; and Lowry (1966) whose model draws together gravity and wage determination principles into a single gravity model predicting migration levels.

Gravity models have since been used to model numerous, 'social interactions', (2000). The application of Gravity models in economics however, is attributed to Tinbergen (1962) who first applied the gravity principles to examine international trade flows. Specifically, gravity modeling applies Newton's Law of Gravity to provide an empirically tractable framework; positing a log-linear relationship between trade volumes, trading distances and the importing

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[41] This section benefitted immensely from Lung (2008) and Foad, (2009)

and exporting countries' GDP. Trade is treated as analogous to the attractive force between two particles. Trade volumes are therefore predicted to be an increasing function of the size of countries, but a decreasing function of the distance between them.

In recent years there has been a significant revival of interest in these models for a number of reasons. First, gravity models have experienced remarkable empirical success in predicting bilateral trade flows in many geographical regions worldwide. Second, gravity modeling lends itself to explain many additional complexities including currency unions (Frenkel *et al*, 2000), regional trade agreements (Cernat *et al*, 2003; foreign aid by Helliwell, 1999) and the effects of immigration on trade flows. Third, whereas once significant criticism was leveled at gravity models for not having a solid theoretical underpinning, these foundations have been provided from a variety of sources. Fourth, in today's world of increasing inter-disciplinary cooperation there is a growing desire to treat countries or regions as physically placed at particular locations rather than as disembodied constructs (Frenkel 1996). Gravity models provide both the geographer and the economist with a flexible tool for accomplishing this.

Gould (1994) was the first researcher that introduced gravity modeling to investigate the effects of immigration on bilateral trade flows. This represented a marked improvement over previous models that treated immigration as equivalent to labour force growth; and thus allowed the effects of immigration upon (bilateral) trade flows to be quantified for the first time. This line of thought therefore represents a recent addition to the economics literature.

4.2.3. *Theoretical underpinning of gravity model*

Following Bergrstrand (1983), Gould (1994), and Head and Ries (1998), production takes place using a given endowment of labour from a country's own population[42] from (N-1) in which L (the country of emigration) is among the (N-1). Producers maximize profits subject to CET technology, and consumers maximize a CES function to a budget constraint. In country i, firms maximize the following profit function every year:

$$\Pi = \sum_{k}^{N} P_{hk} X_{hk} - W_h L_h \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots..46$$

From the supply side, labour is allocated across industries for every country i according to CET joint production surface[43]. The production function is given by:

$$L_h = \{[\sum_{k=1}^{N} (X_{fh}^{\Theta})^{1/\Theta} + X_{hh}]^{\delta}\}^{1/\delta} \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.47$$

i = f, h and k ≠ i.

and firms maximize the profit function:

L_h = a single factor of production available to country h

X_{hf} = country h's good supplied to country f

X_{hh} = country h's good supplied to the domestic market

$\delta = (\eta+1)/\eta$, where η is the elasticity of transformation between any two goods in country h ($0 \leq \eta \leq \infty$)

$\Theta = (\lambda+1)/\lambda$, where λ is the elasticity CET among exportable goods ($0 \leq \lambda \leq \infty$).

Π = the profit of the firm

P is the currency prices of k's product in country i

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[42] We focus on modeling destination country's production and utility because the presence of migration in that country is crucial to trade activities between the source and the host country.
[43] See Powel and Gruen (1968) and Bergstrand (1985)

L is the amount available of the single internationally mobile resource in a given year to produce various outputs

W is the i-currency allocated to a unit of R

Maximizing equation (46) subject to equation (47) produces N^2 first order conditions and generates $N(N-1)$ bilateral export supply equation:

$$X_{hf}^S = Y_h P_{hj}^{*\gamma} \left[\left(\sum{}' P_{hf}^{*1+\gamma} \right)^{1/1+\gamma} \right]^{-(\gamma-\eta)} X \left\{ \left[\left(\sum{}' P_{hf}^{1+\gamma} \right)^{1/(1+\gamma)} \right]^{1+\eta} + P_{hh}^{*1+\eta} \right\}^{-1} \quad \ldots\ldots\ldots\ldots.48$$

Where $P_{hf}^* = P_{hf}/T_{hk}C_{hk}$), the price received by country f for selling i's product in the kth market,

$T_{hk} = 1+$ the ad-valorem tariff rate on k^{th} product produced and export by country h

$\sum{}' =$ summation over $k = 1, 2, \ldots\ldots, N. \; k \neq i$.

$Y_{i} =$ the total income paid to labour ($Y_i = W_i L_i$)

Equation 48 shows that country h's supply of its differentiated product to the foreign market depends on its income (Y_h), the price of that product in country f (P_{hf}) and the domestic market price (P_{hh}), and the price of the product in the other foreign markets ($\sum{}'P^*_{fk}$).

From the demand side, consumers in all countries are assumed to share the following CES utility function:[44]

$$U_h = \left\{ \left[\left(\sum_{k=1}^{N} X_{fh}^{\theta} \right)^{1/\theta} \right]^{\psi} \right\}^{1/\psi} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.49$$

$$Y_h = \sum_{f=1}^{N} P_{hf} X_{hf}; \qquad f = 1,2,\ldots,N \quad \ldots\ldots\ldots\ldots\ldots..\ldots\ldots\ldots\ldots\ldots.50$$

Where $X_{fh} =$ the country f's good demanded by country h,

$X_{hh} =$ the good that is produced and demanded domestically

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[44] Derived from Dixit-Stiglitz (1977) utility function in which utility is derived from the variety and quantity of goods available.

Y_h is the level of income domestic income (including remittances)

$\psi = (\mu-1)/\mu$ where μ is the CES between domestic goods and imported goods in the host country ($0 \leq \mu \leq \infty$)

$\theta = (\tau-1)/\tau$ where τ is the CES among importable goods ($0 \leq \tau \leq \infty$).

Maximizing equation 49 subject to equation 50 yields N+1 first order conditions and N(N-1) bilateral aggregate import demand equations

$$X_{hf}^D = Y_h P_{hh}^{1-\tau} \left[\left(\sum{}'' P_{hf}^{1-\tau}\right)^{1/1-\tau}\right]\left\{\left[\left(\sum{}'' P_{kf}^{1-\tau}\right)^{1/(1-\tau)}\right]^{1-\mu} + P_{hh}^{1-\mu}\right\}^{-1} \quad\ldots\ldots\ldots.51$$

$\sum''$ is the summation over f = 1,2,……….,N; k≠j

Equation 51 describes the import demand of country h from country f product (X_{hf}) that depends on the income Y_h, the price of country f's product (P_{fh}), and its own domestic product (P_{hh}) and the price of other foreign products available $\sum'' P_{kf}$

Equilibrium of supply and demand for N^2 equilibrium from equations 48 and 51 is given by equation 52:

$$X = X^D = X^S \quad\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.52$$

yields $2N^2$ solutions for quantities and prices and N solution for country income as fractions of the exogeneous variables T_{hk}, C_{hk}, and L_h.

Assuming that each country's bilateral trade flows is small relative to total trade, so that for each country, prices are given. The small market assumption implies that changes in X_{ff} and P_{ff} for which demand equals supply for traded goods between two countries have negligible impact on incomes and prices of other markets. Solutions for bilateral prices as well as trade flows are derived from combining equations 48 and 51 and multiplying them together. This yields the following aggregate trade flows:

$$P_{hf} X_{hf} = Y_h^{(\tau-1)/\lambda+\tau} Y_f^{(\lambda+1)(\lambda+\tau)} C_{hf}^{-\tau(\tau+1)/(\tau+\lambda)} T_{hf}^{-\tau(\tau+1)/(\tau+\lambda)} \left(\sum{}' P_{hk}^{*1+\lambda}\right)^{-(\tau-1)(\lambda-\eta)/(1+\lambda)(\lambda+\tau}$$

$$X \left(\sum{}'' P_{kh}^{(1-\tau)}\right)^{(\lambda+1)/(1-\tau)(\lambda+\tau)} \left[\left(\sum{}' P_{hk}^{*1+\lambda}\right)^{(1+\eta)/(1+\lambda)} + P_{hh}^{1+\eta}\right]^{-\tau(\tau-1)/(\lambda+\tau)}$$

$$X \left[\left(\sum{}'' P_{kf}^{1-\tau}\right)^{(1-\mu)/(1-\tau)} + P_{hf}^{1+\mu}\right]^{-(\lambda+1)/(\lambda+\tau)} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 53$$

where $P_{hf}X_{hf}$ is the value of aggregate trade flows from country h to country f. Equation 53 says that the value of aggregate trade flows from country h to country f depends on nine terms and will be interpreted as they follow each other in the model: 1) the income of the exporting country; 2) the income of the importing country, 3) transportation costs; 4) tariffs; 5) migration cost; 6) an export price index; 7) an import price index; 8) an index of domestic prices for the exporting country, and 9) an index of domestic prices for the importing country.

The nine terms can be categorized into three: income term reflecting potential demand and supply; wedges between export and import price traded due to transportation costs, tariff and migration cost, and price terms reflecting substitution effects. This is consistent with what is articulated in the theoretical framework in which bilateral trade flows from f to h are described as depending on the magnitude of tariffs, and migration costs.

It is possible to observe that the trade flow in equation 53 may depart from actual flows due to decision, production or delivery lags. Besides, in the presence of migration, Y_h comprises source income and remittances. Incorporating this information, the economic model specification of equation 53 is presented in equations 54 and 55

$lnX_{ih,f} = f[ln(X_{t-1}, Y_h, Y_f, POP_h, POP_f, P_f, P_h, P_{hx}, P_{fm}, T_{if}, MIG_{hf}, REM_{hft}]$ ...54

$lnM_{jh,f} = f[ln(M_{t-1}, Y_h, Y_f, POP_h, POP_f, P_f, P_h, P_{hm}, P_{fx}, T_{ih}, MIG_{hf}, REM_{hft}]$ ...55

4.2.4 *Justification of the use of the Gravity Model in this Study*

Gravity model has recorded significant success in explaining international trade, and investment. Although, the model has been critized of lacking theoretical foundation, it has the ability to explain a wide variety of goods trade and factors moving between regions and across national borders. Not only that, the models can be derived from very different trade theories: the Ricardo's comparative advantage theory, the Heckscher-Ohlin's factor endowment and factor intensity theory and monopolistic competitive theory with increasing return to scale. The gravity models are consistent with the Heckscher-Ohlin-Vanek factor service trade prediction, one of the most important results of trade flows (Evenett & Keller, 2002).

The gravity models are useful tools in analysing the determinants of international trade flows, identifying and estimating export market potential and identifying "natural" trade blocs (Lung & Gunawardana, 2000). The gravity models can determine the normal or standard bilateral trade pattern that would prevail in the absence of trade impediments (Gunawardana, 2005), and also can determine the magnitude of the trade impediments. In addition, the gravity models are also consistent with Helpman-Krugman-Markusen theory of intra-industry trade (Bergstrand, 1989).

4.2.5 *The explanatory variables found in the standard Gravity Model*

The common feature of the gravity model is that it attempts to attribute flows from one region to another region depending on the relative attractiveness of the two regions. In relation to international trade, the model proposes that flow of goods from one country to another is a function of a positive product of the size of economies of the two trading countries and an inverse function of trade resistance factors. The model attempts to explain the volume of trade as a result of the trading countries' ability to supply and demand tradeable goods

when the trade resistance factors are removed. It appears as a reduced form of simultaneous equations of supply and demand in which prices are endogenous.

4.2.5.1 The GDP Variables

The empirical relationship between GDP variables (of both the exporting and the importing countries) and the total exports is not clear. Most studies found that the GDP variables are positive and significant. These studies include Tinbergen (1962), Pöyhönen (1963), Linnemann (1966), Aitken (1973), Aitken and Obutelewicz (1976), Geraci and Prewo (1977; 1982), Frenkel and Wei (1993), Frenkel *et al*(1995), Bergstrand (1985; 1989; 1990), Thursby and Thursby (1987).

However, Glejser (1968), cited in Oguledo and MacPhee (1994) found that exporter's GDP has a negative and significant impact on total trade. While home country's GDP partially determines total exports, total exports also contribute a portion of home country's GDP. GDP is measured as the sum of aggregate consumption (C), aggregate investment (I), government expenditure (G) and net exports (NX), which are total exports (X) minus total imports (IM). Total exports contribute a portion of GDP either by increasing the GDP if net exports are positive or by reducing the GDP if net exports are negative. Under the very rare situation where the country has a balanced trade (a very special case of zero net export), the GDP is independent from the net exports. Whenever net exports are not zero, the dependent variable of total exports in the gravity model is not independent from the explanatory variable of GDP.

As a result, the GDP variable is contemporaneously correlated with the error term in the regression through the dependent variable, thus the ordinary least squares (OLS) estimators are inconsistent and hence the estimates are biased. For the same reasoning, foreign country's GDP is also correlated with home country's total exports as they constitute a proportion of the foreign country' total imports, but the endogeneity is to a lesser extent. A number of studies acknowledged that the dependent variable in the gravity model has

endogenous problem with the GDP variable and attempted to replace the GDP variables by instrument variables. For example, Frenkel (1996) uses a quadratic function of population as an instrument for GDP.

4.2.5.2 Population

The impact of the population variable is not clear. Linnemann (1966), Aitken (1973), Oguledo and MacPhee (1994), found that populations of the trading countries have a negative and statistically significant impact on the trade flows. However, Brada and Méndez (1983) found population size to have a positive and significant impact on trade flows. In the study of Asian countries, Frenkel, et al (1995) found that the populations of exporting countries have negative and significant impact on trade flows, while the populations of importing countries have positive and significant impacts.

4.2.5.3 Per Capita GDP

Per capita GDP is not a common variable used across gravity models applying cross-section data. However, a number of studies incorporated per capita GDP in the models, by taking into consideration of the stages of economic development on the influence of trade. When per capita GDP is used, either population variable (Bergstrand, 1989; Frenkel and Wei, 1993; Frenkel *et al*, 1995) or GDP variable (Frenkel *et al*, 1995) was omitted. All of the per capita GDP variables, except some in Bergstrand's model, have a positive and significant impact on trade flows.

4.2.5.4 Export and Import Prices in the Gravity Equation

Linnemann (1966) believed that prices of commodities have no role to play in the gravity model since in the world market, supply equals demand. If a particular country has long term "too high" or "too low" prices, there would be a permanent disequilibrium of the balance of payment and the adjustment of the exchange rate will take place to correct the disequilibrium. In the 1970's, a number of authors started to pay attention to the missing price components in the gravity model and their effects on trade. Anderson (1979) argued that

the gravity model should include the price variables. Bergstrand (1985) was more explicit to tackle the problem of missing price variables in the gravity model in his general equilibrium approach. Thursby and Thursby (1987) and Gould (1994) found that the price variables were significant in explaining international trade. Oguledo and MacPhee (1994) made a successful extension to Anderson's approach by placing the price variables in the gravity model and fully justifying the price variable in the gravity model.

4.2.5.5 The Tariff Variables

Linnemann (1966) discussed the difficulty of using tariff as a variable. To overcome the difficulty, he assumed that commodities faced the same average tariff across all trading nations with some deviations. The deviations were classified as positive if deviations are higher than average and as negative if deviations are lower than average. An example of positive deviation is an embargo and an example of negative deviation is preferential treatment. He used dummy variables to capture these deviations. Instead of using dummy variables as a proxy for the impact of tariffs on trade flows, Geraci and Prewo (1977) and Oguledo and Macphee (1994) explicitly used a tariff variable in their gravity models. Although their approaches to tariff variables are different and the bias has been pointed out by Geraci and Prewo (1977), their results confirmed that tariffs have a negative effect on trade flows. Many economists constructed their models adding different variables to the basic gravity model and produced quite satisfactory results.

4.2.5.6 Workers' Remittances

Although, remittances (REM) included in equations 54 and 55 did not feature in the standard gravity equation, migrants send part of their income back home and as discussed in the introductory section, this type of money can be spent

on the production of export goods, purchase of imported products, and used to finance migration or used to consume domestic goods.

4.3 Migration model

The theoretical framework discussed above articulated how trade can cause migration. The Edgeworth-Bowley box shows that if tariff is high, trade will decline and this may lead to increase in migration. However, if tariff is not very high while migration cost can be accommodated, then migration and trade will occur together. This implies that trade can also explain migration. Following equation 42, the tendency to migrate depends on endowment, differences in real wage and migration costs; and the Edgeworth-Bowley box shows that migration depends on trade, together with some variables that determine migration as discussed in the migration theories, migration model is specified the following equation:

$$MIG_{hf} = f((W_f\text{-}W_h), Y_f, Y_h, U_h, C, REM_{fht}, MIG_{t\text{-}1} + X_{hf} + M_{fh}) \quad\ldots\ldots\ldots..56$$

Where $X_{ih,f}$ is the exports of good i from country h (Nigeria) to country f (foreign countries); $M_{jh,f}$ is the imports of good j from country f to country h; Y_f and Y_h are the foreign and home country GDP at factor cost respectively, $POP_{f,}$ and POP_h are the foreign and home country population respectively, T_{if} is *ad-valorem* tariff by foreign country on Nigeria export of good i, T_{ih} is the tariff imposed on imported good i by Nigeria, P_{fx} and P_{hx} is the foreign and home country export unit value indexes respectively, P_{fm} and P_{hm} the foreign and home country import unit value indexes respectively, P_f and P_h is the foreign and home country GDP deflator respectively, MIG_h is stock of Nigerian workers in country f (f = Canada, Italy, UK, US and Sweden), W_f and W_h represent per capita income of country f and h respectively, Y is real GDP growth rate, U_f is unemployment rate in country f, C is cost of migration, REM_{fht} is workers' remittances from foreign to home.

Following the objectives of the study, three versions of equations 54 to 56 are estimated. These are first, Nigeria and the selected trading partners as a group (group model), second, Nigeria and each of the trading partners (country-

specific   model)   and   third,   product-level   which   shows
substitutability/complementarity between tradable products and migration.

(i) *The Aggregate model equation*

$$\ln X_{hft} = \zeta_1 MIG_{hft} + V_{ft}{}' \zeta_i + \eta_i + \lambda_t + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 57$$

$$\ln M_{hft} = \gamma_1 MIG_{hft} + V' \gamma_i + \eta_i + \lambda_t + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 58$$

$$\ln MIG_{hft} = \pi_1 \ln X_{hft} + \pi_2 \ln M_{hft} + V' \pi_i + \eta_i + \lambda_t + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 59$$

where V_{ft} is Kx1 vector of control variables, η_i, λ_t, ε_t are time-specific, country-specific effects and white noise respectively, and ζ_i, γ_i, π_i and β_i are vectors of estimators. Other variables are as defined before.

(ii) *The country-specific model equation*

$$\ln X_{hjt} = \zeta_1 MIG_{hjt} + V_{jt}{}' \zeta_i + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 60$$

$$\ln M_{hjt} = \gamma_1 MIG_{hjt} + V' \gamma_i + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 61$$

$$\ln MIG_{hjt} = \pi_1 \ln X_{hjt} + \pi_2 \ln M_{hjt} + V' \pi_{i+} \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 62$$

where $\ln X_{hjt}$, $\ln M_{hjt}$ and $\ln MIG_{hjt}$ are export, import and migration from country h to country j at time t. Other variables are as defined.

(iii) *The product-type model equation*

$$\ln X_{khjt} = \zeta_1 MIG_{hjt} + V_{jt}{}' \zeta_i + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 63$$

$$\ln M_{khjt} = \gamma_1 MIG_{hjt} + V' \gamma_i + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 64$$

$$\ln MIG_{hjt} = \pi_1 \ln X_{khjt} + \pi_2 \ln M_{hjt} + V' \pi_{i+} \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 65$$

In the equations, k denote product type and other variables remain as earlier defined.

4.4   Estimation Technique

Two estimation problems are identified in equations 57-65. The first problem is the simultaneity problem. As can be verified, equation 54 treated export as endogenous while migration is exogenous. But in equation 56, migration turns out to be endogenous while export becomes exogenous.

4.4.1   *The Simultaneous equation model and the Generalized Method of Moments (GMM)*

The simultaneity problem arises because migration that appears as one of the regressors in the trade equations is actually an endogenous variable which is in turn determined by trade. The implication of this is that migration is likely to correlate with the error term in the trade model while trade is likely to correlate with the error term in the migration model. As a result, ordinary least squares (OLS) cannot be the correct estimation technique because the estimator will not only bias but inefficient. There are at least three ways of solving simultaneity problem.   These are indirect least square (ILS), instrumental variable (IV), and the two-stage least square (2SLS).   The appropriate method is guided by the identification rule which is based on the order and rank conditions of underlying matrices of the system of equations. The identification condition says that in a model of M simultaneous equations[45], in order for an equation to be identified, it must exclude at least M-1 variables appearing in the model.   If it excludes exactly M-1 variables, the equation is just identified and one can estimate the reduced form[46] of the equation using the ILS. If it excludes more than M-1 variable, the equation is over-identified and the appropriate method is the 2SLS. Each equation in the system is over-identifiedand this justifies the use of 2SLS.

The second endogeneity problem is that the error distribution appears to depend on the regressors' distribution, that is, there is the possibility of heteroskedasticity. Although this problem can be dealt with using appropriate

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[45] M = number of endogenous variables in the model, in our case, M = 2

[46] A reduced form equation is one that expresses an endogenous variable solely in terms of the predetermined variables and the stochastic disturbance.

IV, the standard IV estimates of the standard errors are inconsistent, preventing valid inference. The usual forms of the diagnostic tests for endogeneity and overidentifying restrictions will also be invalid if heteroskedasticity is present. These problems can be partially addressed through the use of heteroskedasticity consistent or "robust" standard errors and statistics. The conventional IV estimator (though consistent) is inefficient in the presence of heteroskedasticity. The usual approach today when faced with heteroskedasticity of unknown form is to use the Generalized Method of Moments (GMM), introduced by Hansen (1982). GMM makes use of the orthogonality conditions to allow for efficient estimation in the presence of heteroskedasticity of unknown form.

In migration-trade nexus, migration stocks and trade flows are highly persistent time series. In small sample, persistence can be misattributed to time-invariant fixed effects, and vice versa. Hence, unlike the case of standard methods, GMM allows the migrant stock variable to be correlated with unobservable determinants of the level of trade, thus avoiding a key source of bias. The GMM in dynamic panel gives an efficient estimate of such a model contrary to the OLS while making it possible to control for the individual and time specific effects and to mitigate the endogeneity bias of variables. The estimator usually adopted to partially get rid of this problem is the use of difference GMM developed by Arellano and Bond (1991).

It could be argued that the estimable model is linear in its parameters and so iterated GMM and iterated 2SLS yield relatively the same results. Wooldridge (2002) recommends using the GMM estimator as it is more general. The GMM estimator produces consistent results even in the presence of serial correlation (and heteroskedasticity if the sample is sufficiently large). By accounting for serial correlation ex ante when constructing the optimal weighting matrix appears more satisfactory than adjusting for serial autocorrelation ex post as is usually done in the literature (Kohli, 1991; Tombazos, 2003). Moreover, ex post adjustment for serial correlation may

interfere with instrumenting procedures to account for endogeneity (Tombazos, 2003).

Obsevably, GMM brings with it the advantage of consistency in the presence of arbitrary heteroskedasticity, but at a cost of possibly poor finite sample performance. The usual Breusch/Pagan/Godfrey/Cook/Weisberg and White/Koenker tests for the presence of heteroskedasticity in a regression equation can be applied to an IV regression only under restrictive assumptions. Even when IV or GMM is judged to be the appropriate estimation technique, its validity in a given application can still be questioned. Good instruments should be both relevant and valid. This will be the case if the IV is correlated with the endogenous regressors and at the same time orthogonal to the errors. The necessary condition for validity is that the number of the IV must be greater than or equal to the number of the explanatory variables. If the number of explanatory variable is equal to the IV, then the models is just identified. If it is greater than IV, it is not identified and if it is less than IV, it is overidentified (Greene, 2000; Gujarati, 1988).

The J-statistic, developed by Hansen (1982) gives the value of GMM objective function evaluated using an efficient GMM estimator. If the set of IV is equal to the number of regressors, then the value of J will be zero. Otherwise, J will be greater than zero. For a well overidentified model, the J-statistic behaves like χ^2 random variable about with degree of freedom equals the number of overidentifying restrictions. Thus, J-statistics act as a test for model mis-specification.

In migration-trade nexus, migration stocks and trade flows are highly persistent series. In small sample, persistence can be misattributed to time-invariant fixed effects, and vice versa. Thus the panel data technique estimates the gravity parameters in the presence of both time invariant effects and considerable persistence on trade flows. Hence, unlike the case of standard methods, GMM allows the migrant stock variable to be correlated

with unobservable determinants of the level of trade, thus avoiding a key source of bias.

The GMM in dynamic panel gives an efficient estimate of such a model contrary to the OLS while making it possible to control for the individual and time specific effects and to mitigate the endogeneity bias of variables migration. The estimator usually adopted to partially get rid of this problem is the use of difference GMM developed by Arellano and Bover (1991).

This estimator is based on first level differential and thus eliminates countries specific effects while taking for instruments suitable lagged levels of all the potentially endogenous variables. Thus the dynamic GMM version of equations 57 to 65 are specified in equations 66 to 71:

$$\Delta \ln X_{hf,} = \zeta_1 \Delta \ln Xhf_{,t-1} + \zeta_2 \Delta \ln MIG_{hft} + \Delta V_{ft} \,'\zeta_i + \Delta \eta_i + \Delta \lambda_t + \Delta \, \varepsilon_t \,\ldots\ldots\ldots\ldots\ldots\ldots\ldots \ldots 66$$

$$\Delta \ln M_{hft} = \gamma_1 \Delta \ln M_{hf,t-1} \; \gamma_2 \Delta \ln MIG_{hft} + \Delta V' \, \gamma_i + \Delta \eta_i + \Delta \lambda_t + \Delta \varepsilon_t \,\ldots\ldots\ldots\ldots\ldots\ldots\ldots 67$$

$$\ln \Delta X_{hj,t} = \zeta_1 \, \Delta \ln X_{hj,t-1+} \; \zeta_2 \, \Delta \ln MIG_{hjt} + \Delta V_{jt} \,'\zeta_i + \Delta \varepsilon_t \,\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 68$$

$$\ln \Delta M_{hj,t} = \gamma_1 \Delta \ln M_{hj,t-1} \; \gamma_2 \, \Delta \ln MIG_{hjt} + \Delta V' \, \gamma_i + \Delta \varepsilon_t \,\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 69$$

$$\Delta \ln X_{khft} = \zeta_1 \, \Delta \ln X_{khf,t-1} + \Delta \ln MIG_{hft} + \Delta V_{ft} \,'\zeta_i + \Delta \varepsilon_t \,\ldots\ldots\ldots\ldots\ldots\ldots\ldots \ldots 70$$

$$\Delta \ln M_{Khf,t} = \gamma_1 \Delta \ln M_{Khf,t-1} + \gamma_2 \Delta \ln MIG_{hft} + \Delta V' \, \gamma_i + \Delta \, \varepsilon_{t\ldots} \,\ldots\ldots\ldots\ldots\ldots\ldots\ldots 71$$

The assumption underlying the specification of equations 66 to 71 is that the error terms should not be serially correlated, that is,

$$E[\varepsilon_{i,t}, \varepsilon_{i,t-1}] = 0 \,\forall s \geq t$$

With the initial condition being predetermined by at least one period, that is,

$$E[X_{i,t} \varepsilon_{i,t}] = 0$$

for i= 1, ….., N and t = 3, …., T. with the fact that

$$m = \frac{1}{2}(T-1)(T-2)$$

Moment restrictions or conditions of orthogonality which are linear in the parameters as in

$$E[X_{i,t}\Delta\varepsilon_{i,t}] = 0 \text{ for } s \geq 2 \text{ and } t = 3, \ldots, T$$

This model specifically offers a consistent estimator for N large and T relative small. Arellano and Bond (1991) propose a suitable test for the fundamental assumption of absence of second order serial correlation in the difference equation $E[\Delta\varepsilon_{i,t},\Delta\varepsilon_{i,t-2}] = 0$.

An overidentification (high number of instruments) of the model is expected for $T \geq K$ (where K is the number of regressors and T is the number of instruments). The test of Sagan allows for the verification of the constraints of overidentification or the validity of the instruments. If the value of Sagan is large (probability is small, the instruments are not valid but if the value of Sagan is small (probability is large) the instrument is valid and reliable. For each of the equations, migration is specified as the endogenous variable while the lagged values of the variables in the migration model are chosen as the IV.

4.5   Sources of Data

Migration data were extracted on country basis. The US Statistical Abstract and Census provides source of data on immigrants in the United States. Citizenship and Immigration Statistics of Canada contains annual immigration data in the country. Immigrant data in the UK, Sweden, and Italy were extracted from Census data of respective country. Workers' remittances data were extracted from the IMF Balance of Payments Yearbook (CD-ROM, 2011). Data on aggregate and disaggregate trade were extracted from the World Integrated Trade Solution (WITS). Other variables specified in the model were sourced from the World Development Indicators (WDI CD-ROM, 2011).

CHAPTER FIVE

DATA PRESENTATION AND ANALYSIS OF FINDNGS

This chapter presents the result of estimation and discussion of findings. Following the objectives of the study, the first section presents the panel data estimation of the link between trade and migration, thereby achieving the first objective. To appreciate the efficiency of the GMM, results based on three alternative techniques, namely OLS, 2SLS and dynamic GMM were presented. The Sagan test for overidentifying restrictions is also presented in order to confirm the validity of the instrument used. The second section, which addresses the second objective, presents the country-specific analysis of trade-migration nexus. Three alternative techniques were also presented using the J-statistics to confirm the validity of the instruments. The final section presents the product-level analysis thereby achieving the third objective by investigating closely the extent to which migration reduce or improve trade in a particular product.

5.2   Empirical analysis of subtitutability/complementarity between trade and migration: Nigeria and the trading partners as a group

5.2.1   Result of the link between migration and exports

The OLS panel result presented is the static panel data (fixed effect) as informed by the Hausman test (Table 5.1a). The fact that almost all variables do not significantly explain export cast doubt on this result. Besides, since migration can also be explained by export as demonstrated in the theoretical framework, there is the problem of simultaneity in the result and this tends to contribute to the poor result provided by the OLS estimate..

The simultaneity problem is resolved by adopting the two-stage least square (2sls). The result improved on the OLS because more variables significantly explain export and import. Also, the R-squared has improved (particularly the between group value). Although 2sls was able to correct for simultaneity problem, the issue of endogeneity problem is yet to be addressed. This led to the adoption of GMM to correct this problem. The Sargan test results for over-identifying restrictions indicate that the instruments adopted are valid. The result of the first-order serial correlation shows that there is evidence of country specific effect. However, this effect was removed in the second-order serial correlation test. Thus based on the fact that the second-order serial correlation is insignificant, it implies that very little unobserved country specific effect exists in the GMM system estimation result.

Like in the case of 2sls, GMM shows that there is a significant negative relationship between exports and migration. In particular, the migration elasticity of export was inelastic with estimate being 0.2 percent. Therefore, this result shows that migration and exports are substitutes. Other variables such as foreign countries' population, GDP deflator and income significantly affect the country's exports. Other variables such as Nigeria GDP, (foreign) import tariff and remittances significantly affect exports. The tariff elasticity of exports was negative and almost absolutely inelastic with the estimate being 0.02 percent. This shows that the impact of tariff on Nigerian exports is negligible. The result also shows that there is a positive association between remittances and exports with the elasticity value being 0.4 percent.

The summary of this result is that migration and exports are substitutes, remittances increases import while export sluggishly respond negatively to tariff. The result also shows that allowing for a lagged dependent variable introduces important dynamics into the gravity equation and potentially eliminates a source of omitted variable bias and as can be observed, the estimate is significant and positive.

Table 5.1(a): Panel data result showing the link between exports and migration

Variables	Exports		
	OLS	2SLS	GMM
Δlnexp(-1)	..	..	0.399
			[2.131]**
ΔLnmig	0.411	-0.401	-0.026
	[2.71]**	[2.600]**	[-1.88]*
ΔLnpopng	-4.23	4.509	0.084
	[-1.56]	[4.290]***	[0.01]
ΔLnpop	5.668	5.96	1.803
	[6.22]***	[7.250]***	[3.36]***
ΔNgdefl	0.004	0.007	-0.003
	[1.00]	[1.37]	[-0.89]
ΔDefl	-0.553	0.127	-0.14
	[-1.19]	[2.15]**	[-2.39]***
Δlngdp_nig	-0.107	1.686	0.2
	[-0.20]	[-2.15]**	[3.36]***
ΔLngdp	0.625	3.751	1.696
	[1.09]	[-5.30]***	[2.18]**
ΔLnrem	0.059	0.11	0.035
	[0.85]	[-1.05]	[3.49]***
ΔTariff	0.011	-0.004	-0.002
	[0.34]	[-0.92]	[1.81]*
ΔIndex	-0.006	0.006	-0.007
	[-0.77]	[0.57]	[-0.76]
ΔNgindex	0.002	0.001	0.001
	[0.60]	[0.28]	[0.38]
Constant	-2.237	-2.58	
	[2.26]**	[-3.66]***	..
R-sq: within	0.466	0.38	..
R-sq between	0.837	0.94	..
R-sq overall	0.68	0.69	..
1st order serial corr (P-value)	..	..	0
2nd order serial corr (p-value)	..	..	0.123
Sagan test (p-value)	..	..	0.277

The values in the squared brackets are the t-statistic (*,**,*** represents 10%, 5% and 1% level of significance respectively).

5.2.2 *Result of the link between migration and imports*

The OLS result shows that only four gravity variables significantly affected imports while migration is insignificant (Table 5.1b). The 2sls result showed that migration, Nigeria population, GDP and import index were significant in explaining Nigerian imports. In the same vein, foreign population, GDP deflator, and GDP as well as tariff were significant. The result showed that migration has a negative effect import. The GMM result showed that migration and imports were positively related. The migration elasticity of import was relatively elastic as the estimate was computed to be 1.7 percent. Tariff maintains its negative sign but the magnitude of effect has reduced while the level of significance has improved. All the statistical properties of GMM were satisfactory and the coefficient of the lagged dependent variable is significant. This suggests that the GMM is reliable, consistent and dynamic and so, it will reduce the problem of omitted variable thereby giving a relatively better result more than the first two.

In summary, we can establish the fact that while the link between Nigerians exports and migration are substitute, the link between imports and migration are complements. This result is consistent with our theoretical framework in the sense that tariff appears to have a mild effect on the foreign export to Nigeria and so, migration need to increase so as to benefit more from trade.

Table 5.1(b): Panel data result showing the link between imports and migration

Variables	Export		
	OLS	2SLS	GMM
Δlnexp(-1)	..	..	0.731
			[0.006]***
Δlnmig	-0.059	-0.393	0.169
	[0.72]	[-3.72]***	[2.4]**
Δlnpopng	1.013	6.58	-6.686
	[0.73]	[4.13]***	[-3.21]***
Δlnpop	2.544	3.411	6.598
	[1.75]*	[8.34]***	[3.4]***
Δlngdefl	0.001	0.005	0.001
	[0.44]	[1.32]	[0.36]
Δlndefl	-0.042	0.084	-0.074
	[-1.58]	[2.16]**	[-2.37]**
Δlngdp_nig	1.529	0.996	1.131
	[5.82]***	[2.20]**	[3.82]***
Δlngdp	-0.67	-2.08	0.275
	[-2.03]**	[-5.67]***	[2.01]**
Δlnrem	0.035	-0.029	0.1
	[0.93]	[-0.43]	[2.94]**
Δtariff	-0.002	-0.006	-0.002
	[1.03]	[-1.96]*	[-2.25]**
Δfindex	-0.007	0.002	-0.005
	[3.34]***	[0.47]	[-5.35]***
Δngindex	-0.006	-0.009	-0.001
	[-2.06]**	[-1.92]*	[-1.72]*
Constant	-1.719	-1.402	..
	[2.41]**	[-4.25]***	..
R-sq: within	0.521	0.33	..
R-sq between	0.642	0.83	..
R-sq overall	0.597	0.71	..
1st order serial corr (P-value)	..	..	0
2nd order serial corr (p-value)	..	..	0.322
Sagan test (p-value)	..	..	0.136

The values in the squared brackets are the t-statistic (,**,*** represent 10%, 5%
and 1% level of significance respectively*

5.2 Empirical Analysis of Substitutability/Complementarity between trade and emigration: Nigeria and each of the Trading partners.

5.2.1   Result of the link between migration and trade (Nigeria and Canada)

The second objective of the thesis was to examine the link between trade and migration with focus on Nigeria and each of the trading partners. The question to be answered is there country-specific differences in terms of trade and migration with respect to Nigeria and its trading partners? Answer to this question may shed more light to the dynamics of migration and trade in Nigeria with respect to each country partner.

Table 5.2 provides answer to this question by showing the possible link between migration and trade with special focus on Nigeria and Canada. The OLS result showed that of none of the regressors significantly affected export to Canada. Meanwhile, migration, remittances and tariff show the expected sign. The GMM result improves on the previous two results. Also, the significance of the lagged dependent variables in both the export and import models confirmed the dynamic nature of the model. Nine variables were observed to have explained export from Nigeria to Canada. The J-statistics showed that the instrumental variables were valid and reliable. The adjusted R-squared was approximately 80 percent. The implication of this is that in each case, our model was able to explain approximately 80 percent of total variation in Nigeria exports to Canada. The serial correlation observed in the case of OLS has been corrected in the GMM model. Thus, the preferred model is the GMM because apart from the fact it increases be numbers of variables that significantly explain export and import models, it improves on the value of the Durbin-Watson by showing no presence of serial correlation.

The link between migration and export is positive and significant. Specifically, the estimated elasticity of migration was computed to be 4.7 percent while the tariff elasticity was 0.2 percent. This suggests that export to Canada responds very sluggishly to tariff changes but very sensitive to migration.

Table 5.2: The link between migration and trade: country level result
(Nigeria-Canada)

VARIABLES	Exports			Imports		
	OLS	2SLS	GMM	OLS	2SLS	GMM
Δlnexp(-1)	..	..	0.433 [2.678]***	..	..	0.069 [0.031]***
Δlnimp(-1)	..	..	..	..	..	
Δlnmig	0.415 [1.28]	0.708 [1.79]*	0.469 [3.07]***	0.225 [-0.39]	0.941 [-1.91]*	0.386 [2.19]**
Δlngdp	-1.442 [-0.96]	2.518 [-1.92]*	-1.696 [-3.47]***	-11.002 [-0.71]	-1.45 [-1.99]*	-1.05 [-2.64]**
Δlnnggdp	1.852 [2.33]**	0.944 [1.40]	1.765 [4.34]***	-5.317 [-0.37]	1.238 [1.87]*	1.062 [0.24]
Δlnpopnig	-8.366 [-0.89]	-0.624 [-0.06]	-9.199 [-4.31]***	-0.014 [-1.40]	-0.005 [-1.66]	-0.007 [-1.89]*
Δlnpop	9.468 [1.11]	1.578 [0.08]	1.841 [4.71]***	-0.109 [-0.75]	-0.155 [-1.42]	-0.149 [-2.23]**
Δlngdefl	-0.001 [-0.10]	-0.003 [-0.72]	0 [0.19]	1.499 [0.90]	-0.51 [-0.32]	-1.212 [-1.68]
Δdefl	-0.267 [-3.02]***	-0.183 [-2.31]**	-0.257 [-2.31]**	9.845 [4.34]	8.143 [4.36]***	0.89 [3.05]***
Δlnrem	0.087 [0.85]	0.018 [0.16]	0.088 [2.29]**	0.429 [2.54]**	0.135 [1.79]*	0.321 [4.22]***
Δtariff	-0.024 [-0.67]	-0.031 [-1.01]	-0.022 [-1.73]*	0.106 [1.55]	0.009 [1.95]*	-0.032 [1.37]
Δfndex	-0.002 [-0.14]	-0.011 [-0.54]	-0.001 [-0.21]	0.015 [0.50]	0.019 [0.76]	-0.001 [-0.12]
Δngexdx	0.004 [0.51]	0.008 [1.05]	0.006 [3.51]***	-0.024 [-2.31]**	-0.009 [-1.95]*	-0.005 [-0.99]
R-squared (adjusted)	0.77	0.78	0.767	0.91	0.94	0.929
Durbin-Watson stat	2.58	..	2.089	2.22	..	2.4
J-Statistics (P-Value)	..	..	0.913	..	..	0.859

The values in the squared bracket is the t-statistics (*,**,*** represents 10%, 5% and 1% level of significance respectively).

In the case of imports and migration, the OLS did not perform very well, while the 2sls was better. The GMM showed the best result in terms of numbers of variables that were significant and improved adjusted R. The estimated GMM value for migration elasticity of import was 3.7 percent. In the case of tariff and remittances, the estimated coefficients were -0.3percent and 3.2 percent. This implies that the relationship between imports and tariff were negative but very steep while the relationship between remittances and imports were positive with relatively flat slope.

5.2.2 Result of the link between migration and trade (Nigeria and US)

Table 5.3 presents the result of the link between migration and trade with respect to the US. The OLS result shows that most of the variables that affected exports were not significant. However, the 2sls improved on the significance of the gravity variables. The GMM result is most notable as it shows that five gravity variables explained Nigeria exports to the US. In the same vein, the significance of the lagged dependent variables in both the export and import models validated the dynamic of the models. The Table showed that the relationship between migration and export to the US were complements, strong and notable. This is confirmed by the migration elasticity of export that was computed to be 2.7 percent. Other variables that explained export include Nigeria GDP, GDP deflator of US, remittances and tariff. Exports responded negatively to changes in tariff even though the effect was mild.

Comparatively, the results suggested that in Canada and US (countries representing North America), migration and exports were complements. The implication of this is that if any of the countries reduces migration, there will be a reduction in Nigeria export. Conversely, if Nigeria increases tariff, migration flow to this country will not reduce because tariff have a negligible

impact on exports. Thus, US and Canada's migration policy appears to prevail.

OLS reports indicated that one variable significantly affected import with no serial correlation and high proportion of variation explained. The 2sls result showed that eight variables including migration and tariff significantly affect imports.

Other variables such as remittances and tariff maintained their sign all through the three techniques while remittances and tariff also maintained their magnitude of effect (Table 5.3). In the case of migration, the magnitude of effect was slightly smaller than the result given by the 2sls but very strong and positive. Quantitatively, the estimated coefficient of changes in imports with respect to changes in migration was 2.2 percent, suggesting that imports were very sensitive to changes in migration.

The relationship between remittances and imports were complements with the estimated value being 0.9 percent. Notably, tariff showed a negative but significant relationship with import even though the magnitude of responsiveness was almost negligible (estimate was 0.02 percent). Other variables that significantly affected import from the US are Nigeria GDP deflator, US GDP deflator, and Nigeria GDP. All of these variables positively affect import, and so, the model is consistent with the *a priori* expectation. What can be concluded in the case of the US is that unlike Canada, there is a complementary link between import and migration.

Table 5.3: The link between migration and trade: country level result
(Nigeria-US)

VARIABLES	Exports			Imports		
	OLS	2SLS	GMM	OLS	2SLS	GMM
Δlnexp(-1)	..	..	0.510 [1.848]*	..	..	..
Δlnimp(-1)	..	..	..	..	..	0.691 [0.008]***
Δlnmig	0.278 [1.28]	0.342 [1.09]	0.27 [3.72]***	0.145 [0.351]	0.387 [2.28]**	0.215 [2.29]**
Δlngdp	0.28 [0.16]	-0.441 [-0.21]	-0.057 [1.47]	5.924 [0.78]	2.293 [1.28]	4.365 [1.42]
Δlnnggdp	1.036 [3.33]***	0.855 [2.28]**	0.87 [5.59]***	-2.772 [-0.60]	-0.689 [-1.21]	2.448 [-1.44]
Δlnpopnig	-1.081 [-0.24]	0.057 [0.01]	-0.798 [-0.47]	0.001 [0.27]	0.002 [1.89]*	0.002 [1.95]*
Δlnpop	0.11 [0.059]	0.299 [0.13]	0.544 [0.66]	0.262 [3.15]***	0.24 [2.84]**	0.234 [7.79]***
Δlgdefl	0.003 [1.16]	0.003 [0.67]	0.002 [1.49]	-0.536 [-0.67]	-0.796 [-1.85]*	0.678 [-3.69]***
Δdefl	0.004 [0.08]	0.03 [0.64]	0.026 [-3.61]***	-0.916 [-0.28]	0.111 [1.93]*	-0.051 [-0.05]
Δlnrem	0.182 [4.38]***	0.2 [3.93]***	0.191 [2.94]**	0.107 [1.71]	0.111 [1.96]*	0.092 [3.49]***
Δtariff	-0.002 [-1.25]	-0.002 [-1.78]*	-0.002 [-5.32]***	-0.002 [-0.69]	-0.002 [-2.33]**	-0.002 [-7.02]***
Δfndex	-0.015 [-2.05]**	-0.015 [-2.66]**	-0.014 [-0.09]	0.003 [0.18]	0.004 [1.33]	0.001 [0.23]
Δngexdx	-0.001 [-0.36]	0 [0.11]	0 [0.51]	0.001 [0.21]	0.003 [1.91]*	0.002 [2.52]**
R-squared (adjusted)	0.9	0.88	0.917	0.89	0.76	0.583
Durbin-Watson stat	1.85	..	1.988	2.01	..	1.395
J-Statistics (P-Value)	..	..	0.817	..	..	0.934

The values in the squared bracket is the t-statistics (*,**,*** represents 10%, 5% and 1% level of significance respectively).

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5.2.3 Result of the link between migration and trade (Nigeria and United Kingdom)

In the case of UK model, the OLS result was not encouraging because only one variable was found to significantly affect exports even though the entire variables were able to explain more than 50% of total variation in exports while the Durbin-Watson showed the absence of serial correlation (Table 5.4). The 2sls result showed that migration, Nigeria GDP, UK population, tariff and UK's export index significantly affected exports.

The GMM result showed a negative and significant link between export and migration (Table 5.2). The coefficient of tariff is very strong likewise its level of significance. As can be verified, the estimated coefficient of tariff was 5.8 was. Clearly, migration and export in the case of UK and Nigeria were substitutes. It can also be argued, given our result that it appears export from the UK is relatively sensitive to tariff when compared to either the US or Canada.

The static result showed by the OLS in the case of imports from the UK revealed that only three variables including remittances and tariff are effective given the level of their respective significance. The variables were able to explain 83 percent of total variations in UK's imports from Nigeria and there appear to be slight traces of serial correlation. The result also established how significant and strong tariff is in affecting imports. Migration in the OLS result showed a negative sign but it is not significant. The 2sls result also showed that imports from the UK and migration are substitutes, even though it was not significant. Population and GDP of the UK and remittances were significant determinants of imports. The effect of tariff rate was not significant but the magnitude of the coefficient was around 4 percent. The proportion of variations in imports explained by our explanatory variables in the 2sls model was 88 percent. The GMM result shows that migration, remittances and tariff among other gravity variables significantly affect imports. As can be verified, migration variable retains its negative sign, and so, the substitutability between migration and imports is consistent. The result shows a very strong and significant

Table 5.4: The link between migration and trade: country level result
(Nigeria-UK)

VARIABLES	Exports			Imports		
	OLS	2SLS	GMM	OLS	2SLS	GMM
Δlnexp(-1)	..	..	0.020	..	..	..
			[2.548]**			
Δlnimp(-1)	..	..	..	..	..	0.104
						[2.605]**
Δlnmig	-0.079	-0.232	-0.096	-0.147	-0.107	-0.111
	[-0.71]	[-1.78]*	[-1.85]*	[-0.96]	[-1.63]	[-1.76]*
Δlngdp	0.018	-0.226	0.115	1.054	1.12	-0.242
	[0.03]	[-0.55]	[0.64]	[0.33]	[0.41]	[-0.18]*
Δlnnggdp	0.674	0.898	-0.032	0.571	-3.595	-8.21
	[2.34]	[2.99]**	[-0.29]	[0.22]	[-2.09]***	[-2.28]**
Δlnpopnig	-0.969	3.565	0.568	-0.004	-0.003	-0.074
	[-0.19]	[1.54]	[0.56]	[-2.20]**	[-1.77]*	[-2.90]**
Δlnpop	-5.89	-3.359	0.928	0.014	-0.033	0.072
	[-0.54]	[-1.8]*	[1.01]	[0.49]	[-0.7]	[1.89]*
Δngdefl	-0.079	-0.001	-0.004	-0.021	-0.118	0.509
	[-0.41]	[-0.52]	[-4.60]***	[-0.07]	[-1.41]	[4.14]***
Δdefl	1.181	0.035	-0.009	0.009	0.599	0.194
	[0.78]	[0.78]	[-0.46]	[0.01]	[1.92]*	[1.97]*
Δlnrem	0.054	-0.035	0.079	0.089	0.074	0.055
	[0.99]	[-0.85]	[3.49]***	[2.12]**	[1.81]*	[2.66]**
Δtariff	0.066	0.162	-0.588	-0.575	-0.388	-2.294
	[0.09]	[1.87]*	[-6.85]***	[-4.04]***	[-1.62]	[1.93]*
Δfndex	-0.759	-0.015	-0.001	0	0.006	-0.745
	[-0.75]	[-2.84]**	[-0.39]	[-0.02]	[1.12]	[0.79]
Δngexdx	0.056	0	-0.001	-0.001	-0.007	0.154
	[0.27]	[-0.1]	[-0.96]	[-0.71]	[-0.02]	[2.55]**
R-squared (adjusted)	0.51	0.52	0.829	0.83	0.88	0.527
Durbin-Watson stat	2.04	..	1.91	1.99	..	2.076
J-Statistics (P-Value)	..	..	0.819	..	..	0.892

The values in the squared bracket is the t-statistics (*,**,*** represents 10%, 5% and 1% level of significance respectively.

relationship between migration and imports with the estimate being 1.1 percent. This result supported the claim that high tariff rate tends to reduce import and by implication leads to increase in migration.

5.2.4   Result of the link between migration and trade (Nigeria and Italy)

The OLS model showed that none of the variables significantly affected export to Italy even though the proportion of variation explained by the variables was 91 percent (Table 5.5). Observably, the result showed evidence of strong serial correlation. Meanwhile, migration and some other gravity variables were rightly signed. The 2sls result showed that three variables – Nigeria GDP, Nigeria GDP deflator and Canada export index – significantly affected exports to Italy. Migration maintained positive effect but not significant.

The GMM result revealed that migration, Nigeria GDP, Nigeria GDP deflator, remittances, tariff and Italy export index have the capacity of explaining export to Italy. The coefficient of association of migration and export was 2.5 percent The Table also showed that exports responded sluggishly to tariff changes, an indication that tariff imposition is low. Thus in Italy-Nigeria situation, there is a complementary link between export and migration.

None of the OLS variables affected imports from Italy, even though migration and tariff show negative signs. The presence of serial correlation was observed in the model while the proportion of variations in import explained by the regressors was 53 percent. The 2sls result reveals the fact that Italy population, Italy GDP, Nigeria GDP, remittances and tariff are significant driver of import of Italy from Nigeria. Also, migration did not significantly affect imports while the magnitude of effect of remittances on imports reduced. Thus, imports were not affected by migration and so our result finds no link between migration and imports from Italy.

Table 5.5 The link between migration and trade: country-level result
(Nigeria and Italy)

VARIABLES	Exports			Imports		
	OLS	2SLS	GMM	OLS	2SLS	GMM
Δlnexp(-1)	..	..	0.8780	..	..	..
			[1.683]*			
Δlnimp(-1)	..	..	..	..	..	0.020
						[4.136]***
Δlnmig	0.238	0.361	0.25	-0.086	0.336	-0.242
	[-0.81]	[1.48]	[218]**	[-0.14]	[1.37]	[-1.20]
Δlngdp	-0.071	-0.062	0.006	0.964	-2.071	2.9
	[1.14]	[-0.33]	[0.09]	[0.15]	[-0.25]	[1.31]
Δlnnggdp	1.205	0.927	1.209	-0.759	2.18	-2.398
	[0.52]	[3.16]***	[3.93]***	[-0.14]	[2.25]**	[-1.98]*
Δlnpopnig	-0.743	0.922	-1.122	0	0.001	-0.002
	[0.52]	[0.56]	[-1.25]	[-0.05]	[0.16]	[-0.76]
Δlnpop	0.219	4.956	0.463	0.034	0.042	0.024
	[1.34]	[0.26]	[0.64]	[0.28]	[1.55]	[0.92]
Δlgdefl	0.003	0.006	0.002	-0.028	-0.405	-0.087
	[0.12]	[2.73]**	[2.63]**	[-0.02]	[-1.97]*	[-0.41]
Δdefl	-0.019	0.016	-0.018	0.455	0.708	0.381
	[-1.53]	[0.72]	[-0.85]	[0.54]	[1.86]*	[2.10]**
Δlnrem	0.037	0.009	0.054	0.175	0.264	0.101
	[0.46]	[0.19]	[3.42]***	[1.09]	[1.99]**	[2.36]**
Δtariff	-0.001	-1.512	-0.002	-0.316	-0.009	-0.002
	[0.04]	[-0.35]	[1.97]*	[1.31]	[-1.91]*	[1.31]
Δfndex	-0.008	-0.013	-0.009	-0.003	0.001	-0.006
	[-0.66]	[-3.49]***	[-4.08]***	[-0.16]	[1.04]	[-1.18]
Δngexdx	-0.001	0.003	0	-0.002	-0.002	-0.001
	[0.55]	[0.85]	[0.13]	[-0.32]	[-0.33]	[-0.35]
R-squared (adjusted)	0.91	0.95	0.91	0.53	0.51	0.52
Durbin-Watson stat	1.48	..	1.96	2.62	..	2.57
J-Statistics (P-Value)	..	..	0.883			0.923

The values in the squared bracket is the t-statistics (*,**,*** represents 10%, 5% and 1% level of significance respectively.

5.2.5   Result of the link between migration and trade (Nigeria and Sweden)

The result of export-migration link with focus on Sweden and Nigeria is presented in Table 5.6. The OLS result showed that a small proportion of total variation in exports to Sweden was explained by the gravity variables. The result presented a high level of autocorrelation given the value of the D-W statistics while only two variables significantly affected exports. The 2sls attempted to correct for the errors but only one variable was significant while the proportion of variation explained was encouraging. Meanwhile, migration, remittances and tariff maintained their sign as in the case of OLS. The GMM result reported that migration is very significant in explaining exports to Sweden. Accordingly, the computed estimate of migration coefficient was 32.9 percent. This suggests that the elasticity of exports with respect to migration is elastic in the case of Sweden. That is, the sensitivity of exports due to a slight change in migration is very high and strong.

The sensitivity can be partly explained by the responsiveness of exports to changes in tariff. The tariff elasticity of export was inverse with the estimate being -0.1 percent. This negligible but significant effect suggested that tariff was low and so, it pushed Nigerians to work in Sweden and as the number of emigrant increases, exports to Nigeria also increases.

Imports from Sweden were not significantly affected by migration and all other variables in the OLS model. In the 2sls model, imports were affected by migration, Sweden population, Sweden GDP, and tariff. In the GMM result, migration, GDP of Sweden, GDP deflators of Nigeria and Sweden significantly affected imports. In particular, the estimated value of migration coefficient of import was 16 percent, suggesting that import from Sweden very sensitive to changes in migration. The fact that the direction of estimates was positive implies that migration and imports are complements. An increase in one will lead to an increase in the other.

Table 5.6 The link between migration and trade: country-level result
(Nigeria and Sweden)

VARIABLES	SWEDEN			SWEDEN		
	OLS	2SLS	GMM	OLS	2SLS	GMM
Δlnexp(-1)	..	..	0.373	..	..	..
			[2.836]**			
Δlnimp(-1)	..	..	..	..	..	0.070
						[2.559]**
Δlnmig	2.991	3.287	3.9	1.695	1.698	1.581
	[1.23]	[1.37]	[5.44]***	[0.89]	[2.29]**	[2.27]**
Δlngdp	-1.111	-1.445	-1.3	-1.713	-4.434	-0.775
	[-0.94]	[-1.6]	[-4.66]***	[-0.16]	[-1.45]	[-0.20]
Δlnnggdp	2.864	2.871	2.827	0.411	1.394	0.366
	[2.86]***	[3.57]***	[2.01]**	[0.03]	[1.83]*	[0.08]
Δlnpopnig	0.979	2.096	0.981	0.016	0.02	0.018
	[0.13]	[0.32]	[0.65]	[1.28]	[1.49]	[3.74]***
Δlnpop	-3.373	-4.162	-3.245	0.285	0.341	0.286
	[-0.48]	[-0.7]	[-2.22]**	[2.24]**	[2.48]**	[5.40]***
Δlgdefl	0.007	0.008	0.004	0.117	0.293	-0.183
	[0.55]	[0.75]	[0.62]	[0.09]	[1.26]	[-0.55]
Δdefl	-0.004	-0.008	-0.023	0.843	1.67	0.524
	[-0.02]	[-0.08]	[-0.34]	[0.67]	[2.01]**	[2.44]**
Δlnrem	-0.039	-0.087	0.087	0.234	0.309	0.204
	[-0.23]	[-0.66]	[-1.78]*	[1.50]	[-1.52]	[3.82]***
Δtariff	-0.013	-0.013	-0.01	-0.007	-0.029	-0.011
	[-0.46]	[-0.71]	[-1.14]	[-0.22]	[-2.15]**	[-1.47]
Δfndex	-0.02	-0.018	-0.021	-0.013	-0.029	-0.011
	[-2.25]**	[-1.65]	[-4.17]***	[-0.37]	[-0.75]	[-0.95]
Δngexdx	-0.026	-0.032	-0.031	-0.005	-0.005	-0.004
	[-1.72]	[-1.56]	[-5.89]***	[-0.67]	[-0.6]	[-1.49]
R-squared (adjusted)	0.48	0.62	0.529	0.5	0.53	0.479
Durbin-Watson stat	1.2	..	1.332	2.4	..	2.373
J-Statistics (P-Value)	..	..	0.879			0.932

The values in the squared bracket is the t-statistics (*,**,*** represents 10%, 5% and 1% level of significance respectively.

5.2.6   Summary of the country-specific findings

The result showed that in the North America and Sweden, there was a complementary link between migration and exports. It was also found that some variables such as population and income consistently satisfy prediction of export behavior just as found in the literature. In the migration-import case, the complementarity link is informed by the prediction of the theoretical framework where it was articulated that if tariff rate is very weak in explaining imports, import and migration will be complementary because since the mild effect of tariff reduces imports by a large magnitude, and income differential is still large, the import will not completely offset the migration inflow and so both will be rising together. The implication of this is that the foreign countries have control over the behaviour of the complementary link.

5.3   Empirical Product level analysis of the link between export and migration

5.3.1   The link between Agriculture Exports (AE) and migration

The link between migration and the US agriculture export (AE) is presented in Table 5.7.   The result showed that there is a strong and inverse relationship between AE and migration with the estimated value being 8 percent.   In United Kingdom (UK), tariff and remittances have no significant effect on AE and there was no seeming link between migration and AE due to the fact that the coefficient was not significant. Thus changes in migration have no bearing on changes in AE although the sign was consistent with the *a priori* expectation.

In the case of Sweden, tariff has a positive effect on AE, and the magnitude is very high as shown by the estimated value which was 1.2%. This implies that AE from Sweden has not reached a point where it will fall following tariff increase.   Remittances also affect AE positively to the extent that if remittances increase by 10%, it is expected that AE of Sweden to Nigeria will increase by 1.6%.   This result is consistent with the *a priori* expectation because a rise in remittances creates opportunity for increase in spending on

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imported products, in which AE is one. Migration and AE were complements with the elasticity coefficient being 4.2 percent. What this suggests is that any policy that reduces AE export to Sweden will also increase migration to the country. The model for Italy showed that migration and AE of Italy were complements. The model estimate put migration elasticity of EA to Italy at 6.7 percent. This implies that Nigerian migrants in Italy are important factor for AE to Italy.

Generally speaking, the link between AE and migration was diverse. The link was not established in UK while it showed substitutability in the United States and Canada. In Sweden and Italy, migration complements AE. In particular, migration complements AE coming from the European countries while it was substitutes for AE in America. These findings validated the issue raised earlier that products responded to changes in migration differently across countries.

Table 5.7: Dynamic product-specific estimation result of the complementarity/substitutability between Agriculture products and migration

Variables	Exports				
	CANADA	USA	United Kingdom	Sweden	Italy
ΔDEFL	0.333	-0.212	-0.375	0.059	0.008
	[10.1520]***	[-3.9911]***	[5.0057]***	[1.1734]	[0.2839]
ΔXDX	-0.039	-0.046	-0.046	0.021	-0.017
	[-7.2123]***	[-12.833***]	[-3.32939]***	[2.7455]**	[-3.2037]
ΔLNGDP	4.337	5.183	-0.011	1.206	-0.414
	[4.0214***	[6.7099]***	[-0.6414]	[1.1931]	[-1.8730]*
ΔLNMIG	0.017	-0.791	0.02	0.418	0.672
	[0.0968]	[-2.8363]***	[0.2582]	[-2.6668]**	[2.9596]**
ΔLNNGGDP	-3.05	2.427	-8.041	1.468	1.491
	[-7.0242]***	[7.6241]***	[-6.0180]***	[2.6632]**	[4.5348]***
ΔLNPOP	-1.865	0.589	-1.172	-1.351	-2.764
	[-3.8298]***	[0.5150]	[-5.8574]***	[-2.0497]**	[-1.2096]
ΔLNPOPNIG	1.951	-10.952	0.069	17.093	1.84
	[2.7617]***	[-4.4432]***	[2.1024]**	[3.3355]***	[0.7259]
ΔLNREM	0.255	0.396	0	0.158	0.083
	[3.1437]***	[13.0749]***	[-0.2173]	[0.5426]	[1.0085]
ΔNGDEFL	-0.009	-0.009	-1.946	-0.005	0.004
	[-5.0331]***	[-3.3562]***	[15.933]***	[-0.8702]	[0.9767]
ΔNGEXDX	0.011	0.004	7.72	-0.008	0
	[1.9256]*	[2.3395]***	[5.2165]***	[-0.5667]	[-0.1593]
ΔTARIFF	0.001	0.002	-15.519	0.121	0.007
	[0.0757]	[0.0417]	[-0.004508]	[1.9272]*	[1.2980]
ΔLNEXP(-1)	0.102	0.076	1.851	0.072	0.038
	[1.419]	[2.037]**	[7.707]***	[2.312]**	[1.948]*
R-Squared (adjusted)	0.881	0.886	0.894	0.7	0.78
DW	2.013	2.011	1.891	1.916	2.24
J-J-stat (p-value	0.92	0.85	0.84	0.61	0.87

The values in the squared bracket is the t-statistics (*,**,*** represents 10%, 5% and 1% level of significance respectively).

5.3.2 The link between Agriculture raw materials exports (ARME) and migration

The result of the link between agricultural raw materials export (ARME) and migration is presented in Table 5.8. The model for Canada showed that tariff negatively affected ARME to the extent that a 1 percent increase in tariff imposed on ARME authority will lead to a fall in Canada's ARME to Nigeria to the tune of 0.5 percent. That is tariff tends to negotiate away gains from trade. Migration appears not to have any relation with Canada ARME given the positive but insignificant sign. The implication of this is that increase in migration to Canada has nothing to do with changes in ARME or that changes in ARME is not necessarily caused by migration policy. In the United States, the link between migration and ARME from the US were substitutes. This is because increase in outflow of Nigerians to the US will lead to decrease in ARME to the US. The coefficient of relationship between ARME to the US and migration was -2.1 percent. Thus if the US authorities embarked on expansionary migration policy and the cost of migration is affordable, then this result shows that such expansionary policy will reduce ARME to the US. In the UK, tariff was mild, positive and significant. Migration shows complementarity sign but was not significant. Thus changes in ARME of the UK to Nigeria have nothing to do with migration policy while trade policy that affects ARME has nothing to do with emigration of Nigeria to the UK.

Table 5.8: Dynamic product-specific Estimation Result of the complementarity/substitutability between agriculture raw materials products and migration

Variables	Exports		
	CANADA	USA	United Kingdom
ΔDEFL	-0.638	-0.222	0.007
	[-2.106]**	[-8.7059]***	[1.3721]
ΔXDX	0.203	-0.034	-0.01
	[7.0361]***	[-10.621]	[2.6853]**
ΔLNGDP	-21.143	3.34	0.043
	[-2.102]***	[3.8855]***	[-1.5048]
ΔLNMIG	-0.318	-0.213	0.088
	[-0.221]	[-1.7126]*	[1.0096]
ΔLNNGGDP	0.856	1.553	-0.281
	[4.929]***	[10.316]***	[-0.1422]
ΔLNPOP	0.167	0.46	0.418
	[6.547]***	[0.9809]	[0.9998]
ΔLNPOPNIG	-1.563	-6.965	0.016
	[-3.871]***	[-4.4136]***	[0.8491]
ΔLNREM	0.317	0.157	0.9102
	[0.630]	[9.9266]***	[2.0419]**
ΔNGDEFL	0.007	0	-0.306
	[1.2879]	[0.2339]	[-1.7776]*
ΔNGEXDX	0.016	0.004	0.831
	[0.732]	[2.2917]**	[0.3372]
ΔTARIFF	-0.531	0.0134	0.0.010
	[-5.967]***	[3.2041]***	[10.468]***
ΔLNEXP(-1)	1.047	-1.101	0.413
	[2.354]**	[-3.843]***	[1.838]*
R-Squared (adjusted)	0.844	0.703	0.564
DW	2.451	2.011	1.962
J--stat (p-value)	0.63	0.93	0.81

The values in the squared bracket is the t-statistics (*,**,*** represents 10%, 5% and 1% level of significance respectively.

The overall result in the case of ARME is that it appears the product may not be from changes in migration because two out three countries considered show no seeming relationship between ARME and migration. This indicates that ARME is not an important product that can be affected by migration.

5.3.3 *The link between Chemical export (CE) and migration*

Table 5.9 shows the result of the link between migration and chemical export. Tariff shows a mild effect of CE but it is not significant. Remittances negatively affect CE but the effect is very small. Migration has a strong complementary relationship with CE with the estimated value being 7.6 percent. This implies that outflow of Nigerian workers to the US is important for Nigerian CE to the country. The more Nigerians migrate to the US, the more the chemical products are exported to the US.

 The story is slightly different in the case of Canada as shown in the Table. First, although six variables significantly determined CE, the six variables differ compared to what obtained in the US. Second, migration and CE were substitute, implying that as Nigerians migrate to Canada, less Chemical products were exported to the country. Remittances and tariff were wrongly signed, but significant. Unlike in the case of the US, remittances and tariff were rightly signed. Meanwhile tariff has a negligible effect on CE even though the coefficient was significant. Remittances positively affected CE from the UK with an estimated value of 2 percent. Migration showed a strong inverse relationship with CE with the elasticity coefficient being 1.5 percent. This result does not satisfy the *a priori* expectation given the mild effect of tariff on CE.

Table 5.9: Dynamic product-specific Estimation Result of the complementarity/substitutability between chemical products and migration

Variables	Exports		
	CANADA	USA	United Kingdom
ΔDEFL	-0.105	0.063	-0.002
	[-1.7772]*	[3.2301]***	[5.983]***
ΔXDX	-0.014	0.007	-0.005
	[-0.9148]	[2.68872]**	[-4.6775]***
ΔLNGDP	5.123	-2.08	0.045
	[3.2064]***	[-2.5205]**	[-5.8025]***
ΔLNMIG	0.44	0.764	-0.152
	[1.1289]	[5.8832]***	[-6.3027]***
ΔLNNGGDP	-0.851	-0.184	-0.099
	[-1.1196]	[-1.0578]	[-0.4482]
ΔLNPOP	-17.248	1.211	-0.027
	[-5.0565]***	[1.0413]	[-0.3854]
ΔLNPOPNIG	10.873	2.532	-0.018
	[2.2652]**	[0.9642]	[-2.9771]**
ΔLNREM	-0.971	-0.033	0.201
	[-8.4064]***	[-2.0870]	[1.2911]
ΔNGDEFL	-0.017	0.004	0.561
	[-4.2003]***	[2.9974]**	[9.9144]***
ΔNGEXDX	0.008	0.002	0.514
	[0.9855]	[1.3158]	[1.4575]
ΔTARIFF	0.152	0.001	-0.001
	[7.5984]***	[6.2401]***	[-4.8463]***
ΔLNEXP(-1)	1.248175	0.078682	-0.03207
	[1.718]*	[2.432]**	[1.820]*
R-Squared (adsjusted)	0.662	0.663	0.957
DW	2.341	2.068	2.156
J--stat (p-value)	0.92	0.83	0.88

The values in the squared bracket is the t-statistics (*,**,*** represents 10%, 5% and 1% level of significance respectively.

5.3.4   *The link between Food Export (FE) and Migration*

Table 5.10 shows the link between food export (FE) and migration between Nigeria and each of the trading partners. The result shows that eight variables significantly affected FE of Canada. Out of these eight, five satisfied the *a priori* expectation. Tariff shows a positive but insignificant effect but the magnitude of effect is very small. Remittances have a positive effect on FE and it is the case that when remittances increased by 10 percent, FE to Nigeria will rise by 2.3 percent. Thus, remittances tend to drive FE from Canada. In the case of migration, a 10 percent increase in migration will lead to a 0.3percent increase in FE. Thus, the result shows that FE and migration are complements even though the response of FE to changes in migration was slow.

In the United States, the FE model showed that all the statistical properties were satisfied and the model fits the data very well. Virtually all the variables considered significantly affected FE of the United States. The result showed that tariff is rightly signed but showed a mild effect albeit insignificant. Remittances had a strong positive and significant effect on FE. As revealed, a 10 percent increase in remittances will lead to 4.1 percent increase in FE. This is consistent with the *a priori* expectation. Migration and FE were substitute, in which case, an increase in migration to the tune of 10 percent tends to reduce FE from the US by 8.2 percent. This implies that FE is sensitive to changes in migration to the US.

In the UK, tariff had a negative and significant effect on FE even though the effect was mild. Remittances also affected FE positively and the effect was very strong. In particular, if remittances increase by 10 percent, FE will rise by 17 percent. Migration and FE of the UK were not related in any way, even though the result showed a complementary relationship. This implies that changes in food export to the UK were not informed by changes in migration.

The overall, the result in the case of food export showed that it is only in Canada that migration and food export were complements. In the UK, there was no link while in the US, migration and food exports were substitutes.

Table 5.10: Dynamic product-specific estimation result of the complementarity/substitutability between food products and migration

Variables	Exports		
	CANADA	USA	United Kingdom
ΔDEFL	0.313	-0.216	0.476
	[4.0358]***	[-3.9329]***	[6.3819]***
ΔXDX	-0.037	-0.047	-0.051
	[-3.7488]***	[-12.3056]***	[-3.8359]***
ΔLNGDP	4.449	5.306	-0.022
	[4.8798]***	[6.3774]***	[-1.9265]*
ΔLNMIG	0.031	-0.82	-0.03
	[0.1472]	[-2.9552]**	[-0.3874]
ΔLNNGGDP	-2.951	2.473	-8.961
	[-4.9107]***	[7.5303]***	[-7.6338]***
ΔLNPOP	-1.603	0.621	-1.263
	[-3.9078]***	[0.5121]	[-8.0522]***
ΔLNPOPNIG	1.29	-11.243	0.063
	[2.7750]**	[-4.2381]***	[2.8270]**
ΔLNREM	0.238	0.411	-0.002
	[3.7207]**	[12.739]***	[-1.8485]*
ΔNGDEFL	-0.01	-0.01	2.071
	[-3.6953]***	[-3.6018]***	[19.1345]***
ΔNGEXDX	0.009	0.004	8.526
	[1.5039]	[2.2775]**	[6.5266]***
ΔTARIFF	-0.001	-0.001	-17.379
	[-0.0871]	[-1.8011]*	[-0.0047]
ΔLNEXP(-1)	0.104	0.122	0.166
	[2.512]**	[2.315]**	[1.949]*
R-Squared (adjusted)	0.835	0.883	0.907
DW	2.034	2.351	2.122
J--stat (p-value)	0.86	0.85	0.89

The values in the squared bracket is the t-statistics (*,**,*** represents 10%, 5% and 1% level of significance respectively.

5.3.5 *The link between Manufactured Export (ME) and Migration*

Manufactured export model in Canada shows that tariff and remittances were not significant and they are both wrongly signed (Table 5.11). Migration and ME were complement given the positive relationship between the two. If migration increases by 10 percent, ME will increase by 12.8 percent. It must be noted that manufactured exports are skill intensive and so, inflow of ME tends to lead to outflow of highly skilled workers from Nigeria to Canada. This result is consistent with *a priori* expectation and it is the case that inflow of manufactured goods which are skill intensive tends to induce migration of highly skilled workers.

Table 5.11: Dynamic product-specific estimation result of the complementarity/substitutability between manufactured products and migration

Variables	Exports				
	Canada	USA	United Kingdom	Sweden	Italy
ΔDEFL	0.004	0.123	0.012	-0.037	0.003
	[0.0423]	[3.9219]***	[0.4792]	[-1.6484]	[0.2707]
ΔXDX	0.016	-0.003	-0.014	-0.015	-0.007
	[1.2004]	[-0.5937]	[-1.9565]*	[-15.447]***	[-8.3552]***
ΔLNGDP	5.03	-1.026	0.049	-0.585	0.014
	[2.3844]**	[-1.4211]	[5.8934***]	[-2.3881]**	[0.2689]
ΔLNMIG	1.279	0.338	-0.234	1.664	0.273
	[3.4085]***	[2.5567]**	[-6.9038]***	[9.7985]***	[3.9196]***
ΔLNNGGDP	-1.223	0.411	-3.345	2.285	1.01
	[-1.8807]*	[2.6310]**	[-10.5384]***	[11.5964]***	[8.2024]***
ΔLNPOP	15.363	-0.277	-0.42	-0.043	0.603
	[1.6636]	[-0.2507]	[-4.1299]***	[-0.0311]	[1.6392]
ΔLNPOPNIG	-0.08	2.199	0.015	-2.145	-1.039
	[-1.7635]*	[1.0306]	[1.5375]	[-1.7147]*	[-2.4395]**
ΔLNREM	-0.087	0.117	0.863	-0.045	0.055
	[-0.4327]	[6.4489]***	[-0.0020]	[-1.8099]*	[5.4914]***
ΔNGDEFL	0.003	0.004	0.929	-0.002	0.003
	[0.5852]	[2.0195]**	[7.8153]***	[-0.8541]	[3.1301]***
ΔNGEXDX	0.01	-0.002	3.883	-0.018	0
	[1.4861]	[-1.8844]*	[7.6621]***	[-5.3215]***	[0.1709]
ΔTARIFF	0.075	-0.002	-0.001	0.007	-0.001
	[1.5009]	[1.8011]*	[-2.38370]**	[1.5122]	[-6.0490]***
ΔLNEXP(-1)	0.022	0.020	0.104	0.708	0.839
	[3.878]***	[2.548]**	[2.605]**	[2.275]**	[1.882]*
R-Squared (adjusted)	0.499	0.804	0.924	0.89	0.91
DW	2.021	2.142	1.74	1.991	1.88
J--stat (p-value)	0.83	0.8	0.88	0.89	0.9

The values in the squared bracket is the t-statistics (*, **, *** represents 10%, 5% and 1% level of significance respectively).

5.3.6   The link between Textile Export (TE) and Migration

The product specific result on the link between migration and textile is presented in Table 5.12.   The Table showed that if tariff imposed on textile export increased by 1 percent, it is expected that TE to Canada will fall by 0.1 percent. Remittances on the other hand had a positive effect in the sense that textile export will increase by 10.7 percent if remittances increase by 10 percent.   This result confirms the *a priori* expectation that says that remittances are important driver of imported products such as textile (Kohli, 2002). Migration shows a complementary link between textile export and migration but it is not significant. This means that changes in textile export of Canada to Nigeria does not depend on changes in migration policy.

The result for the US shows that tariff had a mild effect on the product even though it was significant. Remittances positively affected textile products and it is the case that if remittances rise by 10 percent, TE to US will rise by 0.4 percent. In the case of migration, TE substituted for migration to the tune of 4.2 percent. This substitutability is unexpected and so it violated the *a priori* expectation.   However, the sluggish response of TE to tariff changes may partly account for this scenario. In the UK, nature of the link between migration and textile export in the UK is similar to that of the US.   Further, tariff also had a mild effect on textile export. In particular, the result showed that if the UK authorities allowed for 10 percent increase in the stock of Nigerian emigrants, textile export would fall by 3.4 percent.

 The result of Sweden model revealed that tariff was rightly signed but had a negligible effect. Unlike in UK and US model, there was a complementary relationship between migration and textile export. Specifically, if the Swedish authorities embark on expansionary migration policy causing a 10 percent increase in migration from Nigeria, TE would rise by 19 percent.

Table 5.12: Dynamic product-specific estimation result of the complementarity/substitutability between textile products and migration

Variables	Exports				
	Canada	USA	United Kingdom	Sweden	Italy
ΔDEFL	-0.26	0.173	0.407	0.046	0.003
	[-7.4450]***	[6.8134]***	[7.8705]***	[0.9708]	[0.1399]
ΔXDX	0.031	0.006	-0.007	-0.018	-0.011
	[1.5521]	[2.3083]**	[-0.3355]	[-6.1660]***	[-3.9392]***
ΔLNGDP	0.193	-5.098	0.011	0.184	-0.742
	[-4.0707]***	[-8.2874]***	[0.5533]	[0.3284]	[-6.2205]***
ΔLNMIG	0.108	-0.427	-0.34	1.912	-0.05
	[0.3656]	[-5.3209]***	[-5.0582]***	[3.0059]***	[-0.4633]
ΔLNNGGDP	-0.899	-0.381	3.002	2.869	1.015
	[-2.625]**	[-2.1803]**	[2.7568]**	[12.0061]***	[4.6174]***
ΔLNPOP	0.023	-2.336	1.794	-1.591	-2.676
	[9.0670]***	[-2.7611]**	[6.6561]***	[-0.8070]	[-3.1679]***
ΔLNPOPNIG	1.056	12.241	0.144	-2.299	3.22
	[-7.7220]***	[7.1821]***	[6.1799]***	[-1.1442]	[3.4715]***
ΔLNREM	1.07	0.041	0.006	-0.193	0.069
	[10.635]***	[-3.668]***	[9.3567]***	[-3.9884]***	[2.0722]**
ΔNGDEFL	-0.013	0.002	-0.084	-0.017	0.003
	[-4.1201]***	[1.5371]	[-0.4824]	[-3.5223]***	[1.8092]*
ΔNGEXDX	0.019	-0.003	-4.94	-0.015	-0.003
	[6.6579]***	[-2.2627]**	[-3.6671]***	[-4.8544]***	[-2.2897]*
ΔTARIFF	-0.125	-0.001	-3.019	-0.002	-0.007
	[-7.8621]***	[1.9311]*	[-0.0005]	[-0.2449]	[1.4203]
ΔLNEXP(-1)	0.583	0.796	0.014	0.479	0.003
	[2.243]**	[1.821]*	[1.852]*	[1.822]*	[2.741]**
R-Squared (adjusted)	0.931	0.821	0.852	0.822	0.741
DW	1.644	1.8	2.302	2.075	2.06
J--stat (p-value)	0.81	0.86	0.87	0.89	0.85

The values in the squared bracket is the t-statistics (*,**,*** represents 10%, 5% and 1% level of significance respectively.

This implies that like agriculture export, there was a strong complementary link between migration and TE. The model for TE to Italy revealed that tariff did not significantly affect textile export even though it showed a mild and negative effect. Remittances have a positive effect and it is the case that if remittances rises by 10 percent, TE will increase by 0.7 percent.

Overall, there tend to be diverse connection between TE an migration across the trading partners under study. In Canada and Sweden, the link was complementary while in the UK and the US, there the link was substitute and in Italy the substitute association was not significant.

5.3.7 *The link between Petrol Export (PE) and Migration*

Table 5.13 presents the link between petrol export and migration. In Canada, there was a strong complementarity between petrol export and migration. If migration rises by 10 percent, PE will rise by 4 percent. Complementarity association also existed in the United States and it is the case that a 10 percent increase in migration was associated with 12 percent increase in petrol export. Remittances were observed to positively affect PE but it was not significant. In the same vein, tariff showed a positive but insignificant effect on petrol export.

In Sweden, there was a complementarity link between PE and migration. As can be read off from the Table, if migration rises by 10 percent, PE will increase by 13.1 percent. Although the link between PE and migration has not been established, the complementarity shown was consistent with the case of capital intensive products and migration. Thus, it is not surprising that migration may likely complement petrol. The case of Italy was different in terms of relationship. The result showed that petrol export and migration were substitute. In terms of magnitude, when migration rose by 10 percent, PE fell by 0.5 percent. However, unlike it occurred in other countries discussed above, the link was not established because the coefficient was insignificant.

Table 5.13: Dynamic product-specific estimation result of the complementarity/substitutability between petrol products and migration

Variables	Exports				
	CANADA	USA	United Kingdom	Sweden	Italy
ΔDEFL	-1.487	-0.254	0.327	-0.376	0.062
	[-2.7220]**	[-1.8016]*	[2.0770]**	[-3.2052]***	[0.7312]
ΔXDX	0.14	0.013	-0.041	-0.026	0.004
	[1.8389]*	[1.1625]	[3.4557]***	[-2.0483]***	[0.5613]
ΔLNGDP	12.344	-7.099	-0.107	0.55	0.303
	[1.8106]*	[-1.6856]	[-2.5244]**	[0.4702]	[0.5424]
ΔLNMIG	0.403	1.232	0.511	1.317	-0.049
	[2.6542]**	[2.8710]**	[3.1694]***	[3.2382]***	[-0.1859]
ΔLNNGGDP	0.125	3.048	1.459	-6.424	2.303
	[0.1454]	[4.0522]***	[0.4820]	[-7.2175]***	[2.8698]**
ΔLNPOP	153.986	0.559	0.502	50.362	-4.52
	[2.3631]**	[0.1696]	[0.7492]	[6.1492]***	[-2.1323]**
ΔLNPOPNIG	-164.292	6.826	0.199	-41.336	1.652
	[-2.3393]**	[0.6738]	[4.269]***	[-4.9841]***	[0.4726]
ΔLNREM	1.183	0.315	0.574	1.51	0.129
	[2.1787]**	[2.7653]**	[0.0181]	[11.6509]***	[1.9062]*
ΔNGDEFL	-0.004	0.008	0.744	0.003	0.027
	[-0.4814]	[1.9608]*	[1.3831]	[0.2698]	[4.5839]***
ΔNGEXDX	0.058	-0.022	-2.869	0.009	-0.015
	[2.4320]**	[-4.8600]***	[-0.7841]	[0.4775]	[-2.8134]**
ΔTARIFF	0.005	0.002	-5.74	0.924	-0.101
	[-1.2409]	[1.510]	[1.5375]	[4.6961]***	[1.4093]
ΔLNEXP(-1)	0.008	0.076	0.018	0.006	0.017
	[2.259]**	[2.452]**	[1.810]*	[1.731]*	[3.581]***
R-Squared (adjusted)	0.65	0.677	0.8	0.522	0.6
DW	2.069	2.314	2.18	1.583	2.38
J--stat (p-value)	0.89	0.86	0.87	0.91	0.97

The values in the squared bracket is the t-statistics (*,**,*** represents 10%, 5% and 1% level of significance respectively).

5.4 Empirical Product level analysis of the link between Import and migration

The statistical properties of the model showing the association of migration and agriculture imports were reasonably satisfactory (Tables 5.14 to 5.20). The explained variations ranged from 44 percent (agriculture import from Canada) to 92 percent (textile import from UK and petrol import from US). This implies that except for agriculture raw material import from Canada, all the variables fit the data moderately. The values of D-W ranged from 1.5 (petrol import from Canada) to 2.4 (textile import from United States). This suggests that serial correlation was absent in each of the models. Also, the J-statistics confirmed the validity of the instruments. This made the result of the GMM to be reliable relative to the OLS and 2SLS.

5.4.1 The link between Agriculture import and Migration

Table 5.14 presents the result of the possible link between agriculture import and migration in the case of Nigeria-Canada. Out of six explanatory variables that were significant, four were rightly signed. Canada population and tariff were rightly signed but the coefficients were not significant. This implies that tariff appears not to effectively change agriculture imports from Canada. This outcome could account for the reason why there was no significant link between agriculture import and migration to Canada. In the UK, a 1 percent increase in tariff will reduce agriculture export by 0.1 percent. The reduction will lead to increase migration to the UK to the tune of 0.4 percent.

The result obtained in Sweden was similar in terms of significance but different in terms of magnitude and direction. The link between agriculture import and migration were complements with tariff having a positive and significant effect. Specifically, given a 10 percent increase in migration to Sweden, agriculture import will increase by 4 percent. This implies that agriculture import responds faster to changes in migration in Sweden more than in the UK

Table 5.14: Dynamic product-specific Estimation Result of the complementarity/substitutability between Agriculture imports and Migration

Variables	Imports				
	CANADA	USA	United Kingdom	Sweden	Italy
ΔDEFL	-0.39	0.27	-0.031	0.24	0.008
	[-4.4079]***	[4.1922]***	[-0.9220]	[0.1926]	[0.2820]
ΔXDX	0.045	-0.038	0.011	-0.089	-0.012
	[5.2870]***	[-2.1800]**	[6.2807]***	[8.7333]***	[-2.5782]**
ΔLNGDP	-1.569	-4.786	0.718	0.593	-0.073
	[-10.704]***	[-1.2087]	[1.9678]*	[0.5352]	[-0.2587]
ΔLNMIG	-0.325	0.067	-0.407	0.499	-0.103
	[-0.8896]	[0.2543]	[-3.7586]***	[-6.9567]***	[-0.6056]
ΔLNNGGDP	5.24	-1.504	-0.098	-1.1	0.083
	[7.5532]***	[-2.1131]**	[-0.7114]	[3.8320]***	[0.3123]
ΔLNPOP	3.341	-1.539	3.203	2.834	-1.823
	[0.7147]	[-3.4786]***	[2.4464]**	[2.9492]**	[-1.3853]
ΔLNPOPNIG	6.511	2.959	-2.938	-2.723	2.645
	[1.4034]	[2.9887]**	[-1.7322]*	[-9.9796]***	[1.5295]
ΔLNREM	0.005	-0.124	0.025	0.048	0.106
	[0.0575]	[-2.5980]**	[1.1066]	[2.1557]**	[1.9202]*
ΔNGDEFL	-0.015	0.007	-0.007	0.015	0.004
	[-2.7882]**	[2.6367]**	[-6.7318]***	[4.8057]***	[1.8546]*
ΔNGEXDX	-0.016	0.01	-0.004	0.002	0.002
	[-2.8319]**	[4.8181]***	[-2.6976]**	[4.2613]***	[1.1737]
ΔTARIFF	-0.007	0	-0.015	-0.0021	0.008
	[-0.5424]	[-0.5621]	[13.425]***	[4.2577]***	[1.7432]*
ΔLNIMP(-1)	0.755	0.067	0.489	0.055	0.945
	[3.286]***	[1.717]*	[6.181]***	[5.466]***	[1.789]*
R-Squared (adjusted)	0.833	0.583	0.749	0.853	0.7
DW	1.161	1.895	1.835	2.338	1.94
J-J-stat (p-value	0.92	0.88	0.9	0.8	0.86

The values in the squared bracket is the t-statistics (*,**,*** represents 10%, 5% and 1% level of significance respectively).

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The general observation is that in American countries and Italy, migration and agriculture imports are by no means related and so, any policy that affects agriculture imports will not affect changes in migration phenomenon. Notably, any migration policy changes will only affect migration and the effect on migration will have nothing to do with the flow of agriculture imports. In the UK and Sweden, tariff and migration are important for the behavior of agriculture imports.

5.4.2   *The link between Agriculture Raw Materials Import (ARMI) and Migration*

The case of ARMI for Canada shows that there was no link between migration and ARMI, and also tariff did not affect ARMI from Canada (Table 5.15). In the US, migration and ARMI were complements. Tariff affected ARMI negatively but the effect is mild. As shown in the Table if migration increases by 10 percent, ARMI will also increase by 2.5 percent. The results for the UK showed that tariff negatively affected ARMI. As reported in the Table, if tariff rises by 10 percent, ARMI will fall by 0.11 percent. This reduction then leads to a 0.7 percent decrease in migration. Thus ARMI is sensitive to changes in migration which is caused by changes in tariffs.

Table 5.15: Dynamic product-specific estimation result of the complementarity/substitutability between Agriculture Raw material imports and Migration

Variables	Imports		
	CANADA	USA	United Kingdom
ΔDEFL	0.24	0.058	0.052
	[1.4668]	[1.5680]	[1.7502]*
ΔXDX	-0.144	-0.01	0.017
	[-3.9031]***	[-0.9064]	[2.9784]**
ΔLNGDP	4.303	-13.798	1.6
	[2.0201]**	[-6.9073]***	[3.5486]***
LNMIG	-0.417	0.248	-0.693
	[-0.7093]	[10.021]***	[-9.2537]***
ΔLNNGGDP	-3.371	-2.823	0.057
	[-2.0956]**	[-5.5003]***	[0.3435]
ΔLNPOP	-44.692	-3.321	0.462
	[-3.6263]**	[-1.0365]	[0.3726]
ΔLNPOPNIG	40.49	28.826	-1.803
	[2.9699]**	[5.1144]***	[-1.0519]
ΔLNREM	0.9102	0.128	0.038
	[0.9562]	[3.3829]***	[1.0460]
ΔNGDEFL	0.008	0.029	0
	[0.5980]	[9.8827]***	[-0.0793]
ΔNGEXDX	0.034	0.011	-0.009
	[3.0781]***	[4.4335]***	[-4.4120]***
ΔTARIFF	-0.004	-0.003	-0.108
	[-0.0708]	[-3.8417]***	[2.4106]***
ΔLNIMP(-1)	0.068	0.072	0.270
	[1.953]*	[1.719]*	[2.066]**
R-Squared (adjusted)	0.444	0.631	0.668
DW	2.066	1.694	2.376
J-stat (p-value	0.87	0.88	0.9

The values in the squared bracket is the t-statistics (*,**,*** represents 10%, 5% and 1% level of significance respectively.

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5.4.3 The link between Chemicals Imports and Migration

Table 5.16 presented the result of the link between chemical imports and migration. In Canada, there was a complementary link and the effect of tariff on chemicals was positive, but not significant. This implies that tariff tends not to stop importation of chemical products and as a result, migration has to increase. The Table reports that the association between chemical imports and migration was moderate with the coefficient being 0.37. In the case of the United States, tariff was not significant but showed negative and mild effect and as a result, the link between migration and chemical import were complements with a coefficient of 0.28. This result was in line with the empirical findings of Kohli (2002). In the UK, tariff showed a negative and significant effect on chemical import and this informed the substitutability between the product and migration with the estimate computed to be 0.42.

5.4.4 The link between Food Import and Migration

The model for food imports presented in Table 5.17 showed a substitute link migration and food import from Canada while tariff affected the importation of food negatively. The estimated coefficient establishing this link was 0.52. Notably, a 10 percent increase in tariff on food import will cause the importation of the product to fall by 0.5 percent. The same situation existed in the US but the magnitude of effect was higher (0.68). In the UK, tariff did not significantly affect food import, but there was a substitute relationship between the two variables. Thus the same explanation goes for the case of the UK.

Overall, importation of food and beverages substituted for migration. The reason that since importation of food cannot be stopped by tariff (given the mild effect of tariff on food import), migration has to compensate for the reduction in the flow of the product. The effect is informed by the insignificance of tariff on food import. As tariff have no effect on food imports, it means the product is less constrained by tariff and so the more it is requested for, the less people will be willing to migrate to the country. The

link between food import and migration is consistent with the findings of Kohli (2002) where labour intensive products substitutes for migration.

5.4.5   *The link between Manufactured Imports and Migration*

The link between migration and manufactured imports was not established in the case of Canada (Table 5.18) even though the result showed a substitute link. Three variables significantly affected manufactured import and the three were rightly signed. Remittances affected manufactured import positively to the extent that a 10 percent increase in remittances will lead to 1.3 percent increase in manufactured import. This implies that remittances were important drivers of manufactured import from Canada. In the United States, the link between migration and manufactured import was complement, while the effect of tariff on the product was negligible and insignificant.

The case of the UK was different from that of the US but similar to what was obtained in Canada. As reported in the Table, the estimated value of migration elasticity of manufactured import was -0.53. Suggesting that migration and manufactured imports were substitute. Tariff did not affect manufactured imports.

Manufactured import to Sweden substituted for migration with the estimated value computed to be -0.16. It must be noted that tariff had a positive but very small effect on the importation of this products, therefore, the substitutability of migration and manufactured import may be as a result of mild and positive effect of tariff on this product. The same result and hence interpretation is obtained for Italy.

In general, manufactured import appears to be substitute except in the case of US where complementarities link was established. Manufactured goods are skill intensive and so, any policy targeted at improving the exportation of these products will stem migration of highly skilled workers to the UK, Canada, Sweden and Italy. In the United States where tariff is negligible and insignificant, immigration of Nigerians in the country is associated with flow of manufactured products.

Table 5.16: Dynamic product-specific estimation result of the complementarity/substitutability between chemical imports and migration

Variables	Imports		
	CANADA	USA	United Kingdom
ΔDEFL	-0.044	0.523	0.372
	[-0.8778]	[2.4395]**	[4.2005]***
ΔXDX	-0.064	0.081	-0.001
	[-9.8518]***	[2.0571]**	[-0.3979]
ΔLNGDP	4.785	-8.786	2.669
	[9.6991]***	[-0.8952]	[2.3453]**
ΔLNMIG	0.374	2.85	-0.423
	[2.7241]**	[4.0425]	[-1.8230]*
ΔLNNGGDP	-0.345	-7.453	-3.346
	[-0.6846]	[-4.6262]***	[-6.7543]***
ΔLNPOP	-8.352	2.96	9.937
	[-3.5364]***	[2.2922]**	[1.9088]*
ΔLNPOPNIG	1.647	-1.536	-8.911
	[0.5941]	[-0.0765]	[-1.3504]
ΔLNREM	0.339	0.206	0.397
	[7.8170]***	[1.6540]	[5.5991]***
ΔNGDEFL	0.008	0.046	0.009
	[2.0889]**	[5.9391]***	[2.3778]**
ΔNGEXDX	0.009	0.013	0.032
	[2.7939]**	[2.1362]**	[2.5081]**
ΔTARIFF	1.6023	-0.001	-0.12
	[1.9985]*	[-0.8939]	[-7.5178]***
ΔLNIMP(-1)	0.734	0.727	0.674
	[1.888]*	[2.244]**	[2.711]**
R-Squared (adjusted)	0.774	0.571	0.741
DW	1.982	1.573	2.903
J-J-stat (p-value	0.89	0.84	0.84

The values in the squared bracket is the t-statistics (*,**,*** represents 10%, 5% and 1% level of significance respectively.

Table 5.17: Dynamic product-specific Estimation Result of the complementarity/substitutability between Food and Beverages imports and Migration

Variables	Imports		
	CANADA	USA	United Kingdom
ΔDEFL	-0.427	0.327	-0.044
	[-4.9525]***	[4.4941]***	[-1.6997]
ΔXDX	0.028	0.011	0.012
	[2.6136]**	[4.9845]***	[3.4459]***
ΔLNGDP	-10.794	-2.019	0.511
	[-17.8041]***	[-0.4923]	[1.3048]
ΔLNMIG	-0.517	-0.68	-0.307
	[-1.8135]*	[-2.0490]**	[-3.4803]***
ΔLNNGGDP	4.347	-1.501	-0.439
	[6.1441]***	[-1.6052]	[-2.0900]**
ΔLNPOP	3.088	-15.857	4.82
	[1.0407]	[-3.4401]***	[4.2534]***
ΔLNPOPNIG	8.619	23.406	-3.823
	[2.4983]**	[3.4153]***	[-2.2404]**
ΔLNREM	-0.186	-0.23	0.034
	[-2.1833]**	[-4.5001]***	[2.1637]**
ΔNGDEFL	-0.007	0.001	-0.007
	[-1.0052]	[0.2902]	[-7.6579]***
ΔNGEXDX	-0.007	-0.043	-0.001
	[-1.8213]*	[-2.1151]**	[-0.6236]
ΔTARIFF	-0.054	-0.001	0.000
	[-5.6671]***	[-0.932]	[-0.0505]
ΔLNIMP(-1)	0.221	0.933	0.258
	[2.443]**	[1.867]*	[5.603]***
R-Squared (adjusted)	0.844	0.582	0.758
DW	2.135	1.735	1.957
J--stat (p-value)	0.88	0.88	0.93

The values in the squared bracket is the t-statistics (*,**,*** represents 10%, 5% and 1% level of significance respectively.

Table 5.18: Dynamic product-specific Estimation Result of the complementarity/substitutability between Manufactured imports and Migration

Variables	Imports				
	CANADA	USA	United Kingdom	Sweden	Italy
DEFL	-0.039	0.35	0.062	0.026	-0.05
	[-1.7890]*	[8.7333]***	[1.9517]*	[0.6011]	[-1.0719]
XDX	-0.007	0.006	-0.007	0.016	0.001
	[-1.2658]	[4.2613]***	[-1.9642]*	[2.3738]**	[0.1719]
LNGDP	2.007	-5.166	1.11	2.882	1.116
	[6.3556]***	[-6.9567]***	[3.3797]***	[7.4851]***	[6.8071]***
LNMIG	-0.002	0.762	-0.535	-1.603	-0.325
	[-0.0119]	[3.8321]***	[-9.2302]***	[-2.2520]**	[-2.0205]**
LNNGGDP	1.774	-3.346	-0.455	2.748	0.092
	[6.0240]***	[-9.9796]***	[-2.8850]**	[5.5535]***	[0.2063]
LNPOP	0.998	4.398	-1.993	-13.577	-0.883
	[0.3112]	[2.1557]**	[-2.4820]**	[-4.7230]***	[-0.3511]
LNPOPNIG	-5.431	8.34	1.93	5.239	0.106
	[-1.6274]	[2.9492]**	[1.6127]	[2.3104]**	[0.0385]
LNREM	0.13	0.022	0.092	-0.035	0.111
	[3.9207]***	[0.5352]	[3.7291]***	[-0.6450]	[1.8772]*
NGDEFL	0.002	0.01	-0.002	-0.016	-0.006
	[0.9251]	[4.8057]***	[-1.5263]	[-2.7441]**	[-2.3341]**
NGEXDX	-0.003	0.033	-0.001	-0.014	-0.002
	[-1.2092]	[4.2577]***	[-1.0638]	[-10.3486]***	[-1.2028]
TARIFF	0.021	0.000	0.000	0.067	0.001
	[0.7468]	[0.1926]	[0.5572]	[6.2974]***	[1.4179]
ΔLNIMP(-1)	0.805	0.813	0.618	0.671	0.517
	[9.845]***	[1.758]*	[4.471]***	[1.995]*	[2.081]**
R-Squared (adjusted)	0.82	0.688	0.607	0.765	0.57
DW	2.391	1.767	2.384	2.242	2.62
J--stat (p-value)	0.91	0.86	0.86	0.91	0.96

The values in the squared bracket is the t-statistics (*,**,*** represents 10%, 5% and 1% level of significance respectively.

5.4.6 The link between Textile Imports and Migration

Table 5.19 shows the link between textile import and migration. The result for Canada showed that migration complemented textile imports with the estimated value being 1.05 percent. The effect of tariff on the importation of this product was positive. In the US, there is also a complementary link between textile import and migration but the response of the product to changes in migration was faster in the US than Canada. However, in the two countries, textile import was sensitive to changes in migration. An increase in one will lead to a decrease in the other. In the case of the UK, the estimated coefficient for migration was 1.80 percent. In Italy, there was no seeming link between migration and textile import as revealed in the Table. . Tariff effect on textile import of each of the countries was rightly signed, significant but very mild.

Table 5.19: Dynamic product-specific Estimation Result of the complementarity/substitutability between Textile imports and Migration

Variables	Imports				
	CANADA	USA	United Kingdom	Sweden	Italy
DEFL	0.316	0.02	0.394	-0.221	0.205
	[2.4922]**	[0.1668]	[4.8398]***	[-2.3875]**	[3.7771]***
XDX	-0.119	-0.036	-0.047	0.013	0.012
	[-5.0554]***	[-1.7923]*	[-6.8331]***	[1.0972]	[1.2329]
LNGDP	4.268	2.399	2.921	-0.271	3.301
	[2.3765]**	[0.5541]	[3.7363]***	[-0.6432]	[6.8275]***
LNMIG	1.047	2.966	-1.779	-5.486	0.492
	[2.2354]**	[5.7233]***	[-4.3356]***	[-7.0070]***	[1.1127]
LNNGGDP	-2.231	-4.313	1.726	-0.171	0.901
	[-1.7329]*	[-4.2714]***	[3.2498]***	[-0.4494]	[1.1392]
LNPOP	-22.762	-12.781	-1.17	-15.833	0.852
	[-3.5075]***	[-2.6565]**	[-6.3531]***	[-3.2024]	[0.2740]
LNPOPNIG	17.698	14.717	2.954	17.065	-7.295
	[2.1445]**	[2.4055]**	[4.8145]***	[3.5767]***	[-2.3683]**
LNREM	0.352	-0.432	0.314	-0.473	0.743
	[2.7216]**	[-5.0336]***	[6.0111]***	[-4.0794]***	[10.1286]***
NGDEFL	0.007	0.02	0.001	0.007	0.009
	[0.8897]	[2.5333]**	[0.2558]	[1.4791]	[2.3904]**
NGEXDX	0.037	0.011	-0.022	0.013	-0.021
	[3.6293]***	[2.6480]**	[-4.6723]***	[3.6726]***	[-5.1853]***
TARIFF	0.075	-0.004	0.006	-0.086	0.05
	[4.3883]***	[-1.8755]*	[4.2342]***	[-20.7223]***	[4.8898]***
ΔLNIMP(-1)	0.618	0.671	0.517	0.123	0.487
	[1.840]*	[2.301]**	[2.709]**	3.753]***	[1.498]
R-Squared (adjusted)	0.627	0.821	0.923	0.726	0.914
DW	2.369	2.448	2.004	2.469	2.293
J--stat (p-value)	0.89	0.88	0.92	0.91	0.86

The values in the squared bracket is the t-statistics (*,**,*** represents 10%, 5% and 1% level of significance respectively.

5.4.6 *The link between Petrol Imports and Migration*

The result shown in Table 5.20 suggested that there was a negative relationship between migration and petrol imports from Canada, Italy and United Kingdom. The migration elasticity of petrol import in the case of Canada was -0.5 while that of the United Kingdom was -1.6 and that of Italy was -1.6. This suggested that migration and petrol imports to Canada, United Kingdom and Italy were substitutes. However, it must be noted that the relationship was not significant in the case of Canada and Italy.

Imports of petrol from the USA and Sweden were positive and significant. The estimate of petrol imports to USA with respect to migration was 0.17 while that of Sweden was computed to be 1.5. The result therefore suggested that migration and import of petrol from the US and Sweden were complements.

Overall, the result revealed important information about the link between migration and textile import. The link depends on the region where the transaction is taking place and the type of bilateral or multilateral trade policy/trade agreement between the home country and foreign. In America where the trade policy is relatively relaxed and migration policy relatively expansionary, migration and textile imports complements each other. In Europe Union, where the trade policy/trade arrangement is not as much as it occurs in America and where migration policy is not so slack, the link is substitute. Meanwhile, in the two regions, the link is very strong and the magnitude is higher than the one reported by Kohli (2002).

Table 5.20: Dynamic product-specific Estimation Result of the complementarity/substitutability between Petrol imports and Migration

Variables	Imports				
	Canada	USA	United Kingdom	Sweden	Italy
ΔDEFL	0.699	0.178	0.106	0.286	0.146
	[4.842]***	[6.079]***	[0.262]	[-0.957]	[0.638]
ΔXDX	-0.001	0.000	0.341	-0.011	-0.08
	[-0.033]	[-0.087]	[3.713]***	[-1.472]	[-1.340]
ΔLNGDP	-3.831	1.795	12.561	0.524	4.071
	[-2.084]***	[2.143]**	[1.635]	[1.440]	[2.790]**
ΔLNMIG	-0.549	0.172	-1.612	1.581	-1.633
	[-1.279]	[2.293]**	[-4.961]***	[3.743]***	[-1.350]
ΔLNNGGDP	-0.268	0.071	0.77	-0.183	-2.906
	[-0.337]	[0.414]	[0.295]	[-0.551]	[-1.552]
ΔLNPOP	-57.699	-1.743	52.739	0.366	-8.551
	[-3.331]***	[-0.919]	[1.905]*	[0.080]	[-0.630]
ΔLNPOPNIG	61.694	-0.412	-70.173	-0.775	6.843
	[3.199]***	[-0.131]	[-2.001]**	[-0.265]	[0.475]
ΔLNREM	-1.105	0.211	0.932	0.204	0.68
	[-7.419]***	[17.453]***	[3.369]***	[3.821]***	[1.965]*
ΔNGDEFL	0.015	-0.003	0.009	0.018	-0.036
	[1.848]*	[-3.674]***	[0.574]	[-1.964]	[-2.935]**
ΔNGEXDX	-0.013	-0.002	-0.071	-0.004	0.047
	[-1.322]	[-0.458]	[-3.169]***	[5.470]***	[1.968]*
ΔTARIFF	-0.011	-0.002	0.107	-0.011	0.052
	[1.901]*	[-7.707]***	[1.636]	[2.705]**	[1.497]
ΔLNIMP(-1)	0.444	0.228	0.456	0.608	0.87
	[4.009]***	[2.559]**	[4.588]***	[5.421]***	[9.778]***
R-Squared (adjusted)	0.833	0.925	0.471	0.479	0.58
DW	2.085	1.93	2.248	2.373	2.12
J--stat (p-value)	0.88	0.93	0.74	0.93	0.78

The values in the squared bracket is the t-statistics (,**,*** represents 10%, 5% and 1% level of significance respectively.*

5.5   Discussion of findings

The discussion of findings was done with respect to the objectives of the thesis. The first major section discusses the link between migration and trade at the aggregate level. The second major section focused on the country-level while product-level discussion was presented in the third major section. Although the attention was on the link between migration and trade, the beahviour of trade to the gravity variables were also discussed.

5.5.1   Link between migration and trade (Nigeria and trading partners as a group)

5.5.1.1 GDP and trade flow

Starting from the core gravity variables, Nigeria GDP and foreign GDP showed positive and significant effect on Nigeria export. The result supported the *a priori* expectation. That is the export of a country depends among other things, on the level of income of the trading partners. Higher income increases purchasing power, holding relative price constant. The magnitude of effect of foreign GDP is very large (0.16). This could be a result of trade liberalization and the large share of oil in export products

In the case of Nigeria GD, the positive effect is informed by the ability to invest more in exportable. If income rises, production of tradable goods is expected to increase provided the goods are normal. Notably, the magnitude of effect was very low indicating that only very small amount of increase in GDP were spent on exportables. This is not surprising since all the firms producing oil in Nigeria are foreign origin. This result is consistent with Oyejide (2008) where it was established that supply response tends to constrain Nigeria exports of non-oil products.
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In the same vein, income of Nigeria and the trading partners affected imports positively and significantly. The explanation for this is similar to the case of export. That is, increase in Nigeria GDP increases income for the purchase of imported products, while increase in foreign income increases ability to produce more. The magnitude of effect also shows that total export for

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foreign is elastic in the sense that import demand increases more than increase in income. This is expected because the bulk of developed countries' export to Nigeria is manufactured goods (both capital goods and final goods) that command high demand for any increase in income. Overall, our result is consistent with the result of Timbergen (1962), Foad (2009) who found that trade flow and income were positively related.

5.5.1.2 Population and trade flow

Population in the gravity model has no unanimous direction, it could be positive or negative. In the case of Nigeria and trade partners from developed countries, population positively affected trade flow. This implies that the higher the population of Nigeria, the higher the import demand from abroad. Gould (2004) and Nyberg (2009) found similar result in the case of Morocco and EU. The positive effect of foreign population on their Nigeria exports works in through higher demand for some goods produced by Nigeria as population grows. Therefore, it must be the case that foreign consumers have preference for Nigeria products. Observably, Nigeria population did not significantly affect its exports. Since oil has the biggest share in total export and the sector is capital-intensive, it is not surprising that higher population does not feed into foreign demand for the country's exports.

In the case of import, Nigeria population negatively affected import demand while foreign population had a positive effect. Besides, the magnitude, although very large, appears to be the same. The negative effect may work in through the pattern of consumers of foreign products. That is, the bulk of imported goods are purchased by the high and middle income who form a small proportion of the population growth. Thus with high proportion of the poor in population, ability to purchase imported appears to be difficult. The large magnitude of effect further intensify how difficult it is for the poor who form the highest proportion of the population to purchase imported products. The fact that foreign population positively and significantly affected Nigeria import suggested that large proportion of foreign population are not only on the middle to upper income level, they also form the bulk of the working

population and they are gainfully employed. Thus, the higher the population, the higher the labour force, the more production takes place and the more they are able to export.

Our findings supported the argument put forward by Aitken (1973) and Christin (1996). However, our finding contrasted Frenkel, et al (1995) where they argued that the population of exporting country is negative while that of importing country is positive. We found that the population of importing country is negative while the population of exporting country is positive and significant. Furthermore, we also established that it is not in all cases that population of exporting country is significant. If the exporting country's share in total trade is small, population may not affect imports of that country.

5.5.1.3 GDP deflator and trade flow

Price deflator is used to measure the level of control of the authorities. A high price level is an indication that the authorities have lost control while a low price level signifies active control. Our result showed that price deflator of the developed countries was negative. The price deflator of Nigeria also affects foreign importers however, the magnitude was negligible. Foreign GDP deflator impacted negatively and significantly on trade flows, an indication that high price level leads to low purchasing power and this reduces export demand from Nigeria. Specifically, export demand by 1.4 percent for a 10% increase in price level. This result is consistent with Foad (2009). Nigeria GDP deflator also showed a negative but insignificant effect. The reason for this may be due to large share of oil in Nigeria's total export in which its demand is significantly determined by foreign factors.

Price deflator of Nigeria showed positive and insignificant effect on imports. Further, the magnitude of effect was negligible. This implies that Nigerians' import demand was not affected by price level. Reasons attributable to this is that the bulk of foreign products, which are manufactured and capital goods, are consumed by people at the high and middle income class, the multinational firms and the government. Therefore, before price level can affect purchases

by these agents, it will reach a certain level. What the result shows is that even if Nigeria price level rises, consumers will still purchase more of these imported goods. Notably, foreign price deflator impacted negatively and significantly on import demand although the effect was very weak.

5.5.1.4 Export/import price index and trade flow

Export prices of the foreign country and that of Nigeria negatively and significantly affected export goods but the magnitude of effect was small. This implies that an increase in the price of export of developed countries will lead to decrease in the demand for export. An indication that export price plays an important role in determining export demand. This result is consistent with Gould (1994), and Bergstrand (1985).

Our result found no significant effect of import prices on export demand although foreign import price is negative. The reason why this could be so is because oil takes the biggest share of Nigeria total export and since Nigeria is not the only world oil producer, and the fact that oil prices were quoted at the world market, demand for its product may not be affected by price.

5.5.1.5 Tariff and trade flow

Tariff for importing and exporting countries were negative and significant. In the case of foreign tariff on Nigeria export, the magnitude of effect was very small. This implies that it will take large amount of export demand by the developed countries before the impact is felt. Perhaps the reason for the small size was due to various trade arrangements at both the bilateral and multilateral levels which have led to low tariff rate. The negative effect signals that tariff is still detrimental to trade flow.

The effect of Nigeria tariff rate on imports was negative and significant but negligible. Thus foreigners also benefit from low tariff rate of Nigeria. It was emphasized that Nigeria tariff is the lowest among the developing countries

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and this may be responsible for the weak effect on imports. Further, most Nigeria finished goods are import dependent and so the government reduces tariff on the importation of capital and intermediate good. Thus the mild effect is not surprising. Observably, the negative and significant effects show that Nigeria tariff matters for import control. This result is consistent with the work of Helpman and Krugman (1985)

5.5.1.6 Workers' remittances and trade flow

Workers' remittances affected trade flows positively and significantly. When remittances increase, income level rises and this leads to increase in the purchase of imported goods. Adepoju (2007) and Orozco (2007) reported that remittances receivers in Nigeria spend a high proportion of the money on the purchase of building and land properties, home appliances and imported manufactured goods while very few are invested in the purchase of stock. Meanwhile, intermediate goods used in housing construction are imported from abroad. Thus when remittances increase and people use it to purchase new house or to buy imported manufactured finished goods, remittances will positively affect imports. Our result gives a quantitative validation of Adepoju (2007) and Orozco (2007).

Exports from Nigeria increase with increase in remittances. Remittances are mostly received by those at the middle income class while very few are received by the poor (Lucas, 2004). Increase in remittances therefore ease credit constraint that serve as one important supply response constraints pointed out in Oyejide (2008). Thus increase in remittances appears to reduce credit constraint in the export sector. Another channel through which remittances increase Nigeria export is the request for home products by Nigerian foreign resident. Adepoju (2006) reports that many Nigerian send money home for the purpose of buying home products.

5.5.1.7 Migration and trade flow

Turning to the variables of interest, migration, the result shows that the responsiveness of import to changes in migration was positive and significant while import responded negatively. That is import and migration are complements while exports and migration are substitutes. Our theoretical framework shows that when tariff is not too high, both migration and export can take place. Our result shows that tariff was very low but not zero, Therefore, import demand tend to compete away Nigeria goods and this leads to increase in unemployment. Increase in unemployment create tendency to migrate through push effect. Increase in emigration to developed countries leads to increase in foreign labour force and also creates easy access to cheap labour[47]. This, according to Lucas (2004) leads to reduction in production cost of goods that will be exported to the country of emigration. It follows that the contribution of emigrants in the production not only lower cost of production but also allows more of the goods to be produced and exported to their country of origin.

This submission is similar to the information effect demonstrated in Clarke and Hillberry (2009) and Bacarreza, Javier and Laura (2006). It is also consistent with the result of Dolman (2008) in the case of OECD and trade partners. Kohli (2002) made it known that migrants from Africa are most attractive for their exports and imports. This implies that Nigerians abroad are important source of labour in the tradeable sectors of the advanced countries.

In the case of exports, there is a substitute relationship. In this case, as Nigerians migrate abroad, less of Nigerian products are exported. The magnitude of effect was very small compared to imports. This is not surprising since oil is the major export of Nigeria. The substitutability relationship can be attributed to the fact that there are some products that could be imported from Nigeria but can be produced if migrants are available abroad. Orozco (2007) noticed that in the agriculture sector of the advanced economies, emigrants dominate the labour used even though the sector is capital intensive. What this implies is that increase in factor input in

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[47] See Iranzo and Peri (2009), Kohli (2002)

agriculture may reduce demand for agriculture and other labour-intensive products from Nigeria. Thus instead of demanding for Nigeria products, Nigeria workers are demanded for. Meanwhile, we expect foreigner to demand for more goods due to negligible effect of tariff. The reason why this may not be the case is that first, Nigeria is not the only importing country. Second, there are other obstacles to trade such as technical barriers, quotas and subsidies which are not captured by our model. Notably, the result is in line with the findings of Assous (2000) in the case of America and developing countries and Faini and DeMelo (1995) in the case of Morocco and the European Union trade partners.

5.5.2 Link between migration and trade (country-specific investigation)
5.5.2.1 GDP and Imports

Starting with Canada, our result shows that Nigeria import demand responded negatively to Canada's GDP while it responded positively Nigeria's GDP with Nigeria's income responding faster. The reason for this could be informed by the structure of imports from the North America. That is most imported goods from this region are capital and final goods. Thus, increase in leads to more demand for these goods from Canada. Specifically, most products coming from Canada are capital and luxury goods in the face of Nigerians and when income increases, demand for those goods rises faster than the rise in income.

The response of income to import from the US is similar to the case of Canada but differ in magnitude. In particular, the response of income was slower than the case of Canada. It must be noted that the US is Nigerian's highest exporting country until recently when it became the second after China. Thus, this result implies that the US not only constituted the largest trading partner (in terms of import) but also supply normal goods to the country. Goods imported from US are mostly intermediate and manufactured goods. The intermediate goods are important for the production of domestic final goods while the manufactured goods tend to raise the living status of the populace. It

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can therefore be said that products coming from the North America, in the case Canada and the US are very important to Nigerians.

US GDP responded negatively to Nigeria import demand from the country. The reason for this is that low income will shift consumption to some goods exported to Nigeria, and this may reduce the volume of goods exported to Nigeria. This result supports the findings of Glejser (1968), and Oguledo (1994). We can therefore say that Nigeria import demand from the North America is inversely related to latter's GDP while it is positively related to former's GDP.

In the UK and Italy, income was positively related to imports but insignificant. In Sweden, income affected imports negatively and significantly. The response of UK's GDP to Nigeria's imports demand from the country was higher than that of Italy but the response was almost negligible. The reason for the insignificant effect in the case of UK is informed by the fact that the type and size of products exported to Nigeria are not so important to the UK resident that income will necessitate increase such export. One reason for this is that UK and Italy trade mostly with their European country members. Thus changes in income may not have any effect on the volume and value of goods exported to Nigeria. Meanwhile, the positive sign shows that income of the two countries paly important role in the supply of goods to Nigeria.

In Sweden, income negatively and significantly affects their imports from the country. The same explanation given for the situation in US and Canada fit into the Sweden case. Thus it is clear that income of the trading partners from EU and America do not affect Nigeria import demand and where it does, it is negative. Changes in Nigeria income significantly affected import demand from Italy and Sweden with import from the latter country responding faster to changes in Nigeria income. This implies that Nigeria tends to have more preference for Sweden products more than Italy's. It may also be the case that Sweden's product competes favourably with Italian products in Nigeria.

5.5.2.2 Population and Imports

Nigeria's population matter for her imports from Canada showing a positive relationship. In other countries, Nigeria's population did not matter even though there seems to be a positive relationship in UK and Sweden. The reason for this is that those who could purchase imported products from these countries are the middle and the high income class who accounted for a small proportion of the country's population (WDI, 2010). Further, the high birth rate experienced in the country is located in the low income class who could not afford imported products from developed countries. The middle and high income class who could afford it experienced low birth rate. Thus increase in overall population may not have effect on imports. The worst case is when imports increases with decrease in Nigeria population. This is to confirm the inability of the large proportion of Nigerian to purchase foreign goods, particularly products from developed countries. The result also confirms the fact that import depend on income more than population. Our findings are in agreement with Christin (1996) and Aitken and Obutelewicz (1976) where they argue that population may affect trade flow negatively or may not have any effect.

5.5.2.3 GDP deflator and Imports

GDP deflator of all the countries except the UK negatively affected Nigeria import demand from the respective countries. Meanwhile, American (Canada and US) countries reported a significant effect while that of the EU (Italy, UK and Sweden) countries have no effect on Nigeria imports. This means that the bulk of imported goods from these countries have nothing to do with changes in respective country's price level.

Perhaps the reason why this is so is that the type of goods chipped to Nigeria commanded low price in those countries or that those that commands high price are not largely demanded for. That is, the advanced countries tend to export to developing countries, a large volume of products considered to be

'second hand'. Thus since new products are consumed by the native, old products which will be exported may not respond to price changes.

In the case of Canada and the US where price level was significant, imports responded slowly to changes in price level, particularly in the US. It thus appears that products imported from Canada are necessarily old ones. Hence, increase in the price level transmitted to increase in imported goods. This result is consistent with what was documented in standard macroeconomic textbooks.

Nigeria's price level did not significantly affect her imports from Canada, USA and Sweden. Also, there was a positive relationship between Nigeria price level and imports from all the countries except UK. The insignificant effect is unconnected with the nature of products imported from these countries. Most product imported by America countries are capital goods required to grow Nigeria manufacturing sector. Besides, these products are purchased mostly by government, firms and the rich. Therefore, irrespective of what happens to Nigeria price level, imports of these goods are not markedly affected. The positive effect shows that Nigerian consumers tend to penalize domestic products in favour of foreign products any time price level increases.

Observably, the effect cannot be established, and so, it will take some time or import demand must increase at a faster rate before Nigeria price level can have any effect on it. Faini and DeMelo (1994) and Ben-David (1996) also reported in their separate studies that the price level of the importing countries did not significantly affect export from their trade partners. Collins et al (1999) show that there was a negative effect of price level of the importing country on the export of trade partners from OECD countries. Our result clearly shows that the impact of price level on export of the trade partner depends on the country of export.

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5.5.2.4 Export prices and Imports

Export price index of foreign countries negatively affects value of Nigeria. Observably, this effect was not significant in Canada, USA and UK. In Italy and Sweden where the effect was significant, the size was small, particularly in Italy. The negative sign was consistent with the theoretical framework. Although increase in export price will raise import demand, the price becomes very high in the destination country with the resultant effect of reduction in purchasing power thereby reducing import demand. Hence, imported inflation is detrimental to import demand.

Nigeria price index is positive for imports from Canada, USA and Italy, while it was negative for the ones coming from UK and Sweden. Only in Canada and Sweden did price level impacted significantly on import demand. In all the countries, the effect is almost zero, implying that Nigeria export price have no effect on import demand. This result is in line with Lung (2009).

5.5.2.5 Tariff and Imports

Nigeria tariff showed negative and significant effect on imports from all the countries except Sweden where the effect was insignificant. Imports from Canada, USA and Italy were affected by tariff in the same magnitude while imports from UK were most affected. It must be noted that trade relation between the US and Nigeria is stronger than between UK and Nigeria. Imports from North America are more of capital and intermediate goods than from the UK. Since Nigeria reduces tariff on capital and intermediate goods, it means tariff may not affect its import demand form North America. But what is clear is that tariff shows a sign of trade distortion and the distortion is high in the country where more final goods are imported (the EU). The empirical investigation of the effect of tariff on exporting country is established in Gould (1994), Lung (2009), Chin and Cheng (2000). Thus our result supported their findings.

5.5.2.6 Workers' remittances and Imports

Remittances positively and significantly affected foreign exports. That is if workers' remittances increase, imports of goods from each of the trading partners will increase. Imports from the US responded to changes in remittances more than any of the other countries. Workers' remittance inflows from the USA accounted for over 60% of total remittance inflows (World Bank, 2006). Also, the trade relation between the US and Nigeria appear to be the strongest among the countries under study and this made the country to be the largest importing country until recently. Thus strong bilateral trade relations reduce import price, thereby making import from US cheaper. Inflow of remittances increases income, thereby making import demand easily accessible. The low import prices and increase in money income raises purchasing power and this leads to increase in import demand. In the UK, Italy and Sweden where the trade relation is not so strong, the magnitude of effect was small.

Imports from the European countries also responded positively to remittance changes, an indication that most of the products are remittance friendly. This also confirms the fact that remittances are mostly spent on the purchase of imported products where remittance senders work. In other words, it appears Nigerian in the advanced countries are exchanged for developed countries' goods using remittances as the medium.

5.5.2.6 Migration and Imports

Migration positively and significantly affected imports from Canada, USA, Italy and Sweden while it negatively and significantly affected imports from UK. The magnitude of effect was very close to that found in Gould (1994), Rauch and Trinidade (2002), Head and Reis (1998) except in the case of Canada and Sweden where the magnitude was large. The complementarity relationship between export and migration can be attributed to the low tariff on imported products. As emphasized earlier, Nigeria's average tariff is one of

the lowest in the developing countries. Thus low tariff allows influenced inflow of goods from these countries. The magnitude is not surprising since as shown earlier, US and Canada products tend to attract Nigeria consumers.

The magnitude of effect was high in Sweden because is a new country of immigration attracting workers from Africa. Nigerians in Sweden are increasing yearly and they involve in the production of manufactured and intermediate products in the country (Adepoju, 2007). Foad (2009) argued that immigrants receive low wages relative to native workers in developed countries thereby reducing cost of production. Hence, the large magnitude of effect may be as a result of low cost of production arising from the recruitment of immigrants who accept low wages. The low wages implies moderate export price in the immigration country and this increases import demand in the emigration country. However, we do not expect the magnitude to be as large as reported.

Imports from Italy have a moderate response to migration. The tariff effect of export is also mild and according to our theoretical framework, this mild effect will lead to increase in the inflow of goods from foreign and hence outflow of people. Thus we can conclude that Nigeria's imports from Italy and emigration to Italy are complements.

In the case of Nigeria-UK, the relationship was substitute, significant but with small magnitude as informed by the coefficient which was computed as 0.1. This result contrasted the prediction of our theoretical framework. One reason for the negative effect could be that Nigerians in the UK are not instrumental to the production of export goods in the country. This is confirmed by the level of significance of the value. Thus, as Nigerians migrate to the UK, they are more useful in the production of other goods either consumed domestically or exported to other countries. This situation is intensified by the way imports responded to tariff. But given the fact that Nigeria is not UK's major trading partner, high tariff may deter the inflow of goods and services and this reduction may be negligible in UK's total exports.

5.5.2.7 GDP and Exports

The GDP of all the trade partners except US responded positively to export demand. Canada's GDP had the fastest response followed by Sweden and then Italy. The positive effect implies that as the income of the European countries increases, demand for Nigeria products increases as well. There was negative but insignificant effect of US income on export demand. This implies that Nigeria products were not affected by changes in the US income. In the face of the European countries, Nigerian products appears to be normal goods while in the US, they appear to be inferior.

Nigeria GDP did not show any significant effect on its exports to Canada, Italy and Sweden. This suggests that changes in Nigeria income did not change the magnitude of goods exported to Canada, Italy and Sweden. The case is difference in USA and Italy where there was positive and significant effect of Nigeria income on the imports of each of the countries.

5.5.2.8 Population and Exports

Nigeria population impacted negatively on the export to Canada, UK and Sweden while it impacted positively on exports to the rest two countries. Meanwhile, Canada's import demand from Nigeria was affected significantly by Nigeria population. This implies that most goods imported by developed countries from Nigeria appear to be more of capital intensive than labour intensive. The capital intensity is clearly confirmed in the case of Canada where there was negative effect of Nigeria population on their imports.

In the same vein, foreign population appears not to have any effect on Nigeria export. The result showed that although population of Canada, USA and Sweden positively affected their imports from Nigeria, there is no evidence of significant effect. UK and Italy population significantly affected Nigeria exports negatively. Perhaps the reason for this is that these countries also

imported from other foreign countries particularly from other advanced countries.

5.5.2.9 Price deflator and Exports

Nigeria price deflator negatively affected its export to Canada, UK and Italy but was not significant in the case of Canada. Export to UK had the highest response to changes in price deflator (the coefficient was 0.07) when compared to the other two countries. In US, and Sweden, Nigeria' price deflator did not to play any important role because the magnitude of effect was almost zero. This implies that in the face of all the advanced countries considered in this study, Nigeria's products appeared to be inelastic. The reason for this could be traced to the fact that the price of the major products exported are not domestically determined and changes in the world oil price appears not to negatively reflect on other tradable goods in Nigeria.

Meanwhile, the price level of Canada, Italy and Sweden negatively affected their imports from Nigeria while that of the US and the UK reported negative effects. Further, only in the US and UK are the changes in aggregate price significantly affected Nigeria exports to the country. What can be concluded from this analysis is that Nigeria exports were not markedly affected by the price level of the source and destination countries. This conclusion is contrary to the standard gravity expectation and it also in contrast to the work of Gould (1994).

5.5.2.10   Import price index and Exports

Nigeria import price index appears not to affect exports to Canada, Italy and Sweden. The magnitude of effect was almost negligible in all the countries except in the UK. For instance, the estimate of import price index for the UK was 0.15 while the estimated value for other countries was less than 0.01. This small magnitude can be traced to the pattern exports to these countries.

Thus it is important to investigate further on how each of the products are affected by this gravity variable.

5.5.2.11   *Tariff and Exports*

Tariff imposed on Nigeria's export to Canada, Italy and Sweden was mild while it was noteworthy in US and UK. For instance, the estimated value of tariff effect was 0.2 in the UK. This high magnitude reflected the relatively high tariff policy of the UK. The reason for the high effect of UK's tariff is unclear given the colonial tie between the two countries. Meanwhile, the fact that UK is not to a major oil importer from Nigeria coupled with tariff escalation imposed on non-oil products could account for this. Available evidence reveals that UK is the second to the last country in Western Europe importing oil from Nigeria. Further, the country was in the top five of those importing non-oil products from the country (CBN, 2007).

The reason why tariff have a negligible effect on exports to Canada and US was due to the trade arrangements both at the bilateral and multilateral levels. This trade arrangement has led to large reduction of average tariff even though some products are still experiencing tariff escalation. The negative effect of tariff clearly supports the argument that tariff stifles gains from trade.

5.5.2.12   *Workers' Remittances and Exports*

Remittances are a significant variable in explaining foreign imports from Nigeria. The results show that remittances have large and strong effect on the exports to Canada and Sweden. The reason for this can be explained from both the demand and supply sides. These two countries have been increasing their immigration quotas for Africa and particularly from Nigeria and so Nigerians are increasing in size in these countries. Adepoju (2007) and Orozco (2007) reported that Nigerians in Sweden tend to request for their home products and so they send remit money back home for this purpose. Thus from the demand side, part of remittances were meant for the purchase of

Nigerian goods which will be exported to the Nigerian residents in those countries.

From the supply side, increase in remittances tends to ease credit constraint in the non-oil export sector, particularly in the industries where production is labour intensive such as textile and food. Thus as remittances increases investment in the tradeable sector and given the negligible tariff effect on non-oil exports, export demand increases.

5.5.2.13 Migration and Exports

The response of Canada, USA and Sweden' imports from Nigeria to migration were positive and significant while the response of UK and Italy's imports from Nigeria to migration was negative. The magnitude of response was notable in Sweden and Canada while in the US, the magnitude was close to the Gould (1994) and Heads and Reis (2004).

The complementarity relationship between these countries' imports and migration signaled to the fact that policy barrier and other trade restrictions are still at play. According to our framework, if the trade line deviates notably from the free trade or free migration line, then some factors must be inhibiting trade and this will cause migration to be associated with exports. Therefore, expansionary trade policy of these countries was not enough to stop migration. Further, the growth rate of Nigerian emigrants in these countries was on the increase and so, traces of preferences for native products cannot be completely ignored. Specifically, given the fact that oil has the largest share in Nigeria's total export, increase in migration will only affect increase in non-oil exports. This argument was validated by the fact that oil production is capital intensive so trade policy is largely towards market access for non-oil export.

Another reason for the complementarity relationship is that immigration policies of US, Canada and Sweden are more flexible than that of UK and Italy (IOM, 2010). Although UK is Nigeria's colonial country and by implication, language may not be a barrier, UK is interested in the recruitment

of highly skilled workers while Canada, USA and Sweden tend to recruit skilled and semi-skilled workers. Therefore, increase in the migration of both skilled and semi-skilled workers leads to increase in export demand. This line of argument is in support of the connection between remittances and foreign imports of Nigeria goods.

In UK and Italy, the relationship was negative, implying that increase in migration will lead to fewer export demand. This result follows from the proposition of the original H-O model and our framework. Since Nigeria products suffered from tariff escalation in this country, the trade line will be far away from the free trade and hence we should expect migration to substitute exports. The substitutability was made possible through relaxed migration policy of the countries. Meanwhile, it is important to note that these countries allowed only the skilled workers to gain access to their countries. It pays the UK and Italy to import those who would produce rather than what they could produce.

This situation has a diverse implication for Nigeria. On the positive side, unemployment of highly skilled workers will reduce and the increase in remittances can be used to produce more exportables. From the negative side, substituting highly skilled workers for exports will lead to brain drain. But given the high level of unemployment of skilled workers in Nigeria, the brain drain effect will be small. Observably, it is not clear weather exporting goods will be better than exporting persons but if exporting goods will be hampered by other barriers apart from tariff, it will be advisable to export labour.

Hence in countries like the UK and Italy where Nigerian emigrants significantly substituted for the country's exports, gains from globalisation increases when either exports of goods were encouraged against exports of Nigerians or exports of workers were encouraged against exports of goods.

5.5.3   Link between migration and trade (product-level investigation)
5.5.3.1 Gravity variables and agriculture trade flow (Imports)

Nigeria GDP significantly affected agriculture imports from Canada and UK. As Nigeria's income rises, agriculture imports from Canada and UK falls but imports from other countries rose.   The GDP of Canada, USA and Sweden affected imports positively while that of UK and Italy affected it negatively. Meanwhile the GDP of Sweden and UK have nothing to do with import of agriculture.   The overall analysis showed that GDP of US, Canada, Italy and Nigeria are important drivers of agriculture imports demand from these countries.

The population of all the countries except US negatively affected import demand of agricultural products.   Notably, the population of US and Italy did not show any significant effect.   Nigeria population positively and significantly affected exports from all the countries except USA while imports from Italy were not affected.   The reason for the positive effect is that these products serve as raw materials for the production of items such as food which are of low cost and can be afforded by the majority.

The GDP deflator of Canada, USA and UK significantly affected Nigeria imports of agriculture from the countries while Sweden and Italy's GDP deflator reported no significant effect.   Also, there was a positive effect of GDP deflator of Canada on imports but a negative effect of US and UK's deflator. This implies that price level is an important driver of import demand of agriculture from these countries. Nigeria's GDP deflator reported negative effect on agriculture import from Canada, USA, UK and Sweden while it showed positive effect in the case of Italy. Meanwhile, it was discovered that the negative effect was negligible in Canada, USA, Italy and Sweden. What this implies is that these products are very important to the production of final goods in the country.

The export price index of Canada, USA and UK negatively affected agriculture import while Sweden's was positive. This result was consistent

with the theory because if export price rises, demand for the product will fall. The export price of Nigeria was positive except in the case of Sweden where it was negative. Meanwhile, the magnitude of effect was negligible, indicating that Nigeria export price index did not play any role in the behaviour of export of agriculture imports from these countries.

Tariff played no role in agriculture import from each of the trade partners except in Sweden due to trade liberalisation that led to the reduction of tariff. Workers' remittances play a significant role in agriculture imports from Canada and USA while it played no role in import from other countries. Observably, UK's imports were hardly affected by remittances. Perhaps the reason for significant effect of remittances on imports from US and Canada's was that more than half of total remittances to Nigeria came from these countries coupled with the existence of strong bilateral trade relations between Nigeria these countries.

Overall, the gravity variables showed diverse effect on agriculture imports from trade partners. This established the fact that the direction of effect in aggregate product might be different from the product-specific effect.

5.5.3.2 Gravity variables and agriculture trade flow (Exports)

Nigeria's GDP have a positive and significant effect on agriculture exports to Canada but a negative and significant effect on export to US and Sweden. In UK and Italy, there was no evidence of such effect. Thus, as Nigeria economy improves, export of this product to USA and Sweden falls while it rises in Canada. This reason is that improved economy signals to diversification of resource thereby reducing exports of agricultural goods. The GDP of Canada and UK are significant to their imports of agriculture product from Nigeria while the income of other countries did not. As the UK's income increases, demand for agriculture product increases while demand for agriculture product by Canada falls.

In the case of population, while Nigeria's population was important to exports to US, UK and Italy, it was not in Canada. Also, the behavior of Canada's population has nothing to do with agriculture exports from Nigeria. Population of US and Sweden were found to be significant to demand for Nigeria's agriculture products. This shows that Nigeria agriculture products were significantly affected by its population and the population of selected developed countries. Thus, it is not in all cases that population as a gravity variable, is for export.

The GDP deflator of all the countries significantly affected agriculture exports even though the effect was weak. That means Nigeria agriculture product appears to be seriously affected by variations in the general price level. Perhaps the reason for this is that agriculture products, being raw materials, will still be needed irrespective of price changes.

Import prices of all the countries significantly affected export of agriculture product from Nigeria. Further, increase in import price led to reduction of agriculture export demand. The magnitude of effect signals to the fact that the product tends to be inelastic. The reason is that these products serve as raw materials for the production of other goods. Tariff effect was unequivocally negligible, even though it was significant in UK and Sweden. The small effect was informed by the favourable trade relation. Remittances positively affected importation of agriculture products in USA, Sweden, and Italy.

5.5.3.3 Migration and agriculture trade flow

The result showed a substitute relationship between migration and agriculture import from Canada, US and UK but complemented agriculture import from Italy and Sweden. The magnitude of effect in Canada and the UK was similar to Dunlevy and Hutchinson (1999) and Heads and Reis (1998). The magnitude of effect was notable in the US with the estimated value computed to be 0.8. This result is in contrast to our theoretical expectation.

Migration has nothing to do with UK's agriculture export to Nigeria, even though it showed negative effect. In Sweden and Italy, exports of agriculture products to Nigeria were informed partly by migration situation. It has been mentioned earlier that some Nigeria emigrants work in agriculture and manufacturing sector of foreign countries. Thus, the result tells indicated that as Nigeria migrate to Italy and Sweden, their share in agriculture input tend to rise, reducing cost of production, increasing production and hence increase in export.

Nigeria agriculture exports substituted for migration in all the countries showed that except in Italy. Notably, the substitutability effect cannot be statistically established in the US, Canada and Italy. In Canada, the relationship was negligible while in Sweden, it was highly notable. Increase in agriculture exports to UK reduces migration to the country because tariff on agriculture product was small. Thus increase in importation of agriculture products at a negligible tariff rate tends to reduce the rate at which Nigerians migrate to the country. In Sweden, although, the tariff rate on agriculture product was negligible, it is the case that increase in the demand for agriculture product will lead to increase in migration. One reason adduced to this is that Sweden is a new immigration country for Africa. As Nigerians migrate to the country, demand for agriculture products increases. Another reason might be that when Nigerians migrate to this country, demand for agriculture product may be on the increase due to preferences effect.

Overall, four countries: Canada, US, UK and Italy, satisfied substitutability link between export of agriculture products and migration. But out of these four, only the UK reported a significant effect. This result suggested that agriculture exports did not drive migration between Nigeria and these countries. Meanwhile, in UK and Sweden, changes in migration caused changes in agriculture trade flow, an indication that migration matters for exports to these countries.

5.5.4.1 Gravity variables and Chemical products (imports)

Chemical exports by Canada, US and UK were not affected by Nigerian income level, suggesting that this product was income independent. On the other hand, income of these countries significantly affected the imports demand of chemicals with a noticeable response in Canada. It must be the case that Nigeria is an important importing country for Chemicals from Canada and the UK. In the US, increase leads to decrease in export of chemicals to Nigeria.

Imports of chemicals from Canada were significantly and negatively affected by her population. This was not the case in US and UK where their population did not show a significant effect. The interpretation of this is that it appears chemical products are capital intensive in those countries. The result demonstrated that imports of chemicals from Canada and UK benefitted from Nigeria population. Considering chemicals as raw materials with the assumption that it is labour intensive, emigration of Nigerians to these countries will increase proliferation of chemical products to Nigeria and this may justify the reason for the positive effect.

Aggregate price level of Canada and UK negatively affected chemical exports but in the US, the direction is positive and significant. Meanwhile, the effect is not strong, particularly in the UK. Thus, it appears the price level tends to reduce export of chemical products to Nigeria from the UK. Nigeria's aggregate price level significantly affected chemical exports but the direction of effect was country specific. In Canada, the direction was negative while in US and UK, the direction was positive. Further, the magnitude of effect was strong in UK but weak in the US. Hence, the price level of Nigeria tends to have negligible impact on demand for chemical exports, perhaps due to the role this product plays in the production of other goods.

Export index of chemical product negatively affected its demand from Canada and the UK while it positively affected demand from US. Meanwhile, the

magnitude of effect was also negligible, suggesting that chemical products are important to Nigeria.

The effect of tariff on the demand for chemicals from the trade partner countries was significant, positive but negligible. Thus, chemical is one of the products that benefitted from low tariff rate. Observably, the positive effect violated the standard theoretical prediction because chemicals are not needed in large quantity or are not supplied in large quantity due to its role in the production of other goods. Remittances showed negative and significant effect in the case of Canada and US, an indication that if remittances increase, availability of credit will lead to decrease of demand for chemicals.

5.5.4.2 Gravity variables and Chemical products (exports)

In the case of import demand for chemicals from Nigeria by the trade partner, Canada and UK's income level positively affected chemical demand. The income level of US affected chemical imports negatively but insignificantly. Thus it appears that Nigeria chemical products are normal goods in the US and the UK. Meanwhile, UK, US and Canada population positively affected demand for Nigeria chemical goods, an indication that Nigeria's chemical products are important for labour-intensive products in the developed countries.

Aggregate price level of Canada has no impact on the demand for chemicals while price level of other two countries showed significant effect. Also, the result shows that increase in price level leads to increase in demand for chemicals. This positive response will create incentive for chemical manufacturers and since increase in price increases demand in the developed world, it means that either the price level has not reached the point at which it will be too expensive for the trading partners to purchase or the product is so important that changes in price level has no effect on its demand.

In the same vein, import price of all the countries had a negligible effect on chemical import demands. This result complements our submission that

Nigeria chemical products are important goods needed by the foreign countries irrespective of price changes.

Chemical exports of Nigeria to countries like the US and Canada were affected negatively by the tariff levied on them in the destination countries. This established the fact that gains from trade of chemicals are stifled by tariff imposition. The reason is that chemical products are important input materials and tends to compete strongly with the domestic product. Thus one way to reduce the negative impact of the proliferation of the product in the destination countries is to impose tariff.

5.5.4.3 Migration and Chemical trade flow

There was a complementarity relationship between chemical export of Canada and the US, and migration. While the effect was significant in the US, it is not significant in Canada. Thus, Nigerians immigrants in Canada did not affect the behavior of chemical exports to Nigeria. Recall that tariff imposed on chemical products exported by the US to the country was small, leading to a negligible impact on the product. This scenario requires increase in the production and import of from the US. The earlier discussion showed that production of chemicals requires the services of emigrants whose wages were small. Thus, expansionary migration policy favoured migrants, employed in the chemicals sector. Hence, while migrants were influential to the production of chemicals in the, they were not in the case of Canada. In the UK, increase in Nigeria emigrants tends to reduce chemical imports from UK, an indication that Nigerian tend to be useful in the chemical sector in the UK.

Migration played an important role in the export of chemical products to Canada. Specifically, increase in migration to Canada implies increase in chemical exports. Perhaps demand for chemical is important in some sectors where Nigerians work in Canada. This also informed its insignificance in the production of chemicals in Nigeria. Therefore, export demand for Nigerian chemical products by Canada and migration were complements. This result

departed from the case of agriculture and agriculture raw materials where Nigerians did not affect the outflow of the products.

In the case of the US, migration matters for chemical export demand from Nigeria compared to Canada. This implies that Nigeria chemicals are useful in the in the sector where Nigerians are employed or needed. Given the fact that tariff is negligible and migration policy is expansionary, low tariff leads to increase in demand while expansionary migration policy will facilitate the movement of Nigerians into the country where their labour are required in sectors using chemicals. Thus both Nigeria born migrants and Nigeria chemical products are part of factor input in the production of some other goods. Again, compared to the case of agriculture imports by the US, chemical imports complement migration in a significant way.

In the UK, the link between migration and import of chemical were substitutes and the magnitude was remarkable. The magnitude of effect of tariff on chemical exports to UK tends to provide information about the substitutability relationship. Export demand falls because tariff's effect was remarkable and significant. Decrease in export demand leads to increase in unemployment and hence tendency to migrate. Due to expansionary migration policy, cost of migration was relatively accessible and this allows some intending unemployed workers to migrate. The migration was made possible by information effect triggered by the expansionary migration policy. It may also be the case that UK prefers the importation of Nigerian workers to work in the chemical or other sector where chemical products serve as input rather than importing the good directly. When compared with agriculture and agriculture raw materials, it was discovered that migration is an important and significant substitute factor for these products unlike in the case of Canada and the US.

Overall, if chemical products were viewed as raw material, then our result in the case of Canada supported the empirical findings of Kohli (1999) where it was discovered that raw materials were complements to migration. But in the case of UK, our result departed from his findings. Thus the fact that there was a complementarity relationship between migration and products

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export/imports cannot be generally accepted. It depends on the position of the country of origin, country of destination and tariff conditions in both source and destination countries.

5.5.5.1 Gravity variables and food products (imports)

Income level of Canada and the US significantly and positively affected imports from of food product while that of the UK negatively affected food imports. The magnitude of effect was large in the case of the first two countries. Nigeria income level affected imports from Canada and UK negatively while it positively affected import from US. Changes in Nigeria population negatively affected food imports from the US while it positively affected import from Canada and the UK. Since the coefficients are significant, increase in Nigeria population will lead to higher demand for food from Canada and UK but lower demand from US. However, Canada and UK's population tend to affect food exports to Nigeria negatively while in the case of US, the effect is positive.

Nigeria price level affected food imports from Canada and US while it positively affected food import from the UK. In the same vein, Canada and UK's price level positively affected food import. In the case of export price index, the result showed that there was a negative and significant effect of each trade partner's export price on their respective food exports to Nigeria while Nigeria's export price had a positive effect, albeit, not significant in the case of Canada. This effect is consistent with the theory because increase in price level reduces purchasing power of consumers and hence less of it is demanded. Tariff showed a negative but insignificant effect in Canada and US. This established the fact that tariff is detrimental to trade but effective trade relations that leads to reduction of tariff tend to reduce its effect.

Remittances positively affected Canada and US's food export but it negatively affected UK's food export. This implies that a large proportion of worker's remittances are spent on food import from North America. The effect on import from UK was not only insignificant but negligible, an indication that

food import from UK was not remittance independent. Thus UK's food export appears to be inferior in the face of Nigeria.

5.5.5.2 Gravity variables and food products (exports)

Nigeria's food exports to Canada and US are negatively affected by these countries' income level. But the effect was not significant, suggesting that trade partners' income do not affect their demand for Nigeria food products. But the fact that it shows a negative effect implies that Nigeria food products appear to be inferior. However, Nigeria's income level tend to impact positively on the food products exported to Canada while it shows a negative effect on the product's exports to US and UK. The result also shows that Canada and UK's population affected Nigeria's food export positively while US's population affected it negatively.

Nigeria's export index reported a negative effect although with a mild and negligible effect while each trade partner's export index affected their food import from Nigeria in a positive way. Changes in price deflator of Nigeria did not pose any problem for food exports to Canada and the US. In the same vein, UK's price deflator did not account for any effect on food export from Nigeria. In the case of tariff, the magnitude of effect was highly negligible but rightly signed in the case of Canada and the US and not significant in the case of US and the UK.

Overall the behavior of food trade with respect to changes in the gravity variables was not uniform. This shows clearly that gravity variable do not behave uniformly across country for the same product. Notably, Gravity variables behave in almost the same way in countries of North America but different from that of the EU. Also, in most cases, food products tend not to be significantly driven in the direction expected. That is, our findings contrasted the standard expectations. This therefore establishes the fact that gravity variable may not perform very well at the product specific level.

5.5.5.3 Migration and food trade flow

Our result shows that migration and food trade are substitutes in Nigeria. The magnitude of effect of food import from Canada and the UK was lower than that found in Kohli (1999) while that the US was greater. The substitutability effect was also contrary to what was found in Foad (2009) and Kohli (1999). Observably, changes in migration have no effect on changes in food import from Canada and UK. In must be noted that the effects were not significant. The reason for this may be that the food products exported from these countries are useful for the majority of those who may not be able to migrate. It may also be the case that this product is not so competitive that it can cause reduction in the production of domestic competitive products. Thus the export of such product does not affect employment in the sector producing this product.

Given the fact that the country is the largest trade partner of Nigeria, increase in food imports from this country tend to serve as important input for the production of other goods and so, leading to decrease in migration. However, the magnitude of effect was very high and raises some questions as to why the coefficient was as large as 0.8. One reason is that the expansionary migration policy of the US and the network effect will reduce migration cost, thereby further raising the tendency to migrate.

Our result showed that food exports substituted migration in all the countries. The interpretation of this is that if food exports increases, outflow of people will reduce while if market accessibility is reduces, outflow of people will increase. Therefore, food product is an important sector that drives migration. Increase in production and easy market access in the North America and Europe tends to reduce migration to these countries.

Our result shows that tariff shows negative effect but not neither significant nor strong. An indication that demand for food export by these trade partners are not affected by tariff, and so, increase in its export will be made possible by decrease in migration. Conversely, if the product falls in any of the

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countries, migration, made possible by expansionary migration policy will increase. It is clear that given liberalised trade and migration policies, migration will be a substitute for food exports from Nigeria to each of these countries.

5.5.6.1 Gravity variables and manufactured products (imports)

The GDP level of Canada and the UK positively and significantly affected Nigeria's manufactured import while in the case of the US, there was negative but insignificant effect of income. This implies that while Canada and UK's income level were important to Nigeria's manufactured imports, US's income level was not important. The positive effect was consistent with the standard gravity prediction. However, Nigeria's income level negatively and significantly affected exports of manufactured products coming from Canada and the UK while it positively and significantly affected manufactured exports of the US.

The behaviour of manufactured exports with respect to changes in income level of both the source and destination countries clearly shows how important are manufactured products exported to Nigeria from these countries. Manufactured exports from Canada and the UK are not income friendly. If the income of Nigeria increases, demand for manufactured products from the UK and Canada will fall while that of the US will rise. It follows that products from the US tend to be favorites of Nigerians and so, during the booming period, demand for US's manufactured products will increase while during recession, there will be low demand.

Nigeria population was not driving manufactured products from any of the trade partner except Italy, even though there was an evidence of positive effect for UK and US and negative effect for Canada, Sweden and Italy. Perhaps the reason is that some manufactured exports were meant for the middle and high income people while increase in population is mostly accounted for by the poor. In the same vein, only the UK population affected their manufactured exports to Nigeria even though the effect was negative.

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Thus the type of manufactured import from all these trade partners did not depend on population of either the source or the destination country. This result violated the prediction of the traditional gravity model but supported the argument of some authors that argued that population may not necessarily affect exports. In the case of Nigeria, the reason may be due to the product cycle effect.

Nigeria general price level positively and significantly affected manufacture export of US, UK and Italy. Canada and Sweden's manufactured imports are not affected by Nigeria price level. In virtually all the countries, the magnitude of effect was negligible, suggesting that Nigeria price level appears not to play a remarkable role in manufactured exports from North America and Europe. In the same vein, the price level of each of the trade partners played no role (except in the US) in manufactured export to Nigeria.

This findings indicates that the type of manufactured goods exported to Nigeria from the developed world are not price sensitive, probably because such products are not really new products in those countries again. The export price index of Sweden, Italy and United Kingdom significantly affected manufactured exports of those countries to Nigeria and the direction of effect is negative. In the case of other countries, manufactured export were not affected the export price index. This result is consistent with the theory because the higher the export price, the more expensive it becomes and the lower the demand for it. Meanwhile, since export price index is the weighted average of prices of export products, the significant effect shows that manufactured goods dominated the export volume into Nigeria. Meanwhile, the mild effect it has implies that demand for the goods is inelastic.

Tariff consistently maintained its mild effect as it recorded a negligible though negative effect on manufactured exports from each of the countries under study. Also, in Canada and Sweden, tariff has no effect at all, and indication that Nigeria tend to lower tariff rate on manufactured imports probably because of the importance of these products in the growth process of Nigeria. Workers' remittances have no impact on manufactured import from Canada,

and the UK. In the case of the US, worker's remittances play an important role in their manufactured exports to Nigeria. This is not surprising since the largest share of remittances came from the United States and the country also account for the largest manufactured exports flowing to Nigeria. Thus, increase in inflow of remittances will engender inflow of manufacture products from the country.

5.5.6.2 Gravity variables and manufactured products (Exports)

The income of each of the trading partner positively and significantly affected Nigeria manufactured exports (except in the US where negative effect was sighted). The large magnitude of effect estimated suggested that the type of manufactured goods exported to these countries was income friendly. In the same vein, Nigeria's income level is an important driver of manufactured exports to all the countries except Italy. However, the direction of effect is not encouraging in the US and the UK. Canada, UK and Italy's population have nothing to do with Nigeria's manufactured export to these countries while in the US and Sweden, their population is important. However, the magnitude of effect was remarkably difference from the result of Kohli (1999). Perhaps the reason for this is that most manufactured goods are capital intensive.

Price deflator of most of the trading partners did not play any role in manufactured imports but the magnitude of effect was notable. Meanwhile, the price deflator of Nigeria was significant in driving manufactured exports to US, Sweden and Italy but the magnitude of effect is small. Notably, the direction of effect for all the countries except the US is consistent with our theoretical expectation, an indication that Nigeria price level tend to reduce demand for their manufactured goods in most developed countries. Export price index of Nigeria and that of each of the trade partners show a mild effect on manufactured export of Nigeria to these countries.

Meanwhile, export price index of Canada, and Italy were not significant in affecting manufactured exports. Nigeria export price index cannot explain

changes in manufactured exports to Canada, UK and Italy. Clearly, export price index was not a driver of manufactured export to Canada and Italy probably because manufactured export price takes a small portion in the weighted export prices. Tariff did not show any significant effect on manufactured exports to all the trade partners under review except Sweden because of the low tariff on manufactured products of Nigeria. In the case of workers' remittances, only in Canada did the inflow played no significant role. However, even where remittances matter, the direction of effect was not encouraging (negative). Perhaps the reason for negative effect of remittances on manufactured exports is that most products classified as manufactured exports are capital intensive and required large capital which cannot be financed by remittances given the reason why Nigerians abroad remit back home.

5.5.6.3 Migration and manufactured trade flow

The observed link between migration and manufactured is that the former play a significant role in the behavior the latter for virtually all the countries under review. In addition the magnitude of effect was larger than the one found in Kohli (1999) and Foad (2009). Also there was a complementarity relationship between migration and manufactured import (except in the UK where substitutability was observed) and a substitutability relationship between migration and manufactured export.

 The complementarity relationship stems from the fact that the expansionary migration policy that reduces migration cost tends to increase migration. Increase of Nigerian workers in the trade partners' countries increased supply of workers, thereby, creating an avenue for firms in the manufacturing sector to hire labour at a cheaper rate, leading to increase in the production of manufacture goods. With mild effect of tariff import of these products will not be too expensive to afford. Thus as migration increases due to low migration cost, manufactured imports also increased due to access to cheap labour and trade liberalisation. Specifically the effect was remarkable in the two countries that newly reviewed their migration policies by allowing for

more migrants in their countries. It was emphasized earlier that Canada and Sweden are two new countries that have relaxed their migration policy in favour of Nigerians for the purpose of engaging them in some sectors. Our result showed that manufacturing sector is one of the sectors where Nigerians play an important role in these two countries.

In the UK, increase in migration will lead to decrease in manufactured imports or the other way round. What might account for this is not clear but it could be that the effect works in indirectly. For instance, since tariff on manufactured goods is negligible, inflow of these products might create opportunities for employment particularly in the services sector. If this is the case, then manufactured goods from the UK do not create unemployment in the import competing sector but rather complements the production of other goods. Or it may be the case that such goods are not really produced in Nigeria.

Our result showed that migration tends to substitute for Nigerian manufactured products abroad. It is the case that the countries under review will either allow for Nigerians in their country or allow for manufactured products in their market. At the country specific level, changes in migration to Canada did not change the behavior of demand for manufactured export in the country. In Sweden, large ouflow of manufactured export will lead to larger reduction in migration to the country. The explanation for the substitutability can be found in our theoretical framework. Since tariff is not completely zero, but very close to zero, there should be large export of manufactured to these countries. This then lead to employment in the sector and hence reduce migration but not completely due to liberalised migration policy.

5.5.7.1 Gravity variables and Petrol products (imports)

There is a positive effect of Canada, Sweden and Italy income on petrol import into Nigeria but the effect was not significant in the case of Sweden and Italy. The income levels of the US negatively affected their petrol exports to

Nigeria, but the effect was not significant. The significant and positive effect of Canada's income on petrol export is not surprising. Canada is the major petrol exporting country to Nigeria and so, it is expected that during booming period, it should increase export to Nigeria. The insignificant effect of the US, Sweden and Italy on petrol export to Nigeria is not unconnected with their low export of petrol to Nigeria and the importance of the product to their own economic development.

The income level of Nigeria positively affected petrol import from all the countries except Sweden. This positive effect is not significantly established in Canada and the UK. Changes in population did not play any role in the behaviour of petrol imports of the US and the UK, while it played significant and positive role in the case of Canada and Sweden. This result is consistent with the theory. In the case of general price level, there was a negative and positive effect of the variable on petrol export of Canada, the US, the UKS and Sweden. The magnitude of effect is also very strong. This implies that the higher the price level, the more expensive petrol products become and the less it is demanded for. The strong effect reflects the share of petrol in total export.

However, the price level of Nigeria did not significantly affect petrol import from all the countries except in Italy. Also, the magnitude of effect was very small. The reason for this is that changes in price level appears not to really change the rate at which petrol is demanded because its price is regulated and so, increase in price level is not informed by increase in the price level of petrol. Expectedly, import price index did not show any significant effect particularly in the US and Italy. In the same vein, the price level of Nigeria appears not to play a major role in petrol export from the UK and Sweden. The magnitude of effect in the case of Canada confirms the role played by Canada's petrol products in Nigeria.

Tariff on petrol products was mild and not effective except in Sweden. The reason for this is clear: petrol products are needed in Nigeria and supply lags behind demand. Thus there was no reason for imposing large tariff on petrol.

Remittances positively and significantly affected petrol export of Canada, the US, Sweden and Italy. Again, the magnitude of effect show that Canada's petrol export responded faster to changes in remittances than any other countries under study. Increase in remittances tends to increase consumers real income and as mentioned earlier, most of the remittance money are spent on manufactured goods such as house appliances and to establish menial businesses. All these consumption and investment motives require the use of petrol either directly or indirectly. Since Nigeria imports this product from Canada more than any other country under study, it means that increase in remittances will lead to large demand for petrol from Canada.

The gravity variables in the case of petrol exports show diverse outcome both across countries and in terms of magnitude and direction. This diverse result is consistent with the argument put forward in Bergstrand (1989); Frenkel and Wei (1993); Frenkel *et al* (1995). Thus our result supports the fact that the way gravity variables affect product export differ. Meanwhile, it is clear that income of the source and destination countries satisfy gravity expectations if the source country is an important supplier of such product to the destination country and if there is a strong bilateral relation between them. Also, if the price of the product is regulated, we may not expect any significant response of the product to changes in such regulated gravity variable.

5.5.7.2 Gravity variables and Petrol products (exports)

Nigerian petrol exports respond positively to changes in income of all the trade partners in question except Canada. The magnitude of effect was large but not significant in the case of the UK. This implies that petrol export to UK was indifference to changes in income. In the same vein, Nigeria income level plays no role in petrol export to these countries. This is not surprising since government controls the refineries and so, government spending does not depend on the behavior of GDP. The result is a confirmation of the fact that the significant role of income in the gravity equation depends importantly on the nature of the product, the source of finance and the rule guiding the sale of the product. The significant and positive effect of the US income on their

demand for Nigeria petrol is informed by the high preference of US for Nigeria oil. Therefore, during booming period, more quantity of Nigeria fuel will be purchased.

The magnitude of effect of population on petrol export to these countries was not only very large, but also insignificant for all the countries except Canada. The large coefficient can be attributed to zero observations of petrol export coexisting with consistent and large observation of population data. The insignificant effect points to the fact that petrol usage is not labour-dependent but capital-dependent. The price level of Canada and the US positively and significantly affected petrol import from Nigeria. It must be noted that Nigeria is not the only petrol importing country for these countries. Thus, when price level increases, petrol products from other countries become expensive.

The preference for Nigeria petrol product may also create increase in its demand in the face of increase in price level. In the EU countries, import demand for petrol is not affected by changes in price level. This is possible since demand for petrol from Nigeria was in small quantity compared to other countries.

The import price index of all the countries except Canada plays no role in their petrol demand from Nigeria. Tariff imposition plays a significant albeit mild role in petrol import demand by all the countries except Italy. Remittances have positive and significant effect on petrol import of all the countries from Nigeria. This result implies that like in the case of manufactured imports, remittances create credit assistance for the production and export of petrol to these countries. Although, this result is consistent with the theoretical expectation, given the nature of petrol production in Nigeria, it is unclear why remittances significantly affected it while Nigeria GDP level did not.

5.5.7.3 Migration and petrol trade flow

There is a complementarity relationship between petrol import and migration to the countries under study except in UK. The result satisfied our theoretical expectation and it supported the findings of Kohli (2002), Golberg and Klein (1998), but contrasted Golberg and Klein (1999). Kohli (2002) and Golberg and Klein (1998) focused on developed and trade partners from developing countries of Asia and Latin America. Our result established the fact that if developed countries allow for migration and trade flow, trade will complement migration.

The reason for the complementarity link between petrol export and migration is similar to the case of manufactured export. Meanwhile, the magnitude of effect was larger than Golberg and Klein (1998) and Kohli (2002) in the case of the US and Sweden. As said earlier, the US considers Nigeria petrol as very important and of good quality. Also, the migration policy with Nigeria has been well relaxed until recently. Thus, inflow of petrol product to Nigeria tends to increase income which is then used to finance migration. What can therefore be established in this case is that migration responds faster to petrol export of the US and Sweden due to more relaxed trade and migration policies of the two countries and Nigeria.

Migration responded slowly to petrol export from Canada and the UK to relatively restrictive migration policy in the UK and also due to open migration policy embarked upon by Canada. As the result shows, tariffs imposed on petrol product from these countries were not effective. This creates massive inflow of the product and hence increases in the outflow of Nigerians.

In the case of the relationship between petrol import and migration, substitutability was observed in Canada and the UK but the link was not significantly established in Canada and Italy. Thus, there is no link between petrol trade and migration in Italy and Nigeria on one side and Canada's

import and migration on the other. The substitutability link in the case of the UK was notable implying that if the UK removes or relaxes impediments to trade and migration, the increase in one will cause the reduction in the other.

Although the reason for large substitution effect is not clear, the fact that petrol is capital and skill intensive in Nigeria should provide explanation. Further, the supply of the product was in excess of demand in Nigeria. Therefore, the import of the product is not expected to lead to labour outflow. Observable, possible reason can be attributed to the nature of migration policy of the UK. The UK requires the services of highly skilled workers, and so, the country will either allow for highly skilled workers from or increase demand for petrol. Hence, to the UK, importing Nigeria highly skilled workers is as good as importing Nigeria petrol product.

5.5.8.1 Gravity variables and Textile products (Exports)

The income level of Canada, the UK and Sweden showed positive effect on textile export while the income of the rest two countries showed negative effect. Meanwhile, the effect was not significantly established in the UK and Sweden. The income level of Nigeria has a significant effect on textile export from all the countries. However, only in the European countries was such effect positive. Thus, during booming period, Nigerians tend to increase their demand for textile product from the UK, Sweden and Italy while they reduce their demand for textile from Canada and the US. This result is not surprising because market for textile product in Nigeria is dominated European countries, particularly the UK and Italy.

Nigerian population played a very significant role in the textile exports of Canada, the US, the UK and Italy. Increase in Nigeria population tends to increase demand for textile products from these countries. This relationship confirmed the theoretical underpinning of gravity model. Price deflator of Nigeria and the North America play significant role in textile exports with that of Canada being consistently notable. Increase in the trade partners' price

level leads to decrease in export demand for textile products. Thus in the case of Canada, the theoretical underpinning of price level is established. The export price index of Nigeria negatively and significantly affected textile exports even though the magnitude of effect was small. The negative effect shows that the higher the export price index of Nigeria, the lower the demand for textile from these countries.

Tariff on textile export from Canada was effective and relatively high. Tariff on textile export from other countries was ineffective and a change in tariff leaves textile export from these countries unaffected. In the case of remittances, there was positive and significant effect of remittances on the textile export of these countries to Nigeria. This implies that textile products are remittances friendly and it show that remittances are also spent on imported products particularly from countries that relax trade relation with Nigeria.

5.5.8.2 Gravity variables and Textile products (Imports)

Nigeria income level did not effectively impact on textile export to Canada, Sweden and Italy. The of income level of Canada, UK and Italy showed positive and significant effect on textile export. Further, all the countries showed positive income effect on textile import. This result is consistent with gravity expectations. The positive and significance effect can be traced to favourable trade liberalisation and the fact that foreign countries have preferences for the product. Although, tariff on Nigeria textile is low, it still acts as a drag to the smooth flow of the product to the developed world. This implies that Nigeria's textile product tend to face relatively stricter competition in the European countries.

Nigeria population positively and significantly affected textile export to all the countries except Italy where negative effect was established. Textile product in Nigeria is labour intensive and with increase in population, and hence increase in labour force, cost of production is expected to fall because there

will be easy access to labour. Low cost of production implies reduced price of textile product and hence low textile export price. Reduced export price makes the product become relatively cheaper in the world market and this raises the demand for this product. The negative effect in the case of Italy is informed by the country's ability to produce textile products in large quantity and with modern technology. Thus it is not unexpected that Nigeria textile product will be confronted with strong competition when it gets to Italy.

Price level of the US appeared not to play any significant role in textile Nigeria textile export to the country. Also, the price level of Nigeria did not significantly affect textile export to Canada, UK and Sweden. The export price index of Nigeria is significant to textile export to all these countries and the direction of effect was positive except in the UK and Italy. The higher the export price index of Nigeria, the lower the export demands for textile product by the UK and Italy, and the higher the export demand for textile by Canada, US and Sweden. The magnitude of effect informs us that the weight attached to the price of textile in Nigeria export product was remarkable.

Workers' remittances have a positive and significant effect on textile export demand of Canada, the UK and Italy. The reason for this is that these countries imposed low tariff on textile products. The low tariff tends to increase market access opportunities and this increases supply of textile to these countries. Thus, part of the increase in remittances provides additional fund to finance the production of textile products and hence increase in textile export.

5.5.8.3 Migration and Textile trade flow

Migration substituted for textile export in US, UK and Italy while complementarity link was observed in the case of Canada and Sweden. The magnitude of effect in the case of US, Sweden and UK was higher than the result of Kohli (2002), while it was much less in the case of Italy. The substitute link indicated that increase in the outflow of textile products to US,

UK and Italy led to decrease in outflow of migration. The reason for this is that due to the fact that textile is labour intensive product in Nigeria and it benefits favourably from trade liberalisation of US and EU. Also, Nigerian in these countries has high preference for textile. Thus, increased demand for textile implies employment in the textile industries and by implication, reduces the tendency to migrate.

It may also be the case that the role played by tariff on textile import from Nigeria is to discourage the competitiveness of Nigeria textile products in those countries. If demand for textile is high in those countries and if scarcity of labour is an important constraining factor to supply in the countries, then allowing for migration will help ease the problem. This is the prediction of our theoretical framework. It follows therefore that the channel through which migration substitute for import of textile product by the European countries from Nigeria is through the effectiveness of tariff and ageing. Thus, what our result established is that Nigeria migrants play an important role in the textile import demand of both the North America and Europe. While migration substitutes for textile import in Europe, it complements that of North America textile import from Nigeria.

The reason for complementarity link between migration and textile export from Canada and Sweden is made possible by comparatively large expansionary trade and migration policies. In these countries, although tariff imposed on Nigeria textile product was negligible – and indication of liberalized trade, we expect more textile products to be exported. Observably, supply response constraints pointed out by Oyejide (2008) tend to hamper this possibility and since migration policy is expansionary and generates pull effect, migration has to increase. Second, increase in emigration to these countries tends to lead to demand for home product and since tariff is negligible, it will be relatively cheap and easy to get these products.

In the case of the link between textile import of the trading partner and migration, there was a complementarity link in the case of Canada, Italy and

US but substitutability in the case of the rest two countries. These results follow the diverse effect of migration on product type as found in Iranzo and Peri (2009) and Golberg and Klein (1999). These countries are known for their downward review of immigration policy which allows for more immigrants. Thus, the expansionary migration policy of these countries together with migration network has tremendously reduced the implicit migration cost thereby making migration process less costly. Some of the emigrants were employed in the textile sector of these countries thereby reducing the cost of producing the good. And since tariff on textile import was small, importation becomes easy and the products are relatively cheaper.

Thus, it can be argued that Nigerian emigrants are influential in reducing cost of textile production in these countries while low tariff encourages inflow of the products at relatively cheaper price.

In the UK and Sweden, their migration policy is not largely expansionary compared to the other countries (as far as Nigeria is concerned). The implication of this is that migration cost will be relatively expensive compared to other countries and this discourages tendency to migrate. The production of textile depends on easy access to relevant imported capital goods. Since trade liberlisation reduces cost of importing these inputs, easy access to it tends to increase its production and hence increase employment. This could be the reason for substitute link observed.

CHAPTER SIX
SUMMARY CONCLUSION AND RECOMMENDATIONS

This chapter presents the summary of the findings and the conclusion drawn on the link between international trade and migration in Nigeria. The chapter also includes a section that proffers recommendations based on the findings. Moreover, area of further research as is informed by the limitations of the study is highlighted and discussed.

6.1   Summary

The motivation for this thesis was informed by the continuous interest of Nigerians to migrate to countries that account for the largest share of the country's trade. Thousands of Nigerians migrate to the advanced countries yearly due to reasons ranging from income gap, low market access for Nigeria goods, to proliferation of import substituting products. Yet it is unclear why this migration flow increases in the face of liberalized trade.

The government employed various trade policies both at the bilateral, regional and multilateral levels alongside domestic policies aimed at promoting trade, particularly in the non-oil sector. While there is no doubt that these policies have improved trade, it appears not to have stemmed migration. Although there is no seeming emigration policy in Nigeria restricting legal movement of labour in search for work, the fear of brain drain tends to make the government frown at outflow of productive workers.

Theories linking trade and migration do not agree on the direction of effect. While the classical theory showed substitutability, neoclassical and new trade theories predicted complementarity. Yet other theories demonstrated that it the relationship could be substitute, complement or no relation. Empirical evidence failed to unanimously pin down the link because results depend on the theory used, methodology adopted and technique employed. Be that as it

may, apart from the fact that very scanty evidence is available in Africa, the theories adopted appears not to capture some peculiarities of the continent. Such peculiarities include labour abundance, low per capita income and high unemployment coupled with incessant macroeconomic instability. Besides, to the best of our understanding, evidence from Nigeria is not readily available. We also argued in the thesis that investigating the link between migration and pattern of bilateral trade will further deepen the understanding of this link. Another contribution is that instead of treating migration or trade as purely exogenous as it was done in most studies, the two variables were treated as endogenous in the sense that the behavior of one depends on the situation of the other. Hence we argued that the issue of simultaneity and endogeneity must be treated.

The argument in our theoretical framework was that tariff and other trade barriers appear to dictate the type of link expected between trade and migration. In a labour abundant economy, if tariff is very high on the labour intensive products, migration will substitute for trade provided migration cost is affordable. However if tariff is not too high while migration cost is not too low then both migration and trade can coexist.

In order to establish the potency of the argument, we chose five of the major trading partners of Nigeria, of which two were from North America and the rest three from the EU. Incidentally, these countries are the major residents of Nigerians abroad. These countries have increased trade and migration relations with Nigeria in the recent time.

To establish the relation between trade and migration, we collapsed aggregate trade into their respective product classification using the Standard International Trade Code (SITC). These are agriculture products, agriculture raw materials, chemicals, food and beverages, manufactures, textile and petrol. An extended gravity empirical model based on modified Hecsher-Ohlin factor endowment theory developed by Mundell (1957) and extended by Markusen (1983) and Norman and Venable (1995) was employed to provide empirical evidence on the link between trade and migration in Nigeria.

The result from panel GMM, which captured the *first objective* of the thesis shows that there was a strong complementarity relationship between Nigeria import demand and migration. This could occur through at least two channels. First, reduction in tariff arising from trade liberalisation tends to increase import proliferation, and by implication, increases import demand due to the now cheaper products with the resultant effect of unemployment. With expansionary migration policy, the unemployment creates push effect and the tendency to migration increases. Second, increase in migration leads to increase in remittance inflows which in turn lead to increase in import demand. On the other hand, there was a strong and negative relationship between export and migration. This means that Nigeria has been substituting human labour for goods exports. The result confirmed the theoretical basis for trade and factor flow arising from factor (labour) abundant economy. Meanwhile it will imperative to investigate how strong these relationships are at the bilateral level. This is what led to the achievement of the second objective.

The *second objective* was interested in investigating these relationships at the country level. The result showed that while emigration responded positively to export to Canada, US and Sweden, it responded negatively in the case of Italy and the UK. The result of the link between migration and import was positive in the case of Canada, the US and Sweden while it was negative in the case of the other two countries. The variations in the relationship suggested that the examination of the link between trade and migration should go beyond aggregating all the countries because this will suppress country-specific information. The diverse result was informed by the differences in bilateral trade policy arrangements between Nigeria and each of these countries and also different migration policies adopted by the destination countries. But even at that, the fact that oil account for high proportion of Nigeria exports while manufactured products account for the bulk of the country's imports, exploring into the relationship between pattern of trade and migration will further provide more information about the link.

The relationship between pattern of trade and migration at the bilateral level is what the ***third objective*** sought to achieve. The result suggested that exports of agricultural products, textiles and food and beverages to Canada, UK and US were negatively associated with emigration. Increases in emigration to these countries were associated with increases in imports of manufactured products, food and beverages and chemicals with coefficients ranging from 0.02 to 0.76. However, increases in emigration were associated with decreases in imports of agriculture and textiles products with respective estimates ranging from -1.05 and -0.01. Agriculture, textiles, and food and beverages export elasticities of emigration to Italy and to Sweden were 0.02, 0.67, 0.05 and 1.91, 0.03 and 1.28. The manufactured import elasticities of emigration to these countries were -0.54 and -0.33 respectively.

The result did not totally agree with previous findings, particularly at the country and product levels. Notably the results are in line with the product specific findings of Kohli (1999) for some products such as textile. But for food and chemicals, the findings departed considerably.

6.2   Conclusion

The issue of migration-trade nexus in Nigeria appears to be less exploited perhaps because the thinking of the authorities and policy makers was that there cannot be any link between the two. This is because Nigeria depends heavily on oil exports and since this product is capital intensive, there may not likely be any seeming connection between trade and migration. As far as this statement is true, it must be noted that Nigeria does not trade in oil alone. Also, there are series of trade preferences that the country can take its advantage to increase its non-oil exports. Moreover, opening up to the rest of the world implies influx of foreign goods, part of which can be produced in the country. This inflow may tend to increase unemployment, particularly in the import competing sector. Further, the migration policy of the advanced countries tends to create demand pull for potential migrants. It follows therefore that a close inspection of trade and migration relations between

Nigeria and the developed countries can reveal the fact that both are somehow interconnected.

This thesis examined the link between trade and migration between Nigeria and selected developed countries. Overall, the result showing the link between trade and migration with particular focus on product varieties revealed that some products were substitute for migration while some were complements. Manufacture export and migration were complement goods in all the countries except the UK while export of textile substitute for migration in three countries (Canada, US and UK). In the same vein, food export was a substitute for migration in Canada, US, and the UK. Thus migration tends to complement export of goods that are capital-intensive, such that migration stimulated export of these capital-intensive products. The result of the migration model presented earlier also showed that exports and migration were complementary goods. Increase in exports will lead to increase in migration.

Overall, our result was in support of the studies carried out by Helliwel (1997), Iranzo and Peri (2009) and Collins et al (1999). In the case of country specific, our result was in agreement with the work of Golberg and Klein (1999) where they found that manufacture exports complement migration. However, our result departed from their own in the case of imports because in our result, the link was substitute. Meanwhile, our result supported the empirical findings of Iranzo and Peri (2009) where it was submitted that imports and some products tend to be substitutes.

Following these results, we conclude that bilateral trade situation in Nigeria has strong link with Nigeria migration experience. In particular, the movement of Nigeria to the developed countries has important implication for bilateral trade with the destination countries and so policy makers should be conscious of the resultant migration effect of trade policy. Furthermore, the authorities should note that the expansionary migration policy of the developed countries have implication for trade in particular product. The expansionary migration policy tends to have negative implication for Nigeria

manufactured exports but facilitates manufactured imports. Expansionary migration policy is also detrimental to export of Nigeria primary and textile products.

6.3 Recommendations

Following the findings of this thesis, it is imperative to provide some suggested recommendations. Our findings inform the government that trade and migration are interconnected. The trade relations between Nigeria and the advanced countries as a whole should be intensified if the authorities want to reduce the rate at which Nigeria migrate to the advance countries. As our result shows, all means to expand market access for Nigeria products in abroad will be good at reducing migration. Since tariff is already low, trade negotiations that will reduce nontariff barriers should be pursued. Our result shows that important and migration are complements. Thus any policy directed to reduce import demand will be good at reducing migration.

At the country-specific level, Nigeria government needs to intensify efforts on market access in the UK in order to reduce outflow of Nigeria workers into the country. Of course the government has been doing this but negotiations at the bilateral level while taking congnisance of the WTO requirements should be intensified. In particular, tariff levied on Nigerian goods by the UK authorities is still notable and hence reduces gains from trading with the country.

As our result shows, the magnitude of effect of tariff on Nigeria's exports to UK was higher than the effect of Nigeria's tariff on imports from the country. The implication of this is that Nigeria tends to be the net looser from engaging in trade with the UK. To reduce this loss, the authorities should engage in intensive negotiation for the reduction in the average tariff levied on Nigeria products. It must be noted that the type of workers officially migrating to the UK are the highly skilled and the most needed ones. Since increase in export will reduce migration, pressing for further reduction in tariff and increased market access will reduce the movement of Nigerians to this country.

Migration and trade are complementary in Canada and the US, any policy that increases trade will also increase migration. In order to capture gains from both movements, the authorities need to focus on how to take advantage of migration to improve exports. These advantages are the productive use of remittances, access to information and knowledge spillover. Our result shows that increase in remittances lead to increase in export demand. This implies that part of the money remitted by migrants is used in the production of export products. Hence government should design schemes that will ensure efficient and optimal use of remittances particularly in the tradable sector. For example, government can promise waivers for remittance receivers willing to invest in exportables. Moreover, government should put in place necessary infrastructure that will encourage potential investors in the exports sector.

In the case of information preference, although this was not captured in our findings, the literature is unequivocal about the strong influence of information effect. Nigerian in the Diaspora understands the economies of their country of resident and so, information pertaining to what and how the consumers in such economy need from Nigeria can be provided by them. Such information can be tapped perhaps through meetings, conferences and workshop in which some of these migrants will attend. Such meeting can be organized in the country or the migrants' country of resident. The meeting should also have in attendance some trade experts both from tertiary institutions and works of life. Strong communiqué should be drawn from such meeting and it must be strictly followed.

Some Nigerians have spent many years in abroad and so have acquired ample knowledge which can improve the export sector. In Mexico and India, the contribution of the Diaspora in the case of knowledge spillover has been immense and helpful in the export sector of the countries. Nigeria in the Diaspora can demonstrate their advanced knowledge of producing and marketing products to modify and expand the country's export base.

Our result showed that direction of effects of migration on trade in products was diverse across country and products. Thus government should recognize

the fact that trade policy need to be administered on product specific bases. Agriculture and food are labour intensive products in Nigeria. As our result shows, increase in agriculture export will have no effect on migration to Canada and the US. Thus market access for these products in those countries will not reduce migration. If the export of agriculture to the UK and Sweden increases, migration will fall. Tariff levied on Nigeria agriculture exports in the UK and Sweden was negligible. Hence tariff reduction appears not to be an important policy focus. Market access and the demolition/reduction of non-tariff barriers should be the policy focus.

Food exports are substitute for migration in Canada, UK and Italy. As our result shows, tariff levied on these products were negligible. Thus, market access policy will work well for food export and if this is pursued vigorously, migration will reduce. Nigeria government should focus on how to increase export of manufacturing products to the European countries, particularly in Sweden. Our result shows that if export demand can increase in this country, migration will fall. Alternatively, the government needs to create enabling environment for the production of export of manufactured goods. This will serve as a mechanism for reducing migration to these countries. Specifically, the authorities need to double-up bilateral trade relations in manufactured products with the EU. Since Nigeria is not a beneficiary of EBA preference, it can deepen and widen the bilateral trade relations with the UK and Sweden so as to strengthen increase market access for Nigeria manufactured exports.

Textile products are affected positively by migration. Since Nigeria authorities do not have power on emigration, the authorities should create enabling environment for the use of remittances in textile exports. In the UK, the government should not relent on her efforts in ensuring continuous market access for Nigeria textile product in order to reduce migration.

The authorities should encourage firms to engage in the production of exportable goods so that the country can capture the opportunity created by series of trade preferences. This can be done through the repositioning of the power sector, well-functioning financial sector, adequate monetary policy,

complete overhauling of the nation's infrastructure, particularly the power sector, sound governance institutions and relatively stable political terrain. These can be complemented with foreign direct investment in such industry like food, textile and manufactures since export of these products appear to slow down migration flow.

Apart from all these, our result shows that foreign income plays an important positive role in the export of Nigeria. Given the fact that American countries are major trading partner of Nigeria, any negative shock that leads to recession will also affect Nigeria export. In order to avert such development, it is advisable that the authorities should deepen and enlarge market access in Asia countries such as Japan, China and India. Increased trade relations with these countries will cushion any negative effect on our exports arising from economic recession in the North America.

6.4   Agenda for further research

Findings of this thesis suggested that migration and trade are interconnected even though the link has been generally neglected. Thus, this thesis may not be able to capture all the issues surrounding the interconnectedness. Hence further research is required in this area of study not only for academic pursuit but also policy directive. To this end, a list of possible research areas arising from the limitations of this thesis is presented.

First, since the thesis appears to be the first to comprehensively examine the link between migration and trade, data on migration do not represent the entire number of emigrants in the respective destination country. Our study made use of official immigration data, while ignoring those who enter their country of residents through clandestine means. It has been established in the literature that illegal emigrants are almost half the official figure. Observably this figure will vary across source countries. Recently, the OECD embarked on comprehensive documentation of immigrants in the OECD countries. But the dataset is only useful for panel data estimation because of its small time

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series. Hence further research is required in the area of migration databank, which can be collated using destination countries' relevant immigration data.

Second, perhaps paucity of data on immigrants contributed to the large estimator detected in some of the results. For instance, it will be difficult, in real life situation to expect 5% reduction in migration due to 10% increase in exports. However, since there is no other source of dataset on time series basis that is as comprehensive as the one we employed, the reported data still appear to be the best. Meanwhile, further research that will make use of comprehensive and updated data on migration can be carried out in this area so as to test the robustness of our result.

Third, the aggregate remittances data adopted in our models are questionable. Aggregate remittances comprise remittances from Africa, Asia, Europe, America and the Middle East. Thus, using aggregate data for a particular product at the bilateral level may cast doubt on our result. Data on country specific is yet to be fully developed. The only remittance matrix data we are aware of was the one developed by the World Bank (2010). But the dataset was only for 2009 and it cannot serve our purpose. Thus, time series data on country-specific remittances is needed and this can be an interesting area of research.

Fourth, a similar limitation to the case of remittances is the use of aggregate migration data in the product-specific models. The implication of this is that true picture about how emigration affect each product may not be completely established. The best practice is to use data on emigrants working in each industry. Such data is still at its infant stage and the only way by which it can be got is to liaise with the authorities in the host countries to help extract such data. This may not be an easy task except there is a strong connection. Thus, to see the true picture about the link between migration and trade in product varieties, research based on emigrants working in each industry can be carried out.

The availability of the dataset can be used to investigate the potency of our result. Specifically the link between migration and trade will be sharpened if data on Nigerians working in manufacturing sector, food sector and textile sector can be established. Furthermore, our study treated emigrants as homogenous even though they are heterogeneous in real life. Although all emigrants might be skillful, they differ in terms of level and type. These skill differentials are not captured in our study. Perhaps this may be the reason why some of the magnitude of effect was difficult to interpret. This is an important area of research and it can serve as value addition in the Nigeria trade literature.

Fifth, choosing two countries to represent North America and three countries to represent the EU is inadequate. Although these countries are Nigeria's major trading partners, other countries such as Germany, France, and Spain are important trading partners as well. The reason why these countries were not considered in the study was because of paucity of migration data. Thus, to better understand how the connection between migration and trade in the case of Nigeria and the EU, another dataset for Germany, France, and Spain can be developed and the result from such research can be compared with our own so as to check the robustness of our findings.

The author was aware of all these limitations and that is the reason for adopting alternative estimation technique to reduce the magnitude of error that might be committed in the process. Thus, in spite of all these limitations, the study was able to achieve its objectives even though further research can be carried out to deepen the received knowledge about migration-trade nexus in Nigeria.

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APPENDIX

Table A1: OLS Estimation Result showing the link between migration and (Exports)

	Canada Exports						
	Agric	**Agric raw materials**	**Chemicals**	**Food**	**Manufactures**	**Petrol**	**Textile**
CANDEFL	0.343	-0.597	-0.065	0.399	-0.037	-1.878	-0.178
	[-2.564003]	[-0.90095]	[-0.178448]	[2.501395]	[-0.124066]	[-1.325788]	[-0.908829]
CANXDX	-0.043	0.211	-0.028	-0.047	0.014	0.186	0.027
	[-1.660675]	[2.385194]	[-0.458859]	[-1.70154]	[0.26118]	[1.303219]	[0.880231]
LNCANGDP	3.914	-26.191	4.26	3.78	3.517	18.885	-0.809
	[1.585087]	[-2.271548]	[0.811251]	[1.517044]	[0.790185]	[0.757729]	[-0.240555]
LNCANMIG	0.101	-0.816	0.539	-0.027	1.494	5.249	-0.422
	[0.200317]	[-0.466172]	[0.465355]	[-0.044859]	[1.439271]	[1.314649]	[-0.524044]
LNNGGDP	-3.458	11.168	-1.088	-3.472	-1.187	0.617	-0.096
	[-3.022739]	[2.074271]	[-0.434334]	[-2.644724]	[-0.530536]	[0.045934]	[-0.057474]
LNPOPCAN	-14.425	139.617	-18.819	-17.054	17.989	200.052	46.285
	[-1.110113]	[2.771175]	[-0.54708]	[-1.225701]	[0.612934]	[2.107869]	[2.353238]
LNPOPNIG	12.755	-105.662	13.884	15.521	-20.364	-218.625	-41.982
	[0.89867]	[-2.134702]	[0.387816]	[1.02984]	[-0.649871]	[-2.11289]	[-1.864383]
LNREM	0.275	0.122	-0.965	0.266	-0.162	1.677	1.161
	[1.736692]	[0.152423]	[-2.753928]	[1.619084]	[-0.537418]	[0.955749]	
NGDEFL	-0.009	0.009	-0.015	-0.009	0.005	0.001	-0.016
	[-1.082278]	[0.393251]	[-0.796832]	[-0.960389]	[0.280027]	[0.012089]	[-1.576805]
NGEXDX	0.02	0.022	0.016	0.016	0.018	0.062	-0.007
	[1.60728]	[0.505841]	[0.513939]	[1.128083]	[0.726681]	[0.598915]	[-0.470286]
TARIFF	0.007	-0.559	-0.149	-0.007	0.064		-0.129
	[0.313042]	[-2.938249]	[2.010946]	[-0.395032]	[0.516794]		[-3.235568]
R-squared	0.89	0.85	0.67	0.85	0.53	0.43	0.92
Durbin-Watson stat	2.67	2.44	2.96	3	2.78	1.95	1.85

Table A2: OLS Estimation Result showing the link between migration and (Imports)

	Canada Imports						
	Agric	**Agric raw materials**	**Chemicals**	**Food**	**Manufactures**	**Petrol**	**Textile**
CANDEFL	-0.456	0.306	-0.051	-0.434	-0.045	0.73	0.352
	[-2.32584]	[0.663363]	[-0.476778]	[-1.986992]	[-0.6883]	[2.650307]	[1.410947]
CANXDX	0.038	-0.128	-0.064	0.018	-0.007	-0.015	-0.094
	[0.963667]	[-1.338924]	[-2.946543]	[0.400428]	[-0.541239]	[-0.269771]	[-1.888221]
LNCANGDP	-11.119	5.095	4.817	-10.75	2.052	-4.632	5.671
	[-3.252596]	[0.755895]	[2.941069]	[-3.230111]	[1.940555]	[-1.091142]	[1.483151]
LNCANMIG	0.106	-1.173	0.369	-0.352	0.032	-0.493	0.283
	[0.12384]	[-0.646053]	[0.875861]	[-0.401163]	[0.119866]	[-0.450533]	[0.288834]
LNNGGDP	4.432	-1.304	-0.24	2.886	1.659	-0.582	0.173
	[2.629396]	[-0.34964]	[-0.242507]	[1.229552]	[2.529901]	[-0.248395]	[0.074966]
LNPOPCAN	5.448	-46.679	-8.307	3.293	1.653	-63.312	-24.67
	[0.281312]	[-0.965883]	[-0.775135]	[0.159715]	[0.264056]	[-2.390739]	[-0.998884]
LNPOPNIG	6.322	38.575	1.425	10.291	-5.962	68.584	14.364
	[0.302595]	[0.747638]	[0.122771]	[0.449582]	[-0.859192]	[2.341899]	[0.535737]
LNREM	-0.08	0.486	0.341	-0.262	0.125	-1.167	0.514
	[-0.337019]	[0.864415]	[2.544968]	[-1.006495]	[1.593481]	[-3.588368]	[1.764061]
NGDEFL	-0.012	0.002	0.008	-0.004	0.002	0.015	0.004
	[-0.960716]	[0.079536]	[1.07445]	[-0.25218]	[0.467749]	[-0.87503]	[0.252249]
NGEXDX	-0.008	0.016	0.009	0.003	-0.002	-0.01	0.016
	[-0.624647]	[0.60101]	[1.326942]	[0.164711]	[-0.450784]	[-0.566401]	[1.04977]
TARIFF	-0.012	0.012	0.023	-0.065	0.015		0.096
	[-0.36801]	[0.059051]	[0.819294]	[-1.954812]	[0.414434]		[1.552419]
R-squared	0.82	0.41	0.79	0.84	0.83	0.83	0.61
Durbin-Watson stat	2.48	2.54	1.99	0.84	2.46	2.46	2.28

Table A 3: OLS result showing the link between migration and trade (Nigeria and United Kingdom)

	United Kingdom Exports						
	Agric	Agric raw materials	Chemicals	Food	Manufactures	Petrol	Textile
MIG	-0.014	0.086	-0.156	-0.068	-0.22	0.521	-0.316
	[-0.074683]	[0.298623]	[-2.404232]	[-0.354013]	[-2.187031]	[1.263377]	[-2.11369]
NGDEFL	1.832	0.009	-0.001	1.933	1.006	0.528	0.088
	[4.584961]	[2.149189]	[-1.174521[	[4.671063]	[4.623339]	[0.591438]	[0.271104]
NGEXDX	8.41	0.007	-0.002	9.286	3.279	-2.407	-5.721
	[1.923313]	[1.002973]	[-1.483422]	[2.050839]	[1.376845]	[-0.246416]	[-1.619153]
NGGDP	-8.435	-0.237	0.572	-9.368	-3.008	1.48	3.321
	[-2.398912]	[-0.498416]	[5.334607]	[-2.572921]	[-1.570862]	[0.188378]	[1.168758]
POPNIG	0.082	0.217	0.236	0.077	0.003	0.207	0.125
	[1.611875]	[0.034959]	[0.169157]	[1.466252]	[0.125256]	[1.814481]	[3.039284]
POPUK	-1.296	0.008	0.071	-1.408	-0.282	0.339	2.014
	[-1.592803]	[0.001599]	[0.062764]	[-1.671246]	[-0.637368]	[0.186704]	[3.063554]
REM	0	0.003	-0.024	-0.002	-0.001	0.004	0.005
	[-0.057839]	[0.043207]	[-1.346059]	[-0.617614]	[-0.620349]	[0.71629]	[2.457903]
TARIFF	-0.004			-0.004	-0.003	0.02	-0.002
	[-0.802318]			[-0.7675]	[-1.057201]	[1.857703]	[-0.483323]
UKDEFL	0.398	0.006	0.032	0.504	-0.01	0.347	0.345
	[1.858438]	[0.102473]	[2.378744]	[2.271528]	[-0.086654]	[0.725452]	[1.989047]
UKGDP	0.015	0.594	0.045	0.009	0.025	-0.074	-0.037
	[0.361128]	[0.524856]	[0.175657]	[0.207262]	[1.086674]	[-0.78822]	[-1.082743]
UKXINDX	-0.047	-0.01	-0.004	-0.051	-0.013	-0.041	-0.006
	[-5.056745]	[-0.694536]	[-1.33261]	[-5.346404]	[-2.605193]	[-2.000988]	[-0.861]
R-Squared	0.9	0.56	0.97	0.91	0.93	0.8	0.85
DW	1.76	1.59	2.19	1.94	1.92	2.15	2.32

Table A4: OLS result showing the link between migration and trade (Nigeria and United Kingdom)

	Agric	Agric raw materials	Chemicals	Food	Manufactures	Petrol	Textile
				United Kingdom Imports			
LNMIG	-0.429	-0.463	0.096	-0.376	-0.414	-4.487	-1.153
	[-2.245685]	[-1.502474]	[0.1537]	[-1.745552]	[-1.60243]	[-1.805241]	[-1.664071]
LNNGGDP	-0.127	-0.102	-3.732	-0.495	-0.525	-0.378	1.264
	[-0.301995]	[-0.149725]	[-2.803199]	[-1.057679]	[-0.953778]	[-0.064236]	[0.856564]
LNPOPNG	-2.576	-5.563	-14.41	-2.801	-0.127	-83.806	17.378
	[-0.610929]	[-0.824957]	[-1.07011]	[-0.582694]	[-0.022648]	[-1.515689]	[1.159597]
LNPOPUK	[2.987569]	3.494	14.153	4.108	-0.59	64.102	-25.546
	[0.484177]	[0.630723]	[1.286809]	[1.084717]	[-0.128909]	[1.424999]	[-2.083638]
LNREM	0.029	0.012	0.3	0.046	0.066	0.741	0.198
	[0.484177]	[0.127906]	[1.581807]	[0.733369]	[0.836626]	[0.984104]	[0.936868]
LNUKGDP	0.643	2.246	3.901	0.345	1.63	15.183	4.685
	[0.885045]	[1.927651]	[1.667282]	[0.401906]	[1.681744]	[1.540489]	[1.802902]
NGDEFL	-0.007	0	0.01	-0.007	-0.002	0.005	0.003
	[-2.301664]	[0.030113]	[1.029656]	[-2.276312]	[-0.602381]	[0.144823]	[0.29952]
NGIMDX	-0.004	-0.006	0.008	-0.002	0.001	-0.051	-0.011
		[-1.409731]	[-1.391287]	[0.82793]	[-0.462824]	[0.216289]	[-1.256069]
TARIFF	0.005	0.008	-0.013	0	0	0.101	0.005
	[2.108459]	[2.163442]	[-1.678068]	[-0.033566]	[0.147643]	[0.777907]	[0.840579]
UKDEFL	-0.019	-0.055	0.137	-0.007	-0.016	-0.451	0.088
	-0.516	[-0.928225]	[1.145211]	[-0.165124]	[-0.329544]	[-0.945598]	[0.662484]
UKIMDX	0.011	0.016	0.021	0.013	-0.01	0.325	-0.061
	1.344	[1.183899]	[0.761255]	[1.256946]	[-0.904838]	[2.554343]	[-2.010403]
R-Squared	0.76	0.63	0.7	0.78	0.58	0.46	0.9
DW	1.66	1.28	2.69	1.7	2.29	2.38	2.86

Table A5: OLS result showing the link between migration and Trade (United States)

				United States Exports			
	Agric	**Agric raw materials**	**Chemicals**	**Food**	**Manufactures**	**Petrol**	**Textile**
LNMIG	-0.672	-0.123	0.72	-0.71	0.378	1.369	-0.453
	[-1.590116]	[-0.36051]	[2.620888]	[-1.616946]	[1.292939]	[1.496194]	[2.937956]
LNNIGGDP	2.793	1.742	-0.285	2.84	0.508	3.375	-0.595
	[-1.964106]	[3.534743]	[1.417468]	[4.46318]	[1.483943]	[1.248465]	[-4.047342]
LNPOPNIG	-12.343	-6.953	2.546	-12.648	2.518	5.723	12.777
	[0.289943]	[-0.97908]	[0.684856]	[-1.379326]	[-0.621665]	[-1.931525]	[24.44837]
LNPOPUS	0.691	0.479	1.399	0.72	-0.793	0.709	-2.172
	[4.557226]	[0.160295]	[-0.716389]	[0.186604]	[1.19694]	[2.544853]	[-14.15075]
LNREM	0.373	0.141	-0.027	0.386	0.114	0.326	-0.026
	[-1.397914]	[2.170344]	[0.443466]	[4.591258]	[0.41195]	[0.299455]	[-0.37933]
LNUSGDP	5.673	1.126	-2.124	5.808	-0.969	-6.819	-5.372
	[0.185837]	[1.125518]	[0.578648]	[1.607161]	[-0.308218]	[0.088146]	[-3.025627]
NGDEFL	-0.008	0.001	0.004	-0.008	0.004	0.011	0.001
	[4.600278]	[0.247757]	[-0.510567]	[-2.015464]	[2.033913]	[1.862185]	[0.021258]
NGEXDX	0.002	0.002	0.003	0.002	-0.002	-0.024	-0.001
	[-2.908928]	[0.433442]	[1.291497]	[0.284786]	[1.750678]	[-1.330516]	[0.005006]
TARIFF							
USDEFL	-0.278	3.15	0.08	-0.283	0.116	-0.275	0.211
	[1.630353]	[-3.353981]	[-0.938575]	[-2.854685]	[-0.402317]	[-0.905313]	[0.116557]
USINDX	-0.046	-0.031	0.008	-0.047	-0.005	0.012	0.006
	[-3.16728]	[-2.695643]	[0.806223]	[-3.099304]	[-0.452022]	[0.37726]	[-0.024834]
R-Squared	0.88	0.69	0.67	0.88	0.8	0.68	0.88
DW	2.46	2.54	2.06	2.47	1.49	2.32	1.95

Table A6: OLS result showing the link between migration and Trade (United States)

	Agric	Agric raw materials	Chemicals	Food	Manufactures	Petrol	Textile
	United State Imports						
LNMIG	0.027	2.41	2.554	-0.833	0.757	0.165	2.938
	[0.040056]	[2.585114]	[1.377692]	[-1.124977]	[1.245307]	[0.371041]	[1.885612]
LNNIGGDP	-1.16	-2.797	-7.399	-1.133	-3.51	0.182	-4.047
	[-0.895263]	[-1.567428]	[-2.085262]	[-0.799982]	[-3.017403]	[0.213105]	[-1.357347]
LNPOPNIG	28.585	27.489	-7.391	28.415	-0.075	-0.297	24.448
	[2.316482]	[1.617937]	[-0.218738]	[2.106775]	[-0.006772]	[-0.036598]	[0.861035]
LNPOPUS	-14.982	-2.488	24.182	-18.039	5.447	-1.088	-14.151
	[-1.995602]	[-0.240732]	[1.176351]	[-2.198369]	[0.808366]	[-0.220472]	[-0.819154]
LNREM	-0.102	0.145	0.208	-0.219	-0.025	0.223	-0.379
	[-1.008532]	[1.032976]	[0.746908]	[-1.97128]	[-0.279144]	[3.339025]	[-1.622567]
LNUSGDP	-6.377	-13.526	-5.903	-3.967	-0.436	1.194	-3.026
	[-1.216222]	[-1.873653]	[-0.411166]	[-0.692308]	[-0.092695]	[0.346421]	[-0.250787]
NGDEFL	0.007	0.029	0.044	0	0.011	-0.004	0.021
	[1.139564]	[3.2199]	[2.48386]	[-0.029226]	[1.956818]	[-0.915135]	[1.412018]
NGEXDX	0.007	0.01	0.012	0.008	0.011	-0.001	0.005
	[1.459693]	[1.544874]	[0.89862]	[1.495534]	[2.45377]	[-0.4353]	[0.450234]
TARIFF	0	-0.004	-0.001	0	0	-0.002	-0.004
	[-0.057434]	[-0.659082]	[-0.096324]	[-0.085203]	[0.003677]	[-0.769066]	[-0.415666]
USDEFL	0.304	0.072	0.58	0.384	0.277	0.185	0.117
	[2.241706]	[0.382442]	[1.55927]	[2.586638]	[2.271334]	[2.077014]	[0.372934]
USINDX	-0.038	-0.007	0.085	-0.043	0.023	0.002	-0.025
	[-1.560734]	[-0.195848]	[1.255588]	[-1.602678]	[1.045651]	[0.102914]	[-0.437845]
R-Squared	0.59	0.64	0.59	0.6	0.72	0.92	0.85
DW	1.47	1.65	1.56	1.83	1.5	2.03	2.45

Table A7: OLS result showing the link between migration and trade (Sweden)

	Sweden Exports				Sweden Imports			
	Agric	**Manufacture**	**Textile**	**Petrol**	**Agric**	**Manufacture**	**Textile**	**Petrol**
LNNGDP	1.564	2.147	2.820	-6.052	-0.846	2.097	0.761	0.700
	[1.55799]	[4.56503]	[4.10065]	[-1.307417]	[-0.768482]	[1.254678]	[0.50416]	[0.53752]
LNPOPNG	19.096	-2.672	-3.183	-35.641	-5.971	11.986	9.195	-11.101
	[2.05136]	[-0.803928]	[-0.628681]	[-0.919411]	[-0.585846]	[0.886923]	[0.629191]	[-0.912442]
LNPOPSW	-135.928	0.601	-0.752	45.548	5.475	-18.735	-10.125	134.744
	[-1.593538]	[0.180183]	[-0.154053]	[1.20759]	[0.510557]	[-1.299392]	[-0.673356]	[1.403514]
LNREM	0.160	-0.017	-0.184	1.367	0.104	-0.162	-0.337	-0.297
	[0.40274]	[-0.231296]	[-1.514223]	[1.856113]	[0.684239]	[-0.809407]	[-1.499392]	[-0.730799]
LNSWGDP	0.920	-0.437	0.354	-0.617	0.902	2.142	0.675	-1.589
	[0.571796]	[-0.821687]	[0.381566]	[-0.095485]	[0.742955]	[1.327039]	[0.357384]	[-0.751532]
LNSWMIG	-4.860	3.316	1.819	10.530	5.938	-2.374	-4.793	0.016
	[-2.178045]	[2.808328]	[1.057502]	[1.232497]	[3.251056]	[-0.978261]	[-1.903355]	[1.320995]
NGDEFL	-0.003	-0.001	-0.019	0.009	0.013	-0.013	0.001	-0.011
	[-0.309407]	[-0.226313]	[-2.415135]	[0.209607]	[1.304948]	[-0.788369]	[0.077326]	[-1.229219]
NGXDX	-0.006	-0.013	-0.014	0.006	-0.001	-0.008	0.006	0.341
	[-0.355816]	[-1.905577]	[-1.338791]	[0.116697]	[-0.128591]	[-0.755539]	[0.555828]	[2.626048]
SWDEFL	0.090	-0.033	0.018	-0.362	0.239	0.017	-0.252	-0.027
	[0.82748]	[-0.534432]	[0.196146]	[-0.760086]	[2.095498]	[0.105689]	[-1.46347]	[-0.743867]
SWXDX	0.020	-0.016	-0.017	-0.025	-0.086	0.007	0.022	-0.028
	[2.338669]	[-3.765523]	[-2.411859]	[-0.582682]	[-2.523234]	[0.146022]	[0.469555]	[-0.858991]
TARIFF	179.561	0.005	0.000	0.729		0.062	-0.074	2.907
	[1.500953]	[0.481233]	[0.012282]	[0.761099]	[2.078749]		[-2.403662]	[1.433808]
R-Squared	0.76	0.89	0.85	0.54	0.86	0.77	0.72	0.56
DW	1.68	1.89	2.81	1.58	2.28	2.11	2.39	1.94

	USA EXPORT							US IMPORT						
Variables	Agriculture	Raw Materials	Chemicals	Food	Manufactures	Petrol	Textile	Agriculture	Raw Materials	Chemicals	Food	Manufactures	Petrol	Textile
lnmig	-0.587	-0.492	1.243	0.225	0.499	0.867	-0.48	0.459	2.355	2.738	-0.275	0.837	-0.518	3.852
	[-0.86]	[-2.14]**	[2.18]**	[[-0.35]	[1.23]	[0.60]	[-1.87]*	[0.57]	[1.87]*	[1.31]	[-0.35]	[1.81]*	[-0.86]	[2.36]**
lnpopng	-1.26	-0.244	1.648	-6.483	3.625]	5.011	10.93	2.198	4.453	-2.07	2.637	6.69	-6.181	5.03
	[-1.87]*	[1.28]	[0.35]	[-0.70]	[0.55]	[0.23]	[1.96]*	[1.79]*	[-1.78]*	[-0.30]	[1.29]	[0.91]	[-0.71]	[0.79
lnpop	0.542	-3.23	2.365	3.818	-0.305	-11.1	-2.25	-1.85	-2.261	6.989	4.225	5.335	9.869	-7.08
	[0.21]	[-0.16]	[0.90]	[1.95]*	[-0.10]	[-0.28]	[-1.81]*	[-1.37]	[-0.18]	[1.17]	[-1.41]	[1.07]	[-1.79]*	[-0.50]
ngdefl	-0.009	-0.003	0.005	-0.007	0.005	0.014	0.001	0.009	0.029	0.045	0.002	0.011	0.009	0.026
	[2.12]**	[-0.88]	[1.03]	[-1.62]	[1.21]	[0.90]	[0.29]	[1.79]*	[2.63]**	[2.89]**	[0.34]	[2.29]**	[1.71]*	[1.55]
defl	-0.245	-0.224	0.046	-0.191	0.129	-0.262	0.179	0.262	0.064	0.592	0.336	0.362	0.135	0.058
	[-2.45]**	[-2.63]***	[0.65]	[-1.99]*	[2.10]**	[-1.00]	[3.41]***	[1.98]*	[0.51]	[1.84]*	[2.10]	[4.58]***	[1.45]	[0.17]
lngdp_nig	2.63	1.639	-0.107	1.398	0.362	3.554	-0.35	-1.55	-2.663	-7.63	-1.653	-3.395	1.327	-4.981
	[3.58]***	[3.86]***	[-0.23]	[1.45]	[0.86]	[1.34]	[1.97]*	[1.18]	[-1.78]*	[-2.28]**	[-1.09]	[-3.67]***	[1.25]	[-1.57]
lngdp	5.193	4.063	-2.51	-3.701	-1.92	-4.011	4.342	4.269	-11.87	-5.85	-1.999	-4.749	9.844	-1.106
	[2.21]**	[1.74]*	[-1.31]	[-0.56]	[-0.81]	[-0.27]	[-2.37]**	[1.73]*	[-1.97]*	[-0.39]	[-0.29]	[-1.46]	[1.25]	[0.12]
lnrem	0.386	0.112	0.007	0.251	0.139]	0.365	-0.04	-0.1	0.139	0,236	-0.214	0.033	0.309	-0.359
	[3.89]***	[2.24]**	[0.008]	[1.81]*	[2.42]**	[21.31]	[-0.85]	[-1.03]	[-1.04]	[0.78]	[-2.17]	[1.79]*	[3.56]***	[1.77]*
tariff	0.003	0.005	-0.001	0.002	-0.003	-0.002	0.001	-0	-0.004	-0	0.002	0.001	0.001	-0.006
	[1.76]*	[5.93]***	[-0.40]	[1.09]	[-2.25]**	[-0.47]	[0.65]	[1.68]	[-1.10]	[-0.28]	[-0.66]	[0.04]	[-0.03]	[-1.12]
index	-0.49	-0.34	0.005	-0.41	-0.003	0.013	0.005	0.039	-0.009	0.092	-0.042	0.034	0.007	-0.019
	[-5.04]***	[-2.92]**	[0.70]	[-3.17]***	[-0.27]	[0.61]	[0.57]	[-1.40]	[-0.26]	[1.22]	[-1.40]	[1.70]*	[-0.43]	[-0.39]
ngindex	0.004	0.045	0.002	0.011	-0.002	-0.256	-0	0.011	0.011	0.012	0.012	0.006	-0.004	0.011
	[0.80]	[0.73]	[0.39]	[1.79]*	[-0.54]	[-1.65]	[0.85]	[2.26]**	[2.41]**	[1.46]	[2.08]	[1.74]*	[-0.95]	[1.05]

Table A9The complementarity/substitutability between migration and trade 2sls result (Nigeria and UK)

	UK EXPORT							UK IMPORTS					
	Agriculture	Raw Materials	Chemicals	Food	Manufactures	Manufactures	Petrol	Textile	Agriculture	Raw Materials	Chemicals	Manufactures	Petrol
IG	0.111	0.048	-0.139	0.119	-0.212	-0.212	0.591	-0.44	-0.24	-0.6	0.016	-0.604	-6.043
	[0.46]	[0.16]	[-1.79]*	[0.45]	[-2.04]**	[-2.04]**	[1.37]	[-2.76]**	[-1.81]*	[-1.19]	[2.01]**	[-2.20]**	[-1.77]*
DP	-1.004	-0.925	0.076	-1.096	-0.374	-0.374	-0.98	1.78	-0.01	0.65	2.435	1.159	0.914
	[-1.46]	[-0.73]	[-0.28]	[-1.48]	[-1.12]	[-1.12]	[-0.38]	[2.31]**	[-1.61]	[1.85]*	[0.88]	[1.02]	[-0.08]
PNG	1.923	0.578	0.587	2.09	0.894	0.894	1.524	-0.17	-0.07	0.07	Variables	-0.357	4.531
	[5.46]***	[0.85]	[3.18]***	[5.69]***	[3.54]***	[3.54]***	[1.1]	[-0.41]	[-0.58]	[0.11]	[-1.83]*	[-0.65]	[2.10]**
PNG	6.206	9.027	0.671	6.605	3.401	3.401	-2.06	-4.16	0.67	2.86	-8.164	2.401	2.066
	[1.66]	[1.26]	[0.46]	[1.54]	[1.92]	[1.92]	[-0.19]	[-0.93]	[0.15]	[0.37]	[-0.5]	[0.36]	[0.38]
OP	6.755	-7.112	-0.187	-7.306	-2.895	-2.895	65.92	2.34	1.01	-2.4	8.7819	-2.641	-9.309
	[-2.14]**	[-1.21]	[-0.18]	[-2.05]**	[-2.19]**	[-2.19]**	[1.39]	[0.64]	[0.28]	[-0.37]	[1.65]	[-0.50]	[-0.93]
EX	-0.046	-0.018	-0.005	-0.051	-0.013	-0.013	-0.05	-0.01	0	0.01	0.0214	0.008	0.148
	[-5.68]***	[-1.38]	[-1.58]	[-6.13]***	[-2.70]**	[-2.70]**	[-2.06]**	[-0.8]	[1.71]*	[0.69]	[-0.04]	[-0.46]	[0.87]
DEX	-0.003	0.002	-0.002	-0.003	-0.002	-0.002	0.005	-0	-0	-0	1.66	0.599	-0.154
	[-0.84]	[-0.22]	[-1.41]	[-0.80]	[-0.67]	[-0.67]	[0.31]	[-0.23]	[-0.66]	[-1.48]	[-1.54]	[0.79]	[-2.61]**
EFL	-0.001	0.009	-0.001	-0.002	0.001	0.001	0.002	0.01	-0.01	0	0.0043	-0.002	0.016
	[-0.13]	[3.29]***	[-1.23]	[-0.55]	[0.61]	[0.61]	[0.37]	[3.27]***	[-2.13]**	[2.68]**	[0.46]	[-0.77]	[0.52]
FL	-0.02	0.884	0.046	-0.036	0.049	0.049	-0.04	0.02	0.01	0.11	0.3455	0.059	0.673
	[[-0.37]	[1.06]	[2.39]**	[-0.55]	[1.96]*	[1.96]*	[-0.25]	[0.32]	[0.1]	[1.05]	[1.87]*	[0.79]	[0.70]
EM	0.088	0.026	-0.015	0.088	0.017	0.017	0.225	0.13	0.08	0.13	0.3638	0.089	1.061
	[1.78]*	0.40]	[-0.74]	[1.43]	[0.67]	[0.67]	[1.84]*	[3.42]***	[1.51]	[1.91]*	[1.76]*	[1.01]	[1.63]
FF	0.359	-0.659	-0.037	0.435	0.016	0.016	-0.4	0.44	-0.54	-0.6	-0.407	0.001	0.03
	[2.21]**	[-2.39]	[-0.67]	[2.40]**	[0.21]	[0.21]	[-0.51]	[2.92]**	[-2.79]**	[-1.78]*	[-1.79]*	[0.48]	[0.16]

Table A10 The complementarity/substitutability between migration and trade 2sls result (Nigeria and Canada)

Variables	CANADA EXPORTS							CANADA IMPORTS						
	Agriculture	Raw Materials	Chemicals	Food	Manufactures	Petrol	Textile	Agriculture	Raw Materials	Chemicals	Food	Manufactures	Petrol	Textile
LNMIG	0.194	-1.102	-2.372	3.701	-1.588	-2.366	-3.286	0.062	-0.347	0.219	-0.57	0.241	-2.276	-0.125
	[0.38]	[-0.44]	[-0.78]	[1.27]	[-0.71]	[-0.65]	[-1.31]	[0.06]	[-1.74]*	[0.41]	[-0.44]	[0.58]	[-1.17]	[-2.41]**
LNGDP	4.332	1.850	10.252	4.618	-1.757	-2.629	-2.511	-1.543	4.89	0.054	-1.48	1.943	-5.563	5.210
	[2.30]**	[0.12]	[1.25]	[0.28]	[-1.02]	[-3.82]	[-1.76]	[-3.33]***	[1.06]	[1.91]*	[-3.66]***	[1.85]*	[-1.06]	[1.22]
LNREM	0.285	1.027	-1.160	-0.065	-0.940	-0.761	1.717	0.041	0.371	0.213	-0.12	0.107	-1.393	0.196
	[1.77]*	[0.93]	[-1.51]	[-0.09]	[-1.45]	[-0.72]	[2.47]**	[0.12]	[0.56]	[1.72]*	[-0.23]	[0.79]	[-2.58]	[0.44]
LNGDPNG	[1.77]*	-2.618	-2.600	-5.566	-1.305	-3.514	6.181	5.303	-3.485	4.384	4.003	1.614	0.676	-2.580
	[-3.88]***	[-0.88]	[-0.76]	[-1.17]	[-0.35]	[-0.57]	[1.78]*	[2.75]**	[-1.07]	[3.01]***	[1.89]*	[1.93]*	[0.21]	[-1.79]*
LNPOPNIG	1.079	2.379	2.867	1.706	2.705	-2.800	-0.466	6.673	2.684	-2.732	6.285	-1.212	4.114	-0.179
	[0.81]	[0.17]	[0.52]	[0.25]	[0.35]	[-2.82]**	[-0.68]	[0.26]	[1.18]	[-0.64]	[0.66]	[-1.23]	[1.23]	[-0.01]
LNPOP	-1.676	1.687	-1.650	-3.884	59.104	0.916	1.789	-4.721	-3.843	2.945	-5.94	1.099	-3.037	2.378
	[-1.07]	[0.08]	[-0.17]	[-0.24]	[0.43]	[3.57]***	[1.27]	[0.09]	[-0.77]	[0.75]	[-0.34]	[0.62]	[-0.23]	[0.45]
NGDEFL	-0.010	0.028	-0.013	-0.016	-0.008	0.003	-0.009	-0.119	0.005	0.007	-0.01	0.004	0.009	0.002
	[-1.36]	[0.64]	[-0.46]	[-0.51]	[-0.29]	[0.07]	[-0.32]	[-0.95]	[0.20]	[1.32]	[-0.38]	[0.73]	[0.39]	[0.12]
DEFL	0.323	-0.092	0.205	-0.230	0.799	-0.272	0.904	-0.453	0.244	-0.058	-0.41	-0.065	0.849	0.308
	[2.71]**	[-0.22]	[0.30]	[-0.43]	[1.77]*	[-0.37]	[1.95]*	[-2.40]**	[0.42]	[-0.52]	[-1.71]*	[-0.95]	[2.59]**	[1.29]
INDEX	-0.041	0.002	-0.019	-0.071	-0.053	0.094	-0.068	0.043	-0.147	-0.057	0.023	-0.006	-0.027	-0.101
	[-1.89]*	[0.02]	[-0.29]	[-0.66]	[-0.57]	[0.63]	[-0.71]	[1.00]	[-1.62]	[-2.55]	[0.47]	[-0.54]	[-0.98]	[-1.87]*
NGINDEX	0.015	-0.002	-0.047	0.075	-0.027	0.066	-0.088		0.035	0.008	-0.01	0.001	-0.027	0.029
	[1.27]	[-0.06]	[-0.79]	[1.62]	[-0.65]	[1.00]	[-2.06]**		[1.12]	[0.84]	[-0.32]	[0.05]	[-0.98]	[1.58]
TARIFF	-0.003	-532.543	0.050	-0.001	0.222	-0.008		-0.008	0.005	0.278	-0.06	0.006	-0.003	-0.027

Table A11: The complementarity/substitutability between migration and trade 2sls result (Nigeria and Italy)

	ITALY EXPORTS				ITALY IMPORTS			
	Agriculture	Manufacture	Petrol	Textile	Agriculture	Manufacture	Petrol	Textile
	2.930	0.372	1.552	0.500	0.164	1.637	7.106	1.064
Lnmig	[2.20]**	[2.21]**	[0.45]	[0.93]	[0.28]	[0.45]	[0.75]	[0.84]
	49.907	13.200	35.844	26.709	0.176	1.686	11.066	3.461
lngdp_italy	[2.08]**	[5.61]***	[0.79]	[2.91]**	[0.28]	[1.32]	[1.79]*	[2.46]
	-0.885	0.720	-1.458	-0.426	-0.258	-1.287	-5.496	0.074
lngdp_ng	[-0.54]	[3.74]***	[-0.47]	[-0.61]	[-0.45]	[-0.47]	[-0.73]	[0.07]
	0.406	0.010	0.278	0.127	0.130	0.550	4.017	0.805
Lnrem	[1.89]*	[-1.95]*	[0.42]	[1.05]	[0.78]	[0.67]	[1.86]*	[2.08]*
	0.002	-0.067	-0.087	-0.019	0.010	0.001	0.487	0.039
Tariff	[0.76]	[0.20]	[-1.45]	[-0.96]	[1.17]	[0.47]	[1.64]	[1.08]
	-9.784	0.226	-0.443	2.138	0.828	-14.997	-115.288	-9.640
lnngpop	[-1.06]	[-0.16]	[-0.02]	[0.51]	[0.17]	[-0.53]	[-1.49]	[-0.69]
	77.550	-1.747	-14.959	6.099	-24.607	83.694	1380.693	3.759
Lnitpop	[0.88]	[-3.22]***	[-0.11]	[0.16]	[-1.14]	[0.54]	[1.78]*	[0.31]
	0.000	-0.012	0.044	-0.007	-0.003	0.012	-0.066	0.019
Itlxdx	[-0.01]	[-0.08]	[1.04]	[-0.79]	[-0.46]	[0.31]	[-0.40]	[0.65]
	-0.029	0.000	-0.035	-0.011	0.004	-0.006	-0.063	-0.020
Ngexdx	[-1.46]	[2.19]**	[-0.85]	[-1.51]	[1.35]	[-0.51]	[-0.80]	[-2.01]
	0.012	0.004	0.039	0.005	0.005	0.004	-0.047	0.014
Ngdefl	[0.93]	[-1.69]	[1.44]	[1.46]	[1.39]	[0.2]	[-0.62]	[1.87]*
	[-0.0480819]	-0.034	0.296	-0.006	0.018	0.013	0.074	0.243
Itldef	[-0.23]	[-1.04]	[1.08]	[-0.1]	[0.33]	[0.09]	[0.09]	[1.79]*

Table A12: The complementarity/substitutability between migration and trade 2sls result (Nigeria and Sweden)

Variables	SWEDEN EXPORTS				SWEDEN IMPORTS			
	Agriculture	Manufacture	Petrol	Textile	Agriculture	Manufacture	Petrol	Textile
	-6.353	4.067	1.655	1.865	2.000	1.188	-0.283	1.219
Lnswmig	[-2.77]**	[2.58]**	[1.78]*	[1.19]	[3.21]***	[0.41]	[-0.84]	[1.83]*
	-1.893	-0.525	1.234	0.323	-1.451	-1.737	-1.900	1.247
Lnswgdp	[-1.82]*	[-1.01]	[0.26]	[0.29]	[-0.67]	[-0.76]	[-1.75]*	[2.55]**
	1.335	2.122	-0.936	2.818	-0.292	3.859	4.043	0.543
Lnngdp	[1.36]	[5.20]***	[-1.91]*	[3.85]***	[-0.19]	[1.85]*	[0.4]	[1.68]
	1.347	-3.626	-3.971	-3.133	-1.907	-1.309	0.636	-0.773
Lnpopng	[2.33]**	[-0.95]	[-2.04]**	[-0.63]	[-1.22]	[-0.96]	[1.84]*	[1.39]
	-1.891	1.643	2.984	-0.767	1.122	2.263	-0.793	-2.864
Lnpopsw	[-1.79]*	[0.43]	[2.40]**	[-0.16]	[1.77]*	[1.97]*	[-1.37]	[-2.43]**
	0.029	-0.016	-0.027	-0.017	-0.100	-0.017	-0.110	0.162
Swxdx	[3.84]***	[-4.07]***	[-0.56]	[-2.17]**	[-2.23]**	[-0.46]	[-0.57]	[1.06]
	0.005	-0.018	-0.004	-0.014	-0.008	-0.024	-0.034	-0.086
Ngxdx	[0.36]	[-2.4]**	[-0.08]	[-1.29]	[-0.72]	[-2.22]**	[-0.53]	[-1.94]*
	0.002	-0.001	-0.003	-0.019	0.006	-0.016	0.108	0.005
Ngdefl	[0.17]	[-0.22]	[-0.08]	[-2.17]**	[0.48]	[-1.08]	[1.24]	[1.07]
	0.141	-0.033	-0.443	0.019	0.224	0.141	1.776	-0.495
Swdefl	[1.35]	[-0.65]	[-1.03]	[0.18]	[1.75]*	[0.92]	[1.8]*	[-0.9]
	-0.442	-0.022	1.620	-0.188	-0.514	-1.051	-0.466	1.581
Lnrem	[-2.98]**	[-0.29]	[2.59]**	[-1.67]	[-1.35]	[-1.95]*	[-0.71]	[-2.57]**
	-0.145	0.004	0.934	0.000	0.053	0.031	-0.245	-0.003
Tariff	[-4.36]***	[0.38]	[1.35]	[-0.01]	[0.44]	[0.76]	[-1.92]*	[-2.02]**