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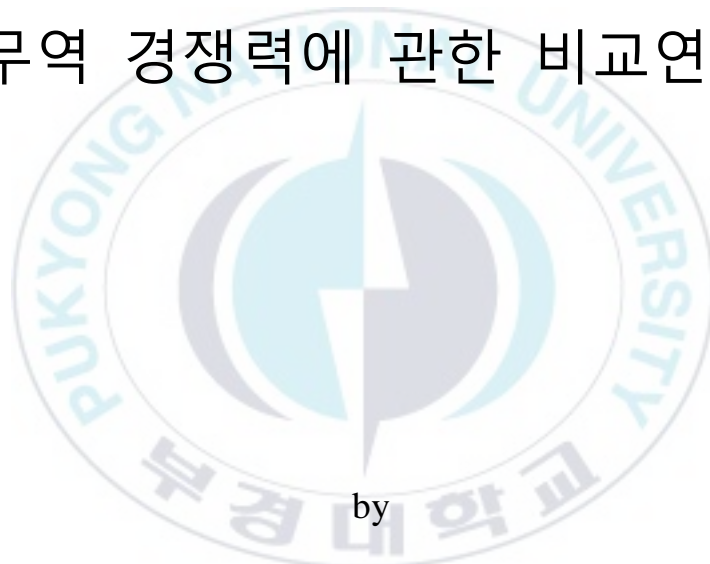
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Thesis for the degree of Master of Arts

A Comparative Study on the International
Trade Competitiveness of Kenya and Korea
and the Determinants of their Exports

케냐와 한국의 수출 결정요인과 국제
무역 경쟁력에 관한 비교연구



by

Geoffrey Musyoki Kitetu

Department of International and Area Studies,

The Graduate School,

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August 21, 2015

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Advisor: Prof. Dr. Jong-Hwan Ko

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Geoffrey Musyoki Kitetu

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교연구

A thesis

by

Geoffrey Musyoki Kitetu

Approved by:

Prof. Ho Seon Hwang (황 호 선 교수님)

(Chairman)

Prof. Dr. Jong-Hwan Ko (고 종 환 교수님)

(Member)

Prof. Utai Uprasen (우프라센 우타이 교수님)

(Member)

August 21, 2015

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Geoffrey Musyoki Kitetu

*Department of International and Area Studies, The Graduate School,
Pukyong National University*

Abstract

Many modern liberal as well as orthodox classical economists believe that trade is the corner stone of sustainable economic growth and therefore countries promote their exports so as to grow their economy. Kenya is now classified as a lower middle income country after rebasing her economy in 2014, while Korea is classified as a developed country. Bilateral trade relations between the two partner states have been improving rapidly as evidenced by the increased overall trade and diplomatic engagements. To promote trade, comparative trade advantage is usually of paramount importance. The question then arises; in which economic sectors does Kenya have competitive advantage over Korea and vice versa? What determines their exports? This was the background upon which this study was established. Better terms of trade through improved production efficiency and export diversification remains one of the corner stone's towards economic prosperity. This study carried out empirical analysis using econometric models one being the Revealed Comparative Advantage (RCA) and the Gravity trade model approach. CA estimation was applied to measure the international trade competitiveness of Kenya and Korea. This was done on ten major trading sectors between the two partners for the period 2000 to 2011. According to the RCA empirical results, Kenya had revealed comparative advantage on sectors HS 03, HS 09, HS44, HS49, and HS7), while Korea showed strong Comparative advantage on sectors; HS63, HS68, HS74, HS84 and HS92. Gravity model was utilized in the evaluation of mirror data to find the real determinants of exports between the two countries and their bilateral trade partners. Complementary exogenous parameters such as labor productivity, exchange rate and FDI will be augmented to the Initial model. Hausman test results illustrated that the Random Effect model (ECM) was most suitable for our data. In the light of the results possible policy recommendations have been suggested. Empirical outcomes show that distance had statistically significant negative impact; for both countries, GDP had significant positive effect on bilateral trade for both Kenya and Korea. GDP per capita for exporter (Kenya or Korea) and that for importer or bilateral partners had significant negative impact on 50 country set for Kenya and 50 and 30 country sets for Korea. Exchange rate had significant negative impact for Kenya throughout but mixed and significant impact on exports for Korea's exports, while labor productivity had consistent positive and significant effect for Korea. FDI had a negative impact for 30 country set for Kenya only. Adjacency and membership to COMESA trading bloc were found to have a positive correlation to Kenya's export trade. 50 country set and the 30 country set were found to be most appropriate in explaining bilateral trade flows for Kenya and Korea respectively.

Keywords: Revealed Comparative Advantage, Gravity model, Panel data, Pooled OLS regression, Fixed Effect, Random Effect, Kenya and Korea

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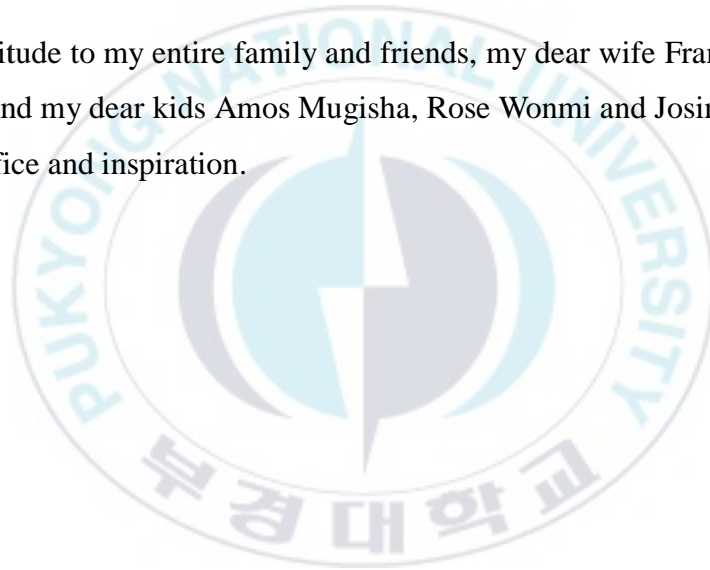


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Acronyms

AfDB	Africa Development Bank
AEO	Africa Economic Outlook
BOP	Balance of payment
CA	Comparative Advantage
CD	Comparative Disadvantage
CBK	Central Bank of Kenya
CEPI	Comparative Export Performance Index
CIPI	Comparative Import Performance Index
COMESA	Common Market for East and South Africa
DRC	Domestic Resource Cost
EAC	East African Community
ECM	Error Component Model
ERS	Economic Recovery Strategy
EU	European Union
FEM	Fixed Effect Model
FDI	Foreign Direct Investment
FIW	ForschungsschwerpunktInternationalewirtschaft
GDP	Gross Domestic Product

GDPPC	Gross Domestic Product Per Capita
HS	Harmonized System
IGAD	Inter-governmental Authority on Development
IMF	International Monetary Fund
KNBS	Kenya National Bureau of Statistics
KITA	Korea International Trade Association
KOICA	Korea International Cooperation Agency
LDC	Less Developed Countries
LSDV	Least Square Dummy Variables
MDG	Millennium Development Goals
MOU	Memorandum Of Understanding
MRA	Meta Regression Analysis
NAFTA	North American Free Trade Agreement
PLS	Panel Least Squares
PPML	Poisson pseudo maximum likelihood
RCA	Revealed Comparative Advantage
RMA	Relative Import Advantage
ROK	Republic of Kenya or Republic of Korea
RTA	Relative Trade Advantage
RXA	Relative Export Advantage

REM	Random Effect Model
S.E	Standard Error
SSA	Sub- Saharan Africa
UAE	United Arab Emirates
UK	United Kingdom
UN Comtrade	United Nations Commercial Trade
USA	United States of America
US\$	United States Dollar
VISION 2030	Kenya's Economic Blue print title
WDI	World Development Indicators
WITS	World Integrated Trade System
WTO	World Trade Organization



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CHAPTER 1 INTRODUCTION

1.1 Background

Kenya has adapted a market based economy in which the state maintains investment in strategic sectors of the economy in addition to upholding a liberalized external trade model. The 2015 economic outlook is positive ¹with GDP growth expected to surpass the 6% growth mark, due to good performance in major sectors of the economy which include; tourism, Agriculture, transport, telecommunication and construction among others.² According to a World Bank press release on March 15, 2015, the country is set to be one of the fastest growing economies. The report also projects the Kenyan economy to grow by 6.6% in 2016³ and expects a positive trajectory of 7% in 2017.⁴

In order to accelerate investment, the government has undertaken numerous regulatory reform frame works to entice local and foreign investors which include, the establishment of the export processing zone, a one stop shop for company registration and reduction in the number of licenses required for business operation. Due to its location and advanced social and physical infrastructure, Kenya is the preferred point of entry into the African market after S. Africa.

¹ Waiguru (2015).

² The Kenya national Bureau of Statistics 2014 Kenya economic report.

³ See <http://www.businessdailyafrica.com/2015-economic-growth-forecast-raised-to-6-9-pc/-/539546/2596734/-/15c4totz/index.html>.

⁴ Gaye (2015).

Upon independence Kenya embarked on rapid economic growth initiatives which included public investment, agricultural incentives and incentives on industrial investments to commercial enterprises. This yielded an average annual growth rate of above 6.5% for 10 years. During the said period, agricultural production grew by almost 5% on average. Since the mid 1970's economic growth for Kenya took downward trend due to unfavorable business environment; increase in oil prices, import substitution policy, tight import controls, foreign exchange restrictions and also lack of export incentives. In the beginning of 1990's, Kenya experienced its worst economic recession since independence with GDP stagnating, while agriculture which is the backbone of Kenya's economy came to a halt leading to stagflation.⁵ With support from the World Bank and the International Monetary Fund (IMF), the Kenyan government in 1993 took bold economic reform programs intended not only to jumpstart the economy but also to liberalize it. This led to removal or elimination of foreign exchange restrictions, price controls and import licensing, reduction of the wage bill (reduction in number of civil employees) and the privatization of state owned corporations. As in the Reagan era the Kenyan government also introduced conservative fiscal and monetary policies.⁶

⁵ Stagflation happens during slowdown in economic expansion coupled with sharp increase in prices or inflation such as during the 1970's when the developed world experienced economic contraction and inflation due to sharp oil price hikes in the international market, as happened in the United States (USA) during which there was high unemployment rate, before Reagan became president.

⁶ In order to lower inflation and grow the American economy, Reagan introduced stringed economic policies including but not limited to restriction of money supply, lowering government consumption, minimization of government controls and regulations as well as reduction of capital gains tax and federal income taxes which came to be known as Reaganomics.

There has been fundamental foreign policy shift by Kenya as the government tries to align its operations in order to achieve its national aspirations. During independence Kenya's main goal was based on growing the economy to eradicate poverty, diseases and illiteracy referred to as the 3U's (*Umaskini, Ugonjwa and Ujinga respectively*) in Kiswahili language. The same challenges still remain to date. However with Kenya's Vision 2030 economic blue print, Kenya aims to transform herself into an industrialized middle income country by 2030 and thereby improve living standards of its people by reducing poverty and unemployment.

Kenya's "Economic diplomacy" seems to be bearing tangible results. There has been high level interaction between Kenyan and Korean government officials⁷ which has led to the establishment of the Kenyan Embassy in Korea in 2007. Kenyan exports to Korea have increased significantly by almost 125%, Korean investments to Kenya tremendously increased by over 3400%, Korean Overseas Development Aid (ODA) to Kenya have grown by about 90 times, while Korean tourists to Kenya have risen by over 150% in addition to the increased value of scholarships to Kenyan students⁸ and Educational exchanges and cooperation.⁹

1.2 Objectives

The objective of this research is to analytically explore and evaluate Kenya's

⁷ See <http://ken.mofa.go.kr/english/af/ken/mission/greetings/index.jsp>.

⁸ Kitau (2013).

⁹ See <http://www.businesskorea.co.kr/article/4633/exporting-expertise-2nd-kaist-be-built-kenya>.

economic performance since independence and its main trading sectors. Secondly the research aims to quantify the international trade competitiveness of both Kenya and Korea as potential bilateral partner states. Thirdly, using econometric models the author intends to find the fundamental determinants of exports of both countries (Kenya and Korea). Another very important objective is the contribution to the existing literature of studies carried out on bilateral trade between Kenya and Korea if any. It is the author's belief that improved bilateral trade relations between Kenya and Korea will have mutual economic and social benefits to both nations.

In addition the Research will also try to establish the level of trade complementarity between the two trading partners and identify the areas of trade specialization in which each partner has competitive advantage. The author looks forward to formulating a comprehensive economic paper on trade between the two bilateral partners which can offer timely insights on the areas of cooperation that can offer optimum mutual social welfare and economic benefits.

1.3 Method

This study investigated bilateral trade on two areas of interest. Part one empirically analyzed the international trade competitiveness of both Kenya and Korea using the Revealed Comparative Advantage (RCA) model for the period 2000 to 2010. This was carried out on ten major trading sectors between Kenya and Korea as bilateral trading partners. Furthermore, results show that trade between the two bilateral trade partners is skewed towards Korea. In part two the study investigated the real determinants of export trade for both partners. In this part, gravity model was applied to ascertain the real

export determinants and their weights. This research was segmented into six chapters. Chapter two presented Kenya's economic overview, chapter three provides an overview of bilateral trade relations between Kenya and Korea, chapter four covers the Revealed Comparative Advantage (RCA), its empirical analysis and findings, chapter five hosts the gravity model of trade on exports and its empirical findings while chapter six includes conclusions and implications of the research outcome.



CHAPTER 2 KENYA'S ECONOMY

2.1 Kenya's Economic Overview

The economic growth history of Kenya has never been consistent. For instance after independence (1960s to early 1970s) Kenya's GDP grew at very impressive levels, at some point surpassing the 20% growth rate mark. On the other hand, in the early 1970s the country's GDP growth took a southward trend and since then it has not gone beyond the 10% growth level.

Studies show that Kenya's economy experienced three recessions from 1990¹⁰ up until the year 2002. World Development indicators show that Kenya's economy grew by a meager 0.55 % in 2002. Upon this background to jump start the economy, the Kenyan government formulated the five year Economic Recovery Strategy (ERS) paper in 2003 in order to create wealth and employment. The impact of this strategy was immediate with GDP growth jumping from 0.55% in 2002 to 2.9% in 2003. The 2003-2007 projected economic growth in addition to the performance of several other parameters, such as revenue collection and expenditure surpassed expectations. For instance, in the five year span (2003-2007) the economy was expected to grow at an average of 4.7% annually, conversely the actual average growth for the same period was 5.4% per year. Upon its full implementation period (2007), the economy is said to have fully recovered achieving a phenomenal growth of 7%.¹¹

¹⁰ See http://carnegieendowment.org/files/kenya_background.pdf.

¹¹ Vision 2030 is Kenya's first comprehensive economic blue print. It comprises of three

Encouraged by the results, the government decided to formulate a long term development blue print the “Kenya Vision 2030.” Kenya seems to emulate the so called Asian tigers among them Korea, Malaysia and Singapore who formulated and implemented development blue prints with profound success. Through this vision the country aims not only to make the country internationally competitive but also, make her an industrialized, middle income nation offering high standards of life to her entire population within a secure and clean environment by the year 2030 and furthermore effectuate the UN Millennium Development Goals (MDGs).¹²

Kenya’s economic outlook is currently positive and is estimated to have grown by 5.3% in the year 2014 which is a recovery from 4.9% the previous year. In the year 2011 the country experienced double digit inflation and drastic currency depreciation. However both indicators are said to have stabilized in the preceding years for instance inflation dropped by a single digit. The same is expected for the year 2014.¹³ The Africa Economic outlook 2015 shows that the economy projected to grow by 6.5% in 2015 and 6.3% in 2016 while, inflationary pressures are expected to maintain the single digit level of approximately 5% similar to 2014.¹⁴

Agricultural trade contributes a great deal in terms of GDP of most developing

pillars; economic, social and political pillars. It was established after the successful implementation of the ERS. “<http://www.investmentkenya.com/about-kenyainvest/kenya-vision2030>.”

¹² MDG Refers to UN Millennium Development Goals. Following UN summit in 2000, eight international development goals were established and adopted by all the 189 UN members at the time.

¹³ Odero and Reeves (2014).

¹⁴ Odero *et al.* (2015).

countries¹⁵. Upon independence Kenya embarked on rapid economic growth initiatives which included public investment, agricultural incentives and incentives on industrial investments by commercial enterprises. This yielded an average annual growth rate of above 6.5% for 10 years from 1963. At the same time agricultural production grew by almost 5% on average. During mid 1970's Kenya's economic performance took a downward trend due the adverse business environment including but not limited to the rise in oil prices, tight controls on imports, import substitution strategy, restrictions on foreign exchange including lack of export promotional efforts.

In the beginning of 1990's, Kenya experienced its worst economic recession since independence with GDP growth and agricultural development, which is Kenya's economic backbone, stagnating. With support from the World Bank and the International Monetary Fund, the Kenyan government in 1993 took bold economic reform programs intended not only to jumpstart the economy but also to liberalize it. This led to the removal or elimination of foreign exchange restrictions, price controls and import licensing, reduction of the wage bill (reduction in number of civil employees) and the privatization of state owned corporations. The so called Structural Adjustment Programs where conditional loans were offered to countries by the World Bank and IMF are criticized for aggravating poverty rather than eliminating or at least reducing it as has been found by many studies (Heidhues and Obare),¹⁶(Easterly, W.- 2003)¹⁷, (Oberdaberning, D.A).¹⁸ Many of the studies

¹⁵ Bhattacharyya (2011).

¹⁶ Heidhues and Obare, (2011).

¹⁷ Easterly (2003).

¹⁸ Oberdaberning, (2012).

found that the programs had significant negative impact on poverty in the short run. Furthermore the studies could not find any concrete proof that it had any tangible positive impact on poverty in the long run. The Kenyan government also introduced conservative fiscal and monetary policies the same way USA did during the Reagan era. The table below summarizes Kenya's economic indicators from 1990 to 2012. Indicators include; GDP %growth, exports of goods and services as a % of GDP, trade as percentage of GDP, agriculture, industry and manufacturing value added as a % of GDP and annual inflation.

Table 2.1 below shows that GDP growth has not been consistent. There has been a high fluctuation as witnessed between 1990 and 2003 after which the economic growth seemed to stabilize. The share of Exports to GDP has remained above the 20 % mark. During most of the high growth periods exports seem to have also improved. The economy relies heavily on trade. Contribution of total trade to the economy ranges between 48% and 72%. Agriculture contribution to the economy is consistent and substantial ranging between 25 and 34 per cent. Industry value added, though stable, is still low compared to Korea's industry value added. Consumer Price Index (CPI) has very high volatility however it has stayed within the single digit level since 2012.

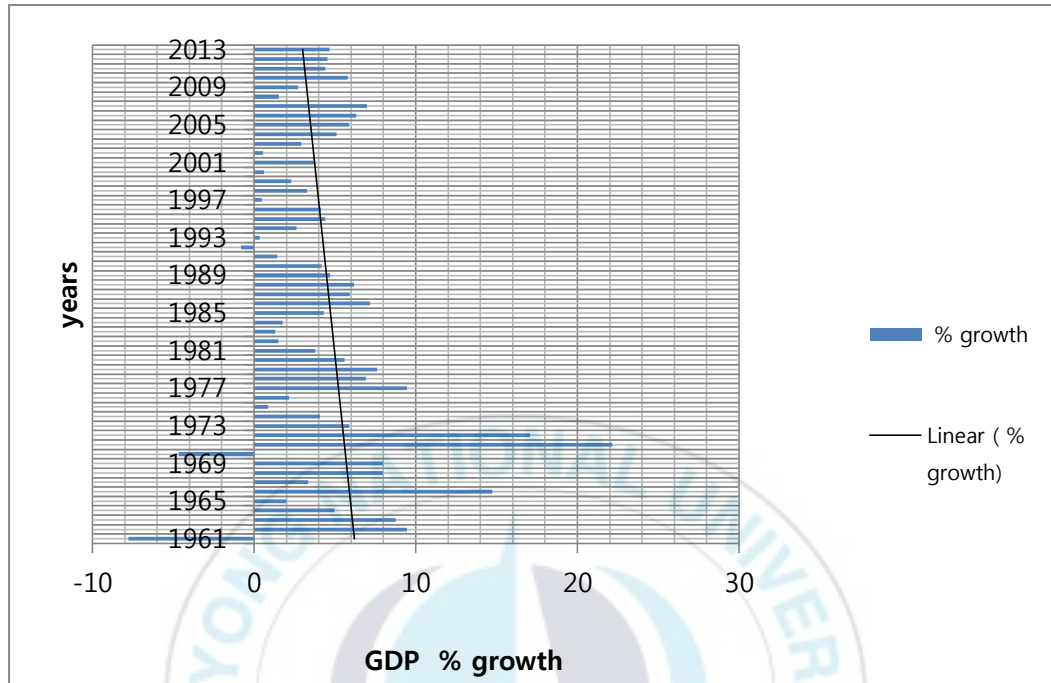
Table: 2.1: Kenya's economic structure 1990-2012

Year	GDP growth %	Exports-goods and services (% of GDP)	Trade (% of GDP)	Agriculture, value added (% of GDP)	Industry, value added (% of GDP)	Manufacturing, value added (% of GDP)	Inflation, CP (annual %)
1990	4.19	25.69	57.02	29.52	19.04	11.72	17.78
1991	1.44	27.04	55.6	28.14	19.67	12.05	20.08
1992	-0.8	26.26	52.93	28.74	18.38	10.79	27.33
1993	0.35	38.9	72.86	31.52	16.89	10.01	45.98
1994	2.63	37.04	71.27	33.32	17.25	10.69	28.81
1995	4.41	32.59	71.75	31.13	16.02	9.88	1.55
1996	4.15	25.2	57.31	30.74	18.33	13.26	8.86
1997	0.47	22.69	54.06	30.91	17.77	12.91	11.36
1998	3.29	20.17	48.9	31.23	17.5	12.3	6.72
1999	2.31	20.83	48.19	32.38	16.8	11.43	5.74
2000	0.6	21.59	53.31	32.36	16.92	11.62	9.98
2001	3.78	22.93	55.95	31.33	17.22	11	5.74
2002	0.55	24.9	55.17	29.13	17.41	11.07	1.96
2003	2.93	24.09	54.13	29.03	17.58	10.92	9.82
2004	5.1	26.61	59.48	28.04	18.23	11.25	11.62
2005	5.91	28.51	64.48	27.2	19.09	11.82	10.31
2006	6.33	27.11	64.94	26.76	18.47	11.55	14.45
2007	6.99	26.78	64.48	25.01	18.54	11.79	9.76
2008	1.53	27.61	69.35	25.84	19.77	12.29	26.24
2009	2.74	24.05	61.36	27.17	18.67	11.28	9.23
2010	5.8	27.59	67.35	25.11	18.57	11.29	3.96
2011	4.42	28.52	73.61	28.48	17.57	10.98	14.02
2012	4.55	27.59	72.57	29.88	17.39	10.41	9.38
2013	5.74	17.73		29.51	19.81	11.72	7.9
2014	5.3						7.0

Source: Data from the World Development Indicators, AEO (2012, 2014, 2015)

Figure 2.1 shows Kenya's economic growth in percentage from 1961 to 2013. It shows that growth was very high in the early years of independence even surpassing 20 percent. Furthermore, it can be seen that GDP growth has experienced stiff fluctuations in many occasions, for instance, in the early 70's early 80's early 90's, late 90's and also early 2000. However, growth has shown some signs of stability probably owing to the governments' prudent macroeconomic policies.

Figure: 2.1 Kenya's GDP growth in % (1961-2013)



Source: Estimation based on data from World Development Indicators (WDI 2015)

It is common knowledge that trade is a crucial factor in economic growth and that economic growth leads to creation of employment and hence improved welfare standards. Improved production efficiency and diversification of exports though remains a major challenge to many developing nations, play a key role in enhancing their competitive advantage. Continued global market liberalization and market segmentation through economic integrations poses many challenges as well as opportunities. Since the establishment of General Agreement on Tariff and Trade (GATT)¹⁹, trade tariff barriers have been negotiated down to low levels. However, developing nations such as Kenya are unable to access global markets especially in the developed nations due to

¹⁹ GATT was established with the aim of liberalizing trade between nations.

stringent nontariff barriers.

2.2 Regional Integration and International Trade

Kenya is a member of several regional trading blocs among them the Common Market for Eastern and Southern Africa (COMESA), the East African Community (EAC) and the Intergovernmental Authority on Development (IGAD). She is touted to be one of the major propellers of economic integration within the sub-Saharan region especially within eastern Africa. According to the African Economic Outlook (AEO) 2015, Kenya's investments in key areas are expected to improve trade operations within the region. These include improvement of road network serving other states within the region, the enhancement of the port of Mombasa operations (24hrs and 7 days a week), the development of the LAPSET project²⁰ to connect with Southern Sudan and Ethiopian through road and rail transport, oil pipeline to S. Sudan as well as improving airport facilities that serve regional and international markets among other initiatives²¹.

Kenya has held an open foreign policy since independence and therefore has been able to trade with all countries around the globe. Furthermore, Kenya's industry is about 70 percent foreign owned. Due to colonial ties, Kenya's development aid and foreign direct investment usually came from the United Kingdom. However Kenya's new foreign policy has resulted into new

²⁰ See <http://www.deputyresident.go.ke/index.php/lapset-projects>.

²¹ Odero *et al.* (2015).

sources of foreign capital inflows such as China and South Korea. Chinese share of funding to Kenya has increased tremendously while on the contrary funds from her traditional source of funding the United Kingdom has taken a sharp decline. Nevertheless, funds from several multilateral agencies such as the European Union and the World Bank have been increasing. Overall, since independence Kenya has tried to maintain policies that encourage foreign investment such as ownership guarantee and allowance to remit dividends and royalties. However as any other government in order to empower its citizens the government requires joint ventures with local firms holding a certain percentage.

According to the European commission report, Kenya's trade with the world²², between 2003 and 2013; EU 28 was the top trading partner followed by India, China, UAE, USA, Japan, Uganda S. Africa, Tanzania and Indonesia in that order. Value of Kenya's world imports surpassed exports by almost three times. Out of the top ten trading partners, five are among the ten major export destinations compared to eight trading partners being among the major sources of imports.

Table 2.2 below displays current account variables presented as a % of Gross domestic product given in current prices. Estimates for current account balance exhibit prevalent volatility from 2005. The Current account balance seems to deteriorate from a shortfall of 1.3 % in 2005 to a deficit of 9.4% in 2011. In 2013 there was an improvement of the current account deficit to - 2.9 %. Nonetheless due to rising importation of infrastructural materials and equipment, the current account deficit is projected to worsen by 11.1% in 2015

²² EC (2015).

and 12.1% in 2016.²³

Table: 2.2 Current account (as % of GDP)

Variable	2005 (e)	2006 (e)	2007 (e)	2008 (e)	2009 (e)	2010 (e)	2011 (e)	2012 (e)	2013 (e)	2014 (p)	2015 (p)	2016 (p)
Trade balance	-11.4	-12.6	-15.7	-18.8	-19.5	-19.5	-20.6	-18.9	-13	-14.1	-11.1	-12.1
Goods export (f.o.b)	18.5	13.6	15.6	15.2	16.8	16.2	14.2	12.5	13.4	12.5	10.7	9.5
Goods import (f.o.b)	29.9	26.2	30.9	35.6	34.6	35.7	34.8	31.3	26.3	26.6	21.8	21.6
Services	4	4.1	4.6	4.6	4.6	5.4	4.8	5	4.9	4.1	5.1	4.1
Factor income	-0.6	-0.3	-0.5	-0.2	-0.2	-0.5	-0.1	-0.3	-0.6	-1.1	-2.1	-3.8
Current Transfer	6.7	6.9	7.8	7.8	7.8	7.2	6.5	5.7	5.8	3.5	0.2	0.2
Current a/c bal.	-1.3	-1.9	-3.8	-6.6	-5.3	-7.3	-9.4	-8.6	-2.9	-7.5	-7.9	-11.2

Source: Adapted from Kenya Economic Outlook- (2012, 2014 and 2015)

Note: This was compiled from Africa Economic Outlook report on Kenyan economy. The letter (e) refers to estimates while (p) means projections based on AEO- Kenya economic report authors

In order to reduce the existing trade account deficit strategies geared towards improving income from exportation of goods and services would be most appropriate for the Kenyan economy.

2.3 Major Exports and Export destinations

Horticultural products, tea and coffee are among Kenya's Main exports.²⁴ Other major exports include cement, fish, and petroleum products which are sold within the eastern and the central African region. Kenya is a member of

²³ Odero and Reeves (2014), and Odero *et al.* (2015).

²⁴ Were *et al.* (200).

several regional trading blocs among them COMESA and EAC. Accordingly, Africa is the largest market for Kenyan goods (exports). Other main importers of Kenyan goods include United Kingdom, the East African community and the Netherlands.

Under the African Growth and Opportunity Act Kenya exports textile and apparels to United States though under immense competition from the Asia counterparts. Many economists argue that the inability by Kenya to add value to its exports does not improve its foreign currency inflows. Being the most developed economy within East and Central Africa, Kenya has dominated trade with Uganda and Rwanda importing 12.3% and 30.5% respectively.

Kenya has joined several regional economic blocs which include IGAD, EAC and COMESA. In 2012/2013 financial year, Kenya's export share to Africa went down by 2% to 46.9 % from the previous fiscal year.

2.4 Major Imports and Import destinations

The EU 28 as Kenya's main trading bloc, food and live animals were found to be the main import commodity with crude materials, inedible, except fuels coming second, machinery and transport equipment third, manufactured goods classified chiefly by material, miscellaneous manufactured articles, beverages and tobacco, commodities and transactions n.c.e and chemicals and related pro, n.e.s in that order between 2010 and 2014.²⁵

A study on "Kenya's Export prospects and problems" in November 2003, found out that imports by Kenya from East Africa and those from East Asian

²⁵ See http://trade.ec.europa.eu/doclib/docs/2006/september/tradoc_113407.pdf.

region went up by 9% while imports from Europe dropped by almost 20%. Coffee and tea imports were worth US\$ 22million and became the second major import from the region. During the same period less than a quarter was imported from the European Union (EU 15), with an insignificant portion coming from the North American Free Trade Agreement (NAFTA) region.²⁶

The table 2.3 below shows Kenya's major import and Export destinations²⁷ in value and in percentage in 2010 and 2013. In 2010 Uganda was the main export destination followed by United Kingdom and Tanzania with 12.72 %, 9.81% and 8.13 % share of exports respectively. Export share to the EAC seems to have increased in volume but decreased in percentage. This means that regional integration is beneficial to the Kenyan economy as a whole. Export share decreased from 12.72% to 11.90% for Uganda, from 8.13% to 7.66% for Tanzania and from 2.57 % to 2.56% for Rwanda. Exports to United Kingdom (UK) have dropped in value from 507.21 mil US dollars to 436.04 mil US dollars, resulting to a 1.92 % drop in export share. Exports to Korea have increased almost five times from 2.228 mil US dollars to 12.504 mil US dollars. In 2010 exports to Korea amounted to a mere 0.04%. However in 2013 it jumped to 0.23 per cent of Kenya's total exports. In terms of imports China, India, United Arab Emirates (UAE) South Africa Japan, UK, United States (USA) dominated Kenya's exports. Four Countries S. Africa, Egypt, Tanzania and Uganda from Africa were major sources of imports with the last two being members of the EAC. Imports from Korea increase in value but decreased in export share from 2.06 % in 2010 to 1.73 % in 2013 of the total

²⁶ Ng. and Yeats (Nov. 2005).

²⁷ See <https://atlas.media.mit.edu/en/profile/country/ken/>.

imports by Kenya.²⁸ Proximity, colonial ties, regional integration, foreign policy shift and improved bilateral trade relations are some of the factors that affect Kenya's International trade. As shown from the table above trade between Kenya and Korea is still negligible and more so one sided. (See fig.3.1)



²⁸ See <http://wits.worldbank.org/CountryProfile/Country/KEN>.

Table: 2.3 Major export and import partners (2010 and 2013)²⁹

Rank	Trading Partner	2010 1000 US\$	% Imports	Trading Partner	2013 1000 USD	%Import	Trading Partner	2010 1000 USD	2010 % Export	Trading Partner	2013 1000 USD	% Exports
1	China	1522538	12.59	India	2998426.3	18.29	Uganda	657286.1	12.72	Uganda	658740.6	11.90
2	UAE	1462913	12.10	China	2117408.9	12.92	U.K	507208.8	9.81	U.K	436038.2	7.88
3	India	1301586	10.76	UAE	1362720.7	8.31	Tanzania	420205.1	8.13	Tanzania	424185.6	7.66
4	S. Africa	754243.4	6.24	Japan	972118.0	5.93	Netherlands	338908.3	6.56	Netherlands	378074.3	6.83
5	Japan	734575.5	6.07	S. Africa	821211.3	5.01	United States	284946.1	5.51	United States	347270	6.27
6	U.K	626322.5	5.18	United States	667462.7	4.07	UAE	237848.7	4.60	Pakistan	279697.6	5.05
7	United States	496007	4.10	United Kingdom	552972.9	3.37	Fm Sudan	237487.8	4.59	UAE	264699.5	4.78
8	Saudi Arabia	406845.1	3.36	Indonesia	522993.4	3.19	Egypt	228514.6	4.42	Congo, DR.	205510.9	3.71
9	Singapore	400102.3	3.31	Saudi Arabia	480981.2	2.93	Pakistan	227919.6	4.41	Egypt	197308.2	3.56
10	Indonesia	339790.8	2.81	Germany	435283.5	2.66	Somalia	164706.9	3.19	Afghanistan	184164.2	3.33
11	Germany	332638.6	2.75	Bahrain	406137.9	2.48	Congo, DR.	161351.9	3.12	Serbia, FR	178567.6	3.23
12	Korea, Rep.	248672	2.06	Egypt	297286.9	1.81	Afghanistan	150457.7	2.91	Somalia	170044.8	3.07
13	France	235788.7	1.95	Netherlands	287824.2	1.76	Rwanda	132891.6	2.57	Rwanda	142021.7	2.56
14	Netherlands	232749.7	1.92	Korea, Rep.	284138.9	1.73	India	106933.2	2.07	India	109756.3	1.98
15	Egypt	232062.3	1.92	Russian	269176.1	1.64	Germany	97307.7	1.88	Germany	95641.19	1.73
16	Finland	178593.4	1.48	France	241197.9	1.47	Burundi	68848.8	1.33	Russian	79313.66	1.43
17	Italy	151051.4	1.25	Italy	236013.0	1.44	France	65451.5	1.27	Sudan	72688.79	1.31
18	Switzerland	143001.2	1.18	Singapore	225687.1	1.38	Zambia	59136.3	1.14	Belgium	71893.23	1.30
19	Tanzania	132980.1	1.10	Uganda	186779.9	1.14	Yemen	57005.0	1.10	Zambia	68409.82	1.24
20	Russian	122133.9	1.01	Pakistan	181679.2	1.11	Russian	56950.7	1.10	France	63784.47	1.15
21	Uganda	116310.9	0.96	Brazil	181174.7	1.11	Ethiopia	55310.2	1.07	Burundi	60459.03	1.09
73/52							Korea, Rep.	2227.7	0.04	Korea, Rep.	12503.9	0.23

Source: Calculation based on data from the World Bank

²⁹ Kenya's exports to Korea increased marginally while imports from Korea had a very sharp increase. Korea's export rank decreased from rank 12 in 2010 to rank 14 in 2013. In case of import rank Korea jumped from position 73 in 2010 to position 52 in 2013.

Table 2.5 below presents percentage shares of exports and imports by regional economic groupings and or economic classifications. Exports to EU27 were 21.9 % in 2013 down from 23.9 % in 2010 a 2.0% decline. Import share had a substantial decline of 4.0% from 18.6% to 14.6 % in 2010 and 2013 respectively. Kenya seems to trade more with World Trade Organization (WTO) members than with WTO non-members. For example exports to all WTO members were 83.5% and 82.6% in 2010 and 2013 respectively, while imports were 97.8% and 97.0% in 2010 and 2013 respectively. Exports to Less Developed Countries (LDC) were 44.0% in 2010 and 38.3% in 2013 while imports were just 2.8% and 2.7% in 2010 and 2013.

Table: 2.4 Percentage share of Kenya's Imports and Export per Economic group/region (2010 and 2013)

Economic Trading Groups/Regions	%Exports		% Imports	
	2010	2013	2010	2013
EU27 --- EU27 members --- EU27	23.9	21.9	18.6	14.6
High-income (OECD plus non-OECD	36.6	37.0	49.8	41.5
Least Developed Countries --- LDC	44.0	38.3	2.8	2.7
Low & Middle income East Asian & Pa	1.4	1.8	17.3	18.1
Low and Middle Income Europe --- LD	2.1	2.8	2.8	4.0
Low and Middle income Latin America	0.1	0.2	1.0	1.4
Low and Middle income Middle East a	6.2	5.8	2.5	2.3
Low and Middle income South Asian c	9.8	10.5	11.7	19.5
Sub-Saharan Africa SSA --- SSA	41.4	35.6	9.9	8.4
WTO All members (123) --- WTO-ALL	83.5	82.6	97.8	97.0
WTO Developing members (59) excl. L	13.6	13.7	39.3	47.6
WTO High-income Members (21) --- WT	13.6	15.8	35.6	30.6
WTO LDC members (31) --- WTO-LDC	30.9	29.7	2.8	2.6
WTO Low & Middle income members (10	45.9	44.7	42.8	50.6
WTO Not member countries --- WTO-NO	15.9	12.6	2.7	3.5

Source: Calculations based on data from the World Bank (2015)

Exports and imports to Sub-Saharan Africa show a similar trend where by the

share of Kenya's exports to the region is huge while import share is small. Kenya exported 41.4% and 35.6% of all its exports in 2010 and 2013 respectively, while it imported 9.9% and 8.4% in 2010 and 2013.³⁰ Kenya is found to import more from high income countries, WTO members and low and middle income countries while exporting mostly to, WTO member states, developed countries, developing and less developed countries.



³⁰ See <http://wits.worldbank.org/CountryProfile/Country/KEN>.

CHAPTER 3 BILATERAL TRADE AND ECONOMIC RELATIONS

3.1 Bilateral Trade Relations

There is little if any literature or comprehensive publication on bilateral and trade relations between Kenya and Korea. Korea established diplomatic relationship with Kenya soon after Kenya got independence on 7th February, 1964, during the reign of president Park Chong Lee.³¹ Despite the delay by Kenya to open its embassy in Korea, both partners have maintained cordial relations.³²

Upon the establishment of Kenyan mission in Korea, there have been high level interactions between the two governments culminating into the establishment of a bilateral joint commission to fast track economic and trade cooperation. For example the first half of 2014 saw the signing of 3 agreements (July 9th, 2014)³³ which revolved around the frame work on Grant Aid, Convention on the avoidance of double taxation and prevention of fiscal evasion and an agreement for the promotion and protection of investments.³⁴ In the same period Korea Organization for International Cooperation on Aid (KOICA) with the Kenya ministry of Education had an MOU on expanding educational and training

³¹ The Current presidents of Kenya and Korea are the son and daughter of Jomo Kenyatta and Park Chong Lee who were the presidents of Kenya and Korea when both states opened diplomatic ties.

³² Kim (2011).

³³ See <http://www.mofa.go.kr>.

³⁴ Kitau (2014).

opportunities to Kenyans. Establishment of the only direct flight to Africa by Korean Air is a big boost to the tourism sector.³⁵ In 2013, over 9000 Korean citizens visited Kenya and the number was projected to hit the 12000 mark in 2014 and expected to surpass the number of tourists from Japan and therefore become one of Kenya's source of tourists.³⁶

This initiative was one of the strategies of strengthening implementation of Kenya's New Foreign Policy. Since then, there has been a significant increase in Kenyan exports to Korea (154%) and value of scholarships for Kenyan students (37%). Furthermore, unlike in many cases the value and the volume of trade between the two partner states have remained negligible and imbalanced since diplomatic relations were established.

The equator cuts Kenya into two halves of almost equal sizes. Kenya's total land area is 582,000 square kilometers almost six times the size of S. Korea which has an area of 99,000 sq. kilometers. Unlike Korea which is industrialized, agriculture is the backbone of Kenya's economy. The size of Kenya and the good climate makes is a nice place for wildlife to thrive. This brings in a lot of income from tourism and hence tourism is also one of the biggest GDP contributors. Until recently, Kenya has been discovering substantial mineral resource which is about to change the composition of its economic contributors. Due to the recent discoveries of oil, gas, iron ore and rare earth minerals there has been an upsurge of foreign direct investment inflow from private enterprises as well as government.

3.2 Kenya's and Korea's Balance of Trade

³⁵ Frances (2012).

³⁶ Kitau (2013).

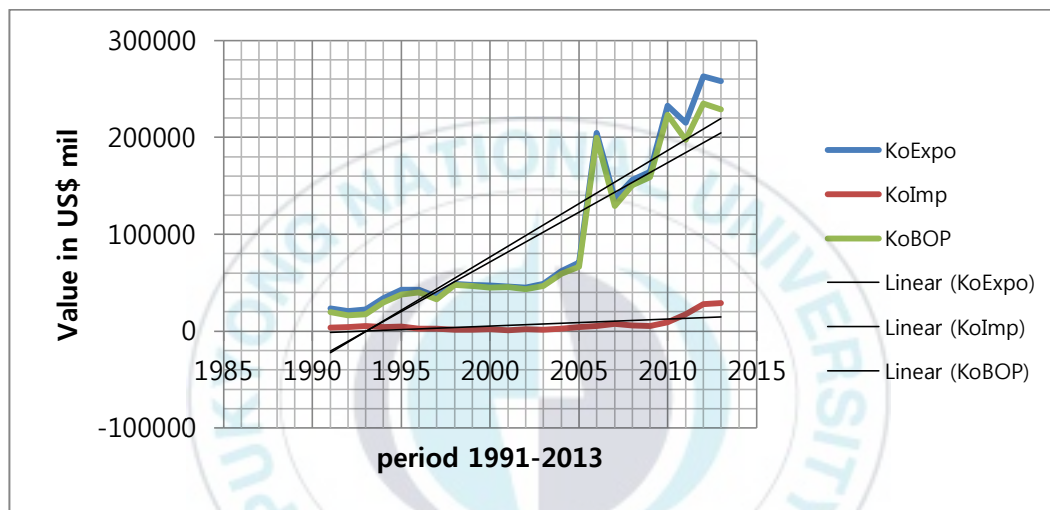
Korea and Kenya established diplomatic ties more than half a century ago. Conversely, it is not until July 2007 when Kenya established its embassy in Seoul, S. Korea. Statistics from Korea International Trade Association (KITA-2014) shows that trade between the two partners is in favor of the Asian country. The figure below shows Korean exports to Kenya and imports in value terms and the balance of trade. Trade seems to pick up marginally from 1993 after dismal performance between 1991 and 1992. In 2005 to 2006 there was a sharp increase in exports to Kenya followed by a sharp decline in 2007 as can be seen from the graph. Factors such as political instability during 2007 and 2008 period and the global financial crisis among others may be the main cause of the export decline. From 2010 imports from Kenya seem to have gained an upward trajectory albeit marginally compared to exports. Kenya's exports to Korea from 2003 to 2006 increased by 400% from US\$ 50 million to US\$ 200 million but declined to US\$ 150 million in 2007, a 25% decline.

There has been a fundamental foreign policy shift by Kenya as the government tries to align its operations in order to achieve its national aspirations. During independence Kenya's main goal was based on growing the economy to eradicate poverty, diseases and illiteracy referred to as the 3U's (*Umaskini, Ugonjwa and Ujunga respectively*) in Kiswahili Kenya's national language. The same challenges still remain to date. However with Kenya's Vision 2030 economic blue print, Kenya aims to transform herself into an industrialized middle income country by 2030 and thereby improve living standards of its people by reducing poverty and unemployment.

As such, there has been high level and enhanced interaction between Kenya and Korea which has led to the establishment of the Kenyan Embassy in Korea in

2007. This initiative was one of the strategies of strengthening implementation of Kenya’s “Look East Policy.” Since then, there has been a significant increase in Kenyan export to Korea (126%), Korean investments into Kenya (3455%), ODA (90%), Korean tourists to Kenya (154%) and value of scholarships for Kenyan students (37%).

Figure: 3.1 Bilateral trade of Kenya and Korea 1991-2013



Source: Korea International Trade Association (KITA- 2014)

Increase in trade volumes seems to have begun even before Kenya opened its embassy in Korea on July 2007. One may argue that the opening of a diplomatic office had no impact in terms of increase in trade. Though there may be other factors such as enhanced business environment in the two countries and that the intention for Kenya to open its embassy in Korea may be a crucial factor. It would not be wrong to attribute the rate of increase in trade volumes and the consistence to improved bilateral trade relations. In 2009 Korean Air began its direct flight³⁷

³⁷ Direct flights from Seoul to Nairobi are expected to have a positive impact on Kenya’s tourism industry. Moreover cost, of doing business between Kenya and Korea is bound to reduce providing the needed impetus to increased trade.

to Nairobi the only direct flight to Africa from Asia. By 2013 Kenyan coffee exports had reached US\$ 6million down from US\$1 million.³⁸

Table: 3.1 Korea and Kenya Exports, import and trade balance statistics 1991-2013

Year	Exports	Imports	Trade bal 000's US \$
1991	23,278,457	3,856,128	19,422,329
1992	20,633,726	4,241,078	16,392,648
1993	22,469,650	5,073,851	17,395,799
1994	33,747,817	4,360,690	29,387,127
1995	42,559,104	4,866,250	37,692,854
1996	42,559,104	2,690,753	39,868,351
1997	35,433,659	2,450,321	32,983,338
1998	48,718,892	1,205,311	47,513,581
1999	47,890,522	1,258,931	46,631,591
2000	47,079,649	1,974,602	45,105,047
2001	46,058,204	787,467	45,270,737
2002	45,008,001	1,940,766	43,067,235
2003	48,598,964	1,724,632	46,874,332
2004	61,861,276	2,428,340	59,432,936
2005	71,038,885	4,360,453	66,678,432
2006	204,857,731	5,115,295	199,742,436
2007	136,741,656	7,792,562	128,949,094
2008	156,363,761	5,738,911	150,624,850
2009	164,652,827	5,572,655	159,080,172
2010	232,687,417	9,237,451	223,449,966
2011	214,946,721	17,603,766	197,342,955
2012	262,966,044	27,808,827	235,157,217
2013	258,047,096	29,173,057	228,874,039

Source: Data from World Development Indicators

3.3 Korea's FDI inflow to Kenya

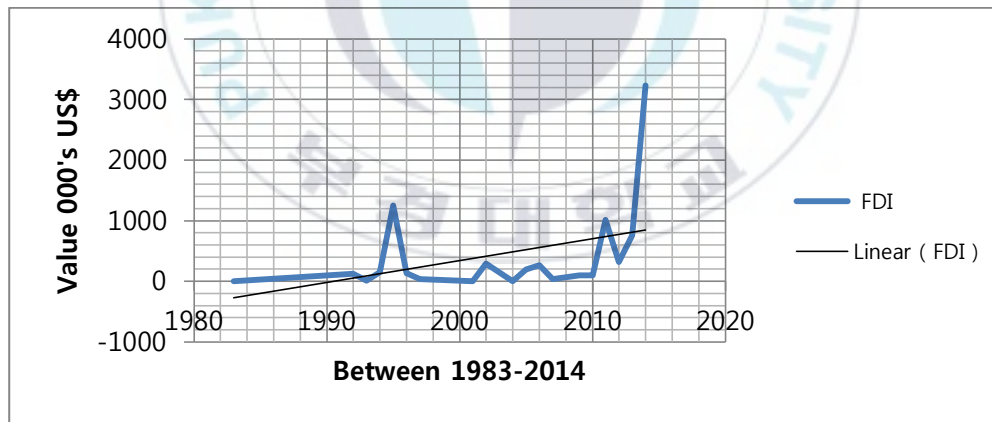
Kenya is cited as one of the hot hub spots in attracting FDI in Africa at 7% points

³⁸ Kitau (2013).

after S. Africa 24%, Nigeria 9% and Angola 8% with Nairobi holding the third position in Sub-Saharan Africa (SSA) after Johannesburg and Cape Town but after Lagos.³⁹

In 2013 Kenya received four times FDI inflows compared to 2012. It was ranked second in Africa in terms of the volume of FDI inflows.⁴⁰ Foreign Direct Investment inflows from Korea to Kenya have been very negligible until 2003 when it started picking up. The figure below shows the amount of loans granted by Korean Exim Bank to Korean firms for their investments' in Kenya and the actual amount finally invested. Out of the available loan capital granted only a small fraction of total disbursed loan is actually utilized. High level engagement between both governments in the mid of 2000 and 2010 may be one of the catalysts of increased trade and thus improved FDI inflows to Kenya.

Figure: 3.2 FDI inflows to Kenya from Korea 1983-2014 (000's US\$)



Source: Data from Korea International Trade Agency data base, Exim Bank

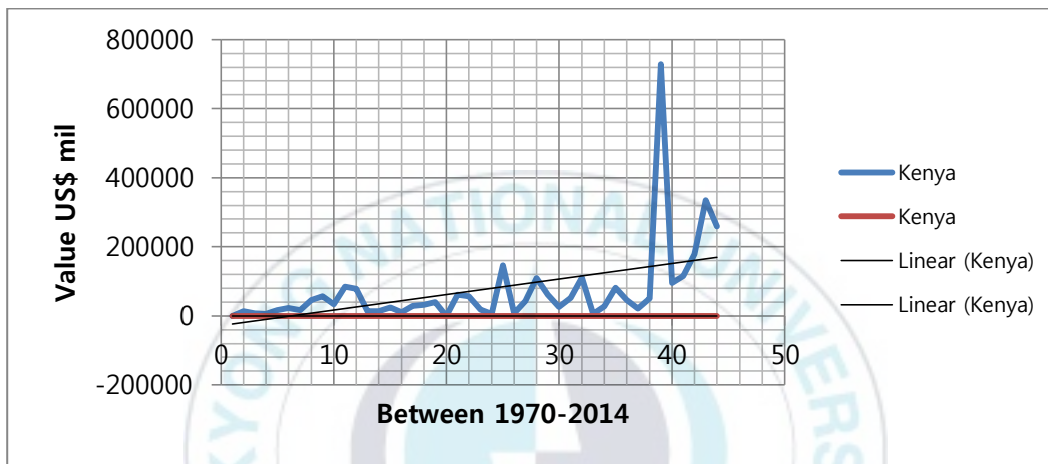
The figure below shows Kenya's FDI inflows from 1970 to 2014. It shows that

³⁹ EY's (2014).

⁴⁰ Multilateral Investment Guarantee Agency (MIG), (2007).

Kenya did not attract significant FDI inflows during the period until 2008 where by sharp FDI inflow of over US\$ 700 billion can be noticed and an immediate drop in 2010 to the levels witnessed before 2008 to about US\$ 150 billion. From 2011 to 2014 FDI is found to increase substantially.

Figure: 3.3 FDI inflows to Kenya (mil US \$)



Source: Data from World Development Indicators

Though economic relations have many opportunities there are also many challenges which may need to be addressed for it to be mutually beneficial. In the last few years diplomatic and economic relations between Kenya and Korea seems to have improved dramatically. There has been an increase in exports by Kenya to Korea, increased FDI by Korea to Kenya, increase in the number of Korean tourists to Kenya, increase in educational Scholarships and Overseas Development Aid to Kenya from Korea (ODA).

China's way of engagement with African Countries even investing in countries neglected by many might have won the hearts of many Africans Kenyans included. Korea seemed to have been engaging with only economically and mineral resources endowed nation states. Korea's policy to engage with the economic

superpowers and crucial resource abundant nations seems to have worked miracles towards its economic growth. The outward export oriented policies of the 1980's have enabled Korea to have the value of exports exceed that of imports, hence maintaining trade surplus for most of the period under investigation. However due to changes in the global economic landscape Korea is seeking bilateral engagements with less resource abundant and less developed countries such as those in Africa.

Bilateral, regional and multilateral trade are the features of global trade systems' whereby two partners states, close neighboring states or even multiregional states agree to trade together. Adam Smith (1776)⁴¹ argued that free trade between nations has huge positive impacts to the overall macro economy of a nation. The World Trade Organization (WTO) promotes free trade under GATT which was established in 1945 to spearhead multilateralism. Through the principle of the most favored nations (MFN) WTO expects member states to eliminate preferential treatment though with some exceptions.⁴²

Improved economic ties between Kenya and Korea have huge mutual benefits both economically and socially in the short term, medium term and even in the long term.

⁴¹ See [http://www.ifaarchive.com/pdf/smith_an_inquiry_into_the_nature_and_causes_of_the_wealth_of_nations\[1\].pdf](http://www.ifaarchive.com/pdf/smith_an_inquiry_into_the_nature_and_causes_of_the_wealth_of_nations[1].pdf).

⁴² MFN - Most favored nation principle with exceptions for preferential treatment to developing countries and also the option to establish bilateral and or regional trade agreements.

CHAPTER 4 REVEALED COMPARATIVE

ADVANTAGE (RCA)

4.1 RCA

The establishment of General Agreement Tariff and Trade organization was formed with the aim of liberalizing world trade. Since then, many trade agreements and regional trading blocs have been established such as the European community, the East African Community, ASEAN, ECOWAS, COMESA, NAFTA and many more with the aim of opening new markets. Several Developed and developing nations have established trade agreements such as Mexico USA and Canada. Furthermore; most of the tariff barriers have been negotiated down while nations have resulted to the use of non-tariff barriers to protect their national economy from the negative impacts of external trade. What motivates nations to engage in trade? Is there mutual benefit in trade? What determines the level of trade engagement by a nation with other nations?

To address the above questions this study will employ various trade theories. Classical and the new trade theories are employed to respond to the question as to why nations engage other nations in trade, while the gravity theory model (Model two –presented in Chapter five) highlights why countries have a higher trade volume with some countries than with others.

The ability of a party to produce a particular commodity or service at a lower marginal and opportunity cost over another party constitutes a comparative advantage. The comparative advantage force is deemed to be the fundamental driving force under which international trade thrives. The theory argues that even

if one country is more efficient in the production of all goods (i.e. has absolute advantage) than the other, both countries will still gain by trading with each other, as long as they have different relative efficiencies.

According to Heckscher-Ohlin (H-O) theorem of factor abundance, a country pursues specialization based on its natural endowments of labor and capital. Therefore labor abundant countries will tend to export labor intensive goods whereas capital-abundant nations will specialize on capital intensive commodities.

In order to study India's revealed comparative advantage in vegetables, fruits and flower trade within Asia, EU and North American market (USA & Canada) Bhattacharyya (2011) applied the revealed comparative advantage (RCA) and the comparative export performance (CEP) index. Empirical outcomes of both indices show India to have statistically significant comparative advantage in vegetables market in EU and North America over China, Thailand, Malaysia and Indonesia but less competitive in the Asian market compared to China and Malaysia. Though India fruit sector is found to have high competitive power in EU than the Asian countries under study it was found to have a disadvantage in the North American market against China and Malaysia. Unfortunately India was found to have a disadvantage in fruit and flower markets in Asia but advantage in flower market both in the EU and the North American markets.⁴³

A study carried out by Uprasen⁴⁴ to find out export competitiveness and Revealed Trade between Korean and USA exports to the EU based on HS 2-digit level on 15 major export industries used the Augmented Dickey-Fuller unit root tests for data stationary and found that data for 10 were not stationary. To make them

⁴³ Bhattacharyya (2011).

⁴⁴ Uprasen (2014).

stationary he applied the cointegration method after the first econometric analysis results and found that 8 out of 10 industries had cointegration properties and therefore 2 industries were dropped. The general outcome of the study showed that; USA had a higher competitiveness on two industries; HS 85 (Electrical machinery and equipment) and HS 87(Vehicles other than railway).

The Revealed Comparative advantage (RCA) is an index applied in international economics for analyzing the relative advantage or disadvantage of a certain country in a specific class of goods or services as evidenced by trade flows. It is based on the Ricardian Comparative advantage concept. There are several ways of constructing RCA indices but the most common is the Balassa's RCA index, which is essentially an export intensity index calculated at the commodity level.

There are numerous and diverse RCA indices. Though many researchers have criticized the accuracy and preciseness of the RCA; Balassa's index furnishes us with useful numerical values in relation to comparative advantage. However, each index provides different results nevertheless; it is not yet determined if any provides better empirical values.

For empirical analysis this research has selected five RCA indices. For the empirical analysis of the collected trade data the researcher has selected five RCA indices as explained below.

***RCA₁* Index**

The principal reason of using the RCA1 index for the empirical analysis of the comparative advantage of both Kenya and Korea is to find the share of exports of both countries on each of the ten sectors in respect with the world exports.⁴⁵ The

⁴⁵ Liesner is the one credited for the introduction of *RCA₁* in 1958 actually earlier than

higher the index value, the bigger the share of export.

$$RCA_1 = X_{ij}/X_{nj} \quad (\text{Eq.2.1})$$

Where X represents exports/imports, i for import or exporting country, j for commodity or sector n refers to set of countries(in this study it refers to main trading partners). The scale of the results ranges between 0 and 1. With zero showing no comparative advantage while one shows a high comparative advantage.

RCA_2 Index

RCA_2 index is a more comprehensive measure which Ballassa developed in 1965. In this formula total exports for a country as well as for her trading partners are included.⁴⁶

This formula can be referred to relative export advantage RXA.⁴⁷

$$RCA_2 = (X_{ij}/X_{it})/(X_{nj}/X_{nt}) = (X_{ij}/X_{nj})/(X_{it}/X_{nt}) \quad (\text{Eq.2.2})$$

Here X stands for exports, i denote trading country, j is a commodity or sector, t is total exports and n stands for the number of a country's trading partners. This formula tries to quantify country's i share of exports of a particular commodity j in comparison to a number of its trading partners n in relation to their overall exports. Though empirical results are always positive, values less than one reveal a comparative disadvantage and while value above one reveal comparative

Balassas's RCA index in 1965.

⁴⁶ RCA_1 and RCA_2 are calculated on the global level, While RCA_3 is estimated on national level.

⁴⁷ Note: Some researchers refer RCA_2 as Relative Export Advantage (RXA), while other use the term Comparative Export Performance Index (CEPI).

advantage. $RCA_2 < 1$ means a disadvantage while $RCA_2 > 1$ means an advantage.

RCA_3 Index

In order to find a country's share of balance of trade in regard to overall trade we will employ RCA_3 . The uniqueness of this formula is that estimation is based on a country's own trade.

$$RCA_3 = (X_{ij} - M_{ij}) / (X_{ij} + M_{ij}) \quad (\text{Eq.2.3})$$

Here X denotes exports, M is imports, i represent a trading country and j refers to a commodity or a sector. In this formula the index ratio lies between -1 and +1. Whereby -1 to 0 implies a comparative disadvantage while +1 and above means a comparative advantage. It is worth noting that there exists obscurity in terms of zero values.⁴⁸

RCA_4 Index⁴⁹

The fourth formula helps find out the ratio of exports and imports of commodity j in comparison to the total exports and imports of a country i . The formula is presented below:

$$RCA_4 = (X_{ij}/X_{it}) / (M_{ij}/M_{it}) = (X_{ij}/M_{ij}) / (X_{it}/M_{it}) \quad (\text{Eq.2.4})$$

Where X and M refers to exports and imports respectively, i is a trading country, j represents commodity or sector while t is for overall exports or imports (all sectors).⁵⁰ Empirical analysis results take positive values with values below 1

⁴⁸ Greener and Milner (as cited in Utkulu and Seymen 2004).

⁴⁹ RCA_4 is an augmented version of Balassa's RXA formula encompassing imports.

⁵⁰ Note that RCA_3 and RCA_4 in addition to being domestically applied, they can also be estimated bilaterally, multilaterally and even globally.

revealing a comparative disadvantage and values above 1 showing a comparative advantage.

$RCA_4 < 1$ means exports are less than imports while if $RCA_4 > 1$ means exports are greater than imports.

RCA_5 Index

The fifth measure is applied in order to ascertain the overall trade revealed competitiveness. This is done by subtracting relative import advantage (RMA or Comparative Import performance index (CIPI), from relative export advantage (RCA_2) or the Comparative Export performance (CEPI). Therefore, RCA_5 can be referred to as the Revealed Trade Advantage.

$$RCA_5 = RTA = RXA - RMA = (X_{ij}/X_{it})/(X_{nj}/X_{nt}) - (M_{ij}/M_{it})/(M_{nj}/M_{nt})$$

Here: $RXA = CEPI = (X_{ij}/X_{it})/(X_{nj}/X_{nt})$ ⁵¹

$$RMA = CIPI = (M_{ij}/M_{it})/(M_{nj}/M_{nt})$$
⁵² (Eq. 2.5)

In this formula X refers to exports, M imports, i a country, j is a commodity/sector, n refers to set of trading partners and t is for overall trade. If empirical results are positive (+) it implies advantage and vice versa.

4.2 Data Sources

The analysis is derived from time series data on total exports and imports of ten

⁵¹ Bhattacharyya (2011).

⁵² Note that the author can alternately use Comparative Import Performance Index (CIPI) for Relative Import Advantage (RMA).

commodities as listed below. Data for this study is retrieved from the World Integrated Trade System (WITS) managed by the World Bank. The author chose data under the Harmonized System (HS) 1996 classification of 2 digits.

The applied data is from 2000 to 2010⁵³.

Selected commodities under HS96 classification include⁵⁴,

1. HS03 –Fish, crustaceans, mollusks, aquatic invertebrates
2. HS09 – Coffee, tea, mate and spices.
3. HS44 – Wood and articles of wood, wood charcoal.
4. HS49 – Printed books, newspapers, pictures
5. HS63 – Other made textile articles, sets, worn clothing
6. HS68 – Stone, plaster, cement, asbestos, mica etc. articles
7. HS74 – Copper and articles thereof.
8. HS76 –Aluminum and articles thereof.
9. HS84 – Nuclear reactors, boilers machinery etc.
10. HS92 – Musical instruments, parts and accessories.

Except for S. Korea, most of Kenya government data handling and processing is still done manually which is cumbersome and subject to human error. Kenya has porous borders with five neighboring countries. Studies have found that a big volume of intra-regional trade between Kenya and its neighboring countries is not recorded.

⁵³ See www.wits.worldbank.com.

⁵⁴ Selected items were based on the major trading sectors between Kenya and Korea. Data for selection was drawn from CBK , KNBS and KITA (<http://www.kita.org/>) data bases.

4.3 Empirical Findings

Despite slight differences in a few sectors empirical analysis results of the four of the five RCA indices yielded similar outcomes albeit small differences.⁵⁵ Overall Kenya showed comparative advantage on sectors' HS03 –Fish, crustaceans, mollusks, aquatic invertebrates, HS09 – Coffee, tea, mate and spices, HS44 – Wood and articles of wood, wood charcoal, HS49 – Printed books, newspapers, pictures and HS76 -- Aluminum and articles thereof, while S. Korea had comparative advantage on sectors HS63 – Other made textile articles, sets, worn clothing, HS68 – Stone, plaster, cement, asbestos, mica etc. articles, HS74 – Copper and articles thereof, HS84 – Nuclear reactors, boilers machinery etc., and HS92 – Musical instruments, parts and accessories. The empirical analysis outcome from the five RCA indices yielded similar results albeit small differences.

Table: 4.1 Advantageous sectors for Kenya and for Korea

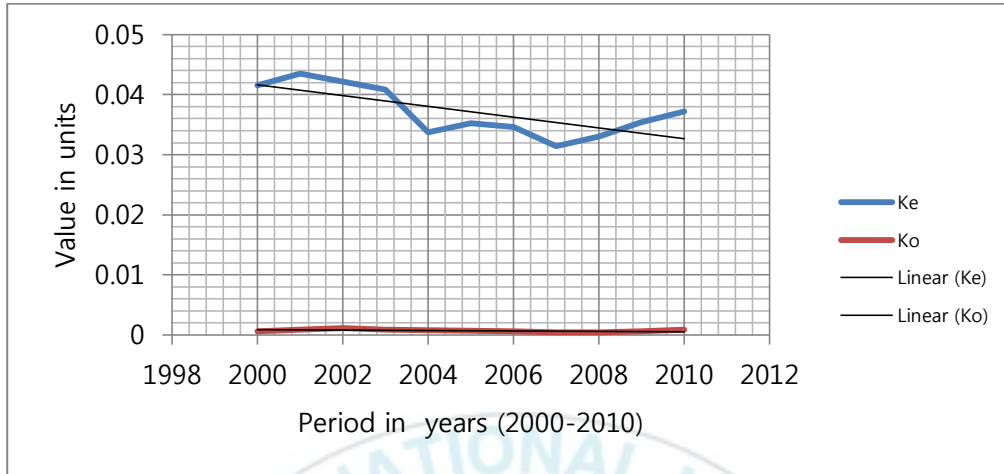
Sectors Kenya has Comparative advantage	Sectors S. Korea has comparative advantage
HS03 – Fish, crustaceans, mollusks, aquatic invertebrates	HS63 – Other made textile articles, sets, worn clothing
HS09 -- Coffee, tea, mate and spices	HS68 – Stone, plaster, cement, asbestos, mica etc. articles
HS44 -- Wood and articles of wood, wood charcoal	HS74 – Copper and articles thereof
HS49 – Printed books, newspapers, pictures	HS84 –Nuclear reactors, boilers machinery etc
HS76 -- Aluminum and articles thereof.	HS92 – Musical instruments, parts & accessories

Source: Selection based on data from the CBK, the KNBS and KITA ⁵⁶

⁵⁵ Sanindas and Shin (n.d.). [http://www.akes.or.kr/eng/papers\(2010\)/24.full.pdf](http://www.akes.or.kr/eng/papers(2010)/24.full.pdf).

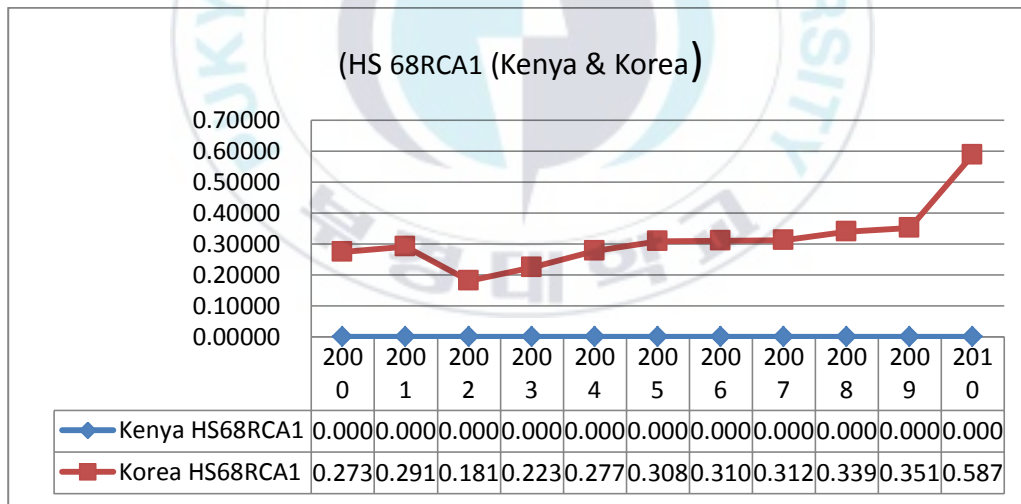
⁵⁶ CBK refers to the Central Bank Of Kenya, KNBS refers to The Kenya National Bureau of Statistics while Kita refers to the Korean International Trade Agency.

Figure: 4.1 RCA_1 for selected sectors HS09 of Kenya and Korea



Source: Calculations based on data from the World Bank

Figure: 4.2 RCA_1 for selected sectors HS68 of Kenya and Korea⁵⁷

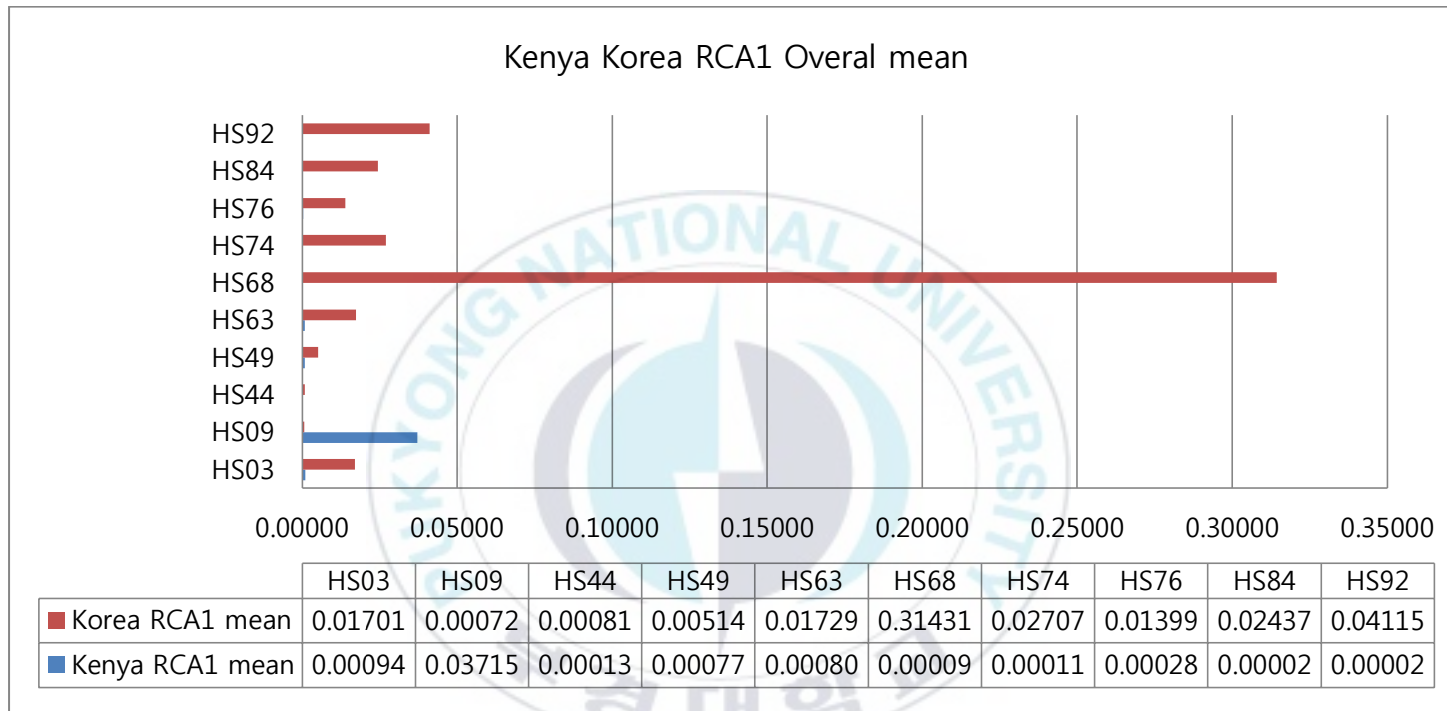


Source: Calculations based on data from the World Bank

⁵⁷ Note (a) Figure 4.1 Upper line-is a better performing sector for Kenya and lower line same sector for Korea, (b) Figure 4.2 Upper line-is a better performing sector for Korea and lower line same sector for Kenya as bilateral trading partners.

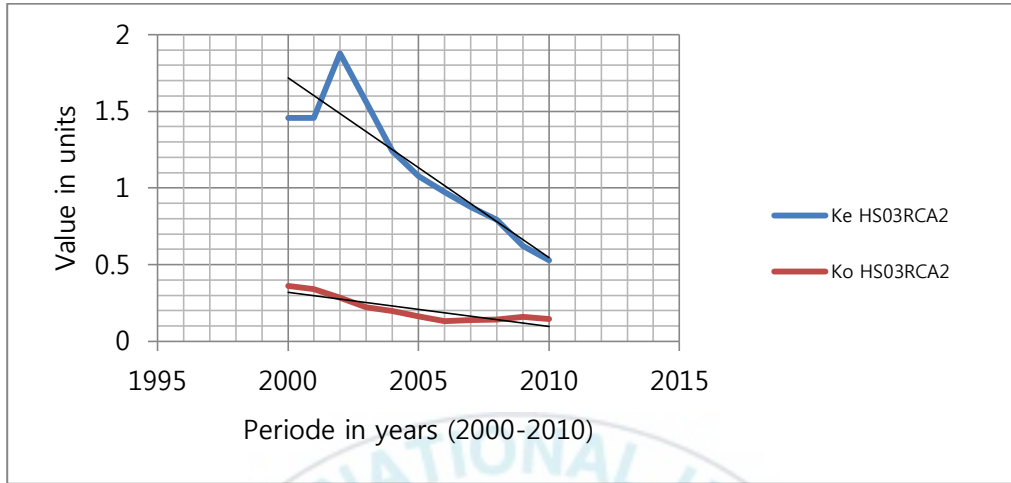
Empirical results are presented in accordance to the order of RCA (1, 2, 3, 4 and 5). Calculation of RCA_1 will help highlight the share of exports for the selected sectors in comparison to world exports of the same sectors by both partners. The above tables show a comparison of sectors HS 09 and HS 68 where Kenya and Korea had revealed comparative advantage (RCA) in comparison to corresponding sector with each other. RCA_1 overall mean shows that Kenya had higher RCA values in only (HS09) Coffee, tea, mate and spices sector out of the ten sectors while Korea had higher values on the other nine sectors HS03 –Fish, crustaceans, mollusks, aquatic invertebrates, HS09 – Coffee, tea, mate and spices, HS44 – Wood and articles of wood, wood charcoal., HS49 – Printed books, newspapers, pictures, HS63 – Other made textile articles, sets, worn clothing, HS68 – Stone, plaster, cement, asbestos, mica etc. articles, HS74 – Copper and articles thereof., HS76 –Aluminum and articles thereof, HS84 – Nuclear reactors, boilers machinery etc., HS92 – Musical instruments, parts and accessories. Figures 4.1 and 4.2 are a comparison of the most advantageous sectors for both Kenya and Korea respectively. (For more detailed empirical results see appendix A1 and A2).

Figure: 4.3 RCA_1 for overall sectoral mean of Kenya and Korea



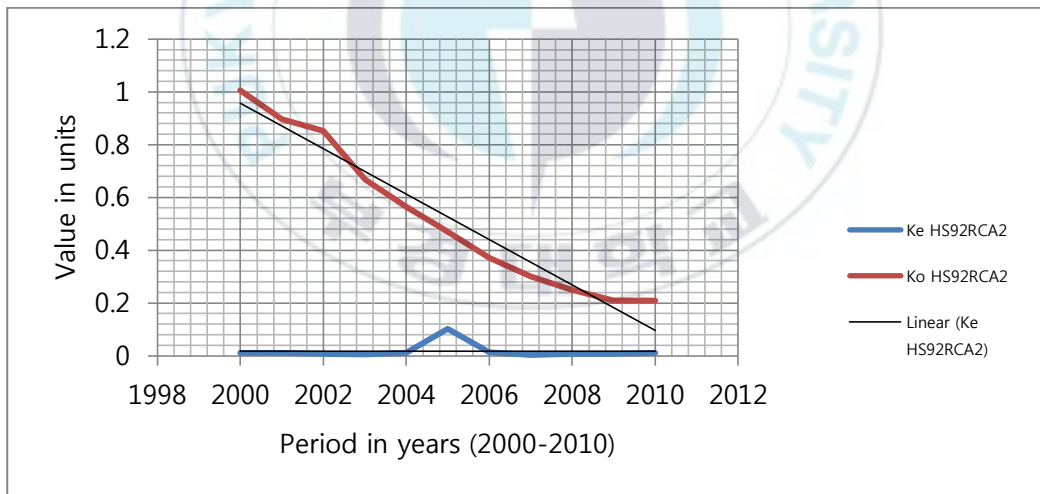
Source: Calculations based on data from the World Bank

Figure: 4.4 RCA_2 for selected sectors HS03 of Kenya and Korea



Source: Calculations based on data from the World Bank

Figure: 4.5 RCA_2 for selected sectors HS92 of Kenya and Korea⁵⁸



Source: Calculations based on data from the World Bank

⁵⁸ Note (a) Figure 4.4 Upper line-is a better performing sector for Kenya and lower line same sector for Korea, (b) Figure 4.3 Upper line-is a better performing sector for Korea and lower line same sector for Kenya as bilateral trading partners.

The above tables highlight RCA_2 empirical results. The main objective of this index is to do a comparative analysis of the shares of exports of the selected sectors of each of the two countries (Kenya and Korea) and the world in relation to their total exports. Values with a higher value than one reveal a comparative advantage whereas values lower than one imply a revealed comparative disadvantage. HS03- Fish, crustaceans, mollusks, aquatic invertebrates. RCA_2 for Kenya showed a revealed comparative advantage for Kenya in 2000, 2001, 2002, 2004 and 2005 with the rest years revealing a comparative disadvantage, while for Korea it does not reveal any comparative advantage. HS92 RCA_2 for Kenya never revealed any comparative advantage for the eleven years (from 2000-2010) while for Korea it revealed a comparative advantage only in 2000. (For more detailed empirical results see appendix A3 and A4).

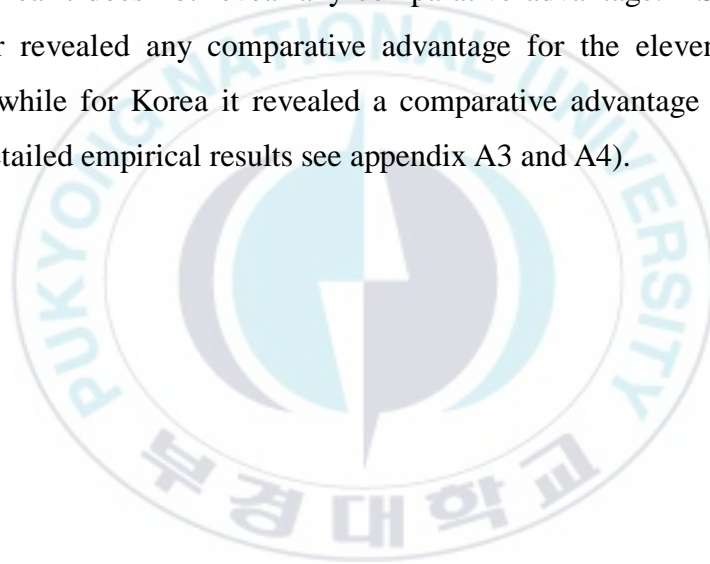
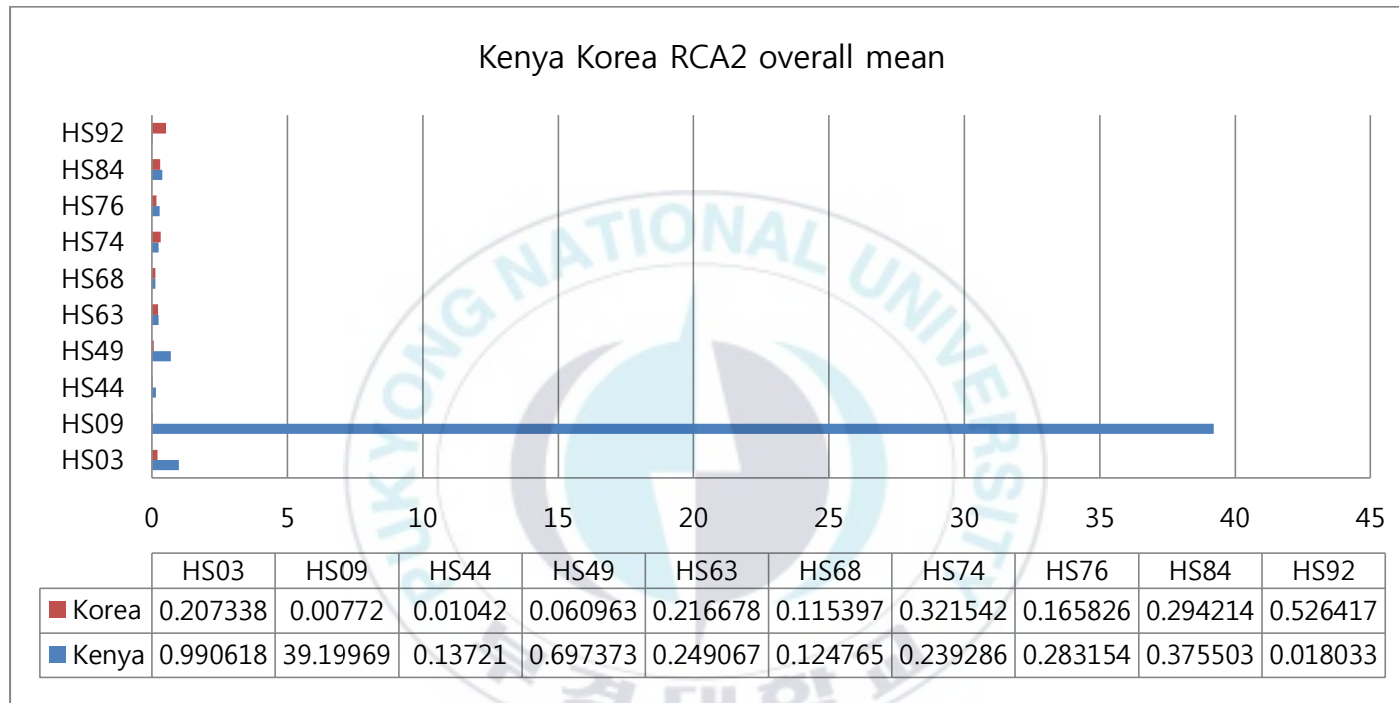
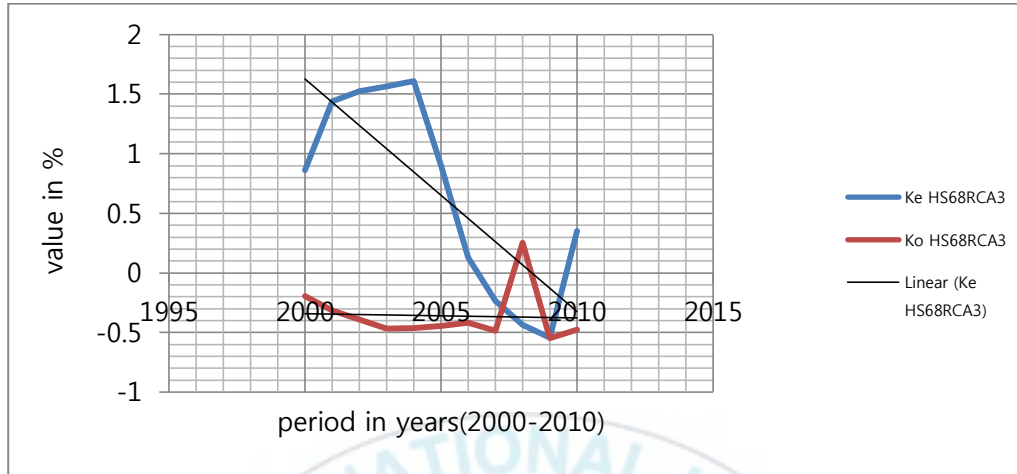


Figure: 4.6 RCA_2 for overall sectoral mean of Kenya and Korea



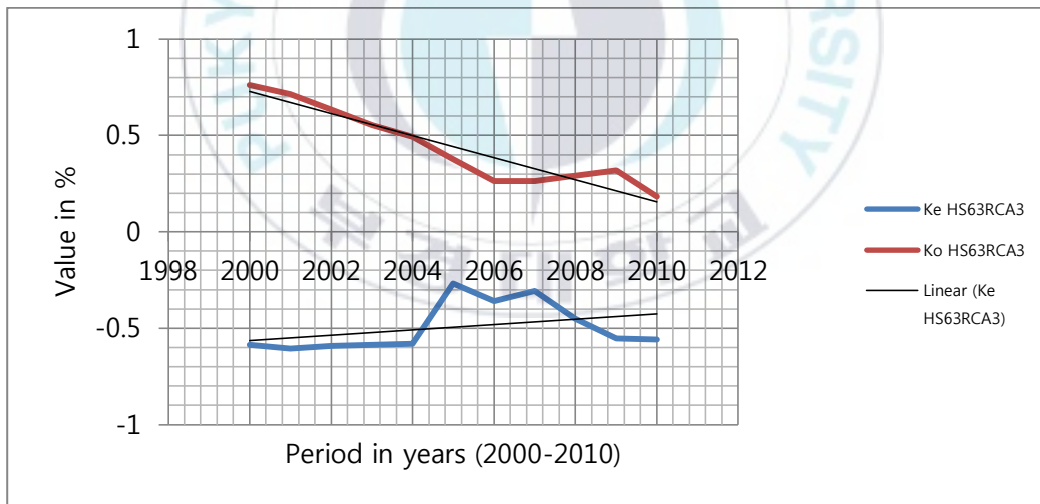
Source: Calculations based on data from the World Bank

Figure: 4.7 RCA_3 for selected sectors HS68 of Kenya and Korea



Source: Calculations based on data from the World Bank

Figure: 4.8 RCA_3 for selected sectors HS63 of Kenya and Korea⁵⁹



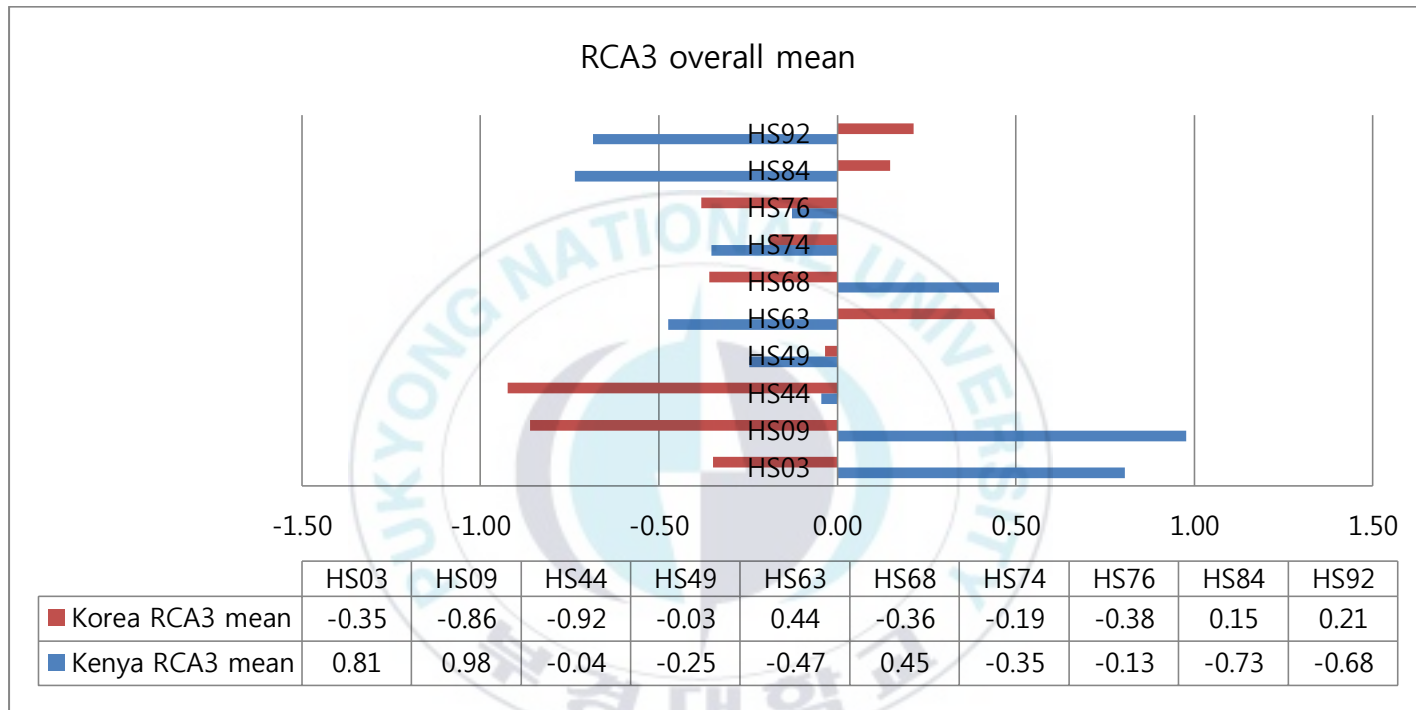
Source: Calculations based on data from the World Bank

⁵⁹ Note (a) Figure 4.7 Upper line-is a better performing sector for Kenya and lower line same sector for Korea, (b) Figure 4.8 Upper line-is a better performing sector for Korea and lower line same sector for Kenya as bilateral trading partners.

RCA_3 Index is crucial in the empirical analysis of a country's share of balance of trade in regard to a country's total trade. The uniqueness of this index is that estimation is based on a country's own trade. Empirical results range between -1 and 1 whereby positive values imply a comparative advantage while negative values show a comparative disadvantage. The empirical results are interpreted in percentage. For the period under study HS03-Fish, crustaceans, mollusks, aquatic invertebrates, HS09 - Coffee, tea, mate and spices and HS68 – Stone, plaster, cement, asbestos, mica etc. Articles for Kenya revealed a comparative advantage while other sectors had a comparative disadvantage. For Korea HS 63- Other made textile articles, sets, worn clothing, HS84 - Nuclear reactors, boilers machinery etc. and HS92 - Musical instruments, parts and accessories displayed a comparative advantage while the other industries had a comparative disadvantage.

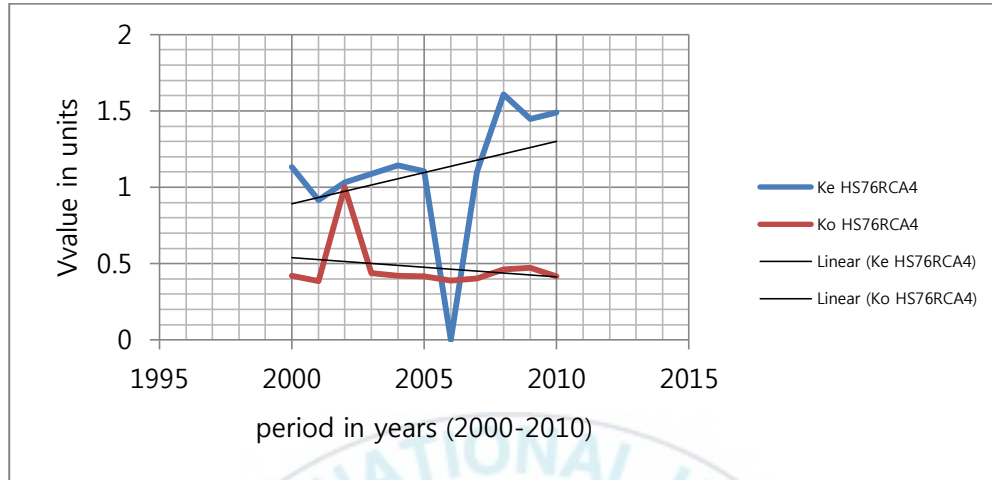
According to the empirical results, Kenya appears to have better terms of trade on sectors which trade on natural and or raw material which include HS03, HS09 and HS68 but imbalance of trade on technology or capital intensive sectors such as HS63, HS84 and HS92. Korea on the other hand have balance of trade terms on the manufacturing and or technology intensive sectors HS63, HS84 and HS92. (For more detailed empirical results see appendix A5 and A 6).

Figure: 4.9 RCA_3 for overall sectoral mean of Kenya and Korea



Source: Calculations based on data from the World Bank

Figure: 4.10 RCA_4 for selected sectors HS76 of Kenya and Korea



Source: Calculations based on data from the World Bank

Figure: 4.11 RCA_4 for selected sectors HS84 of Kenya and Korea⁶⁰

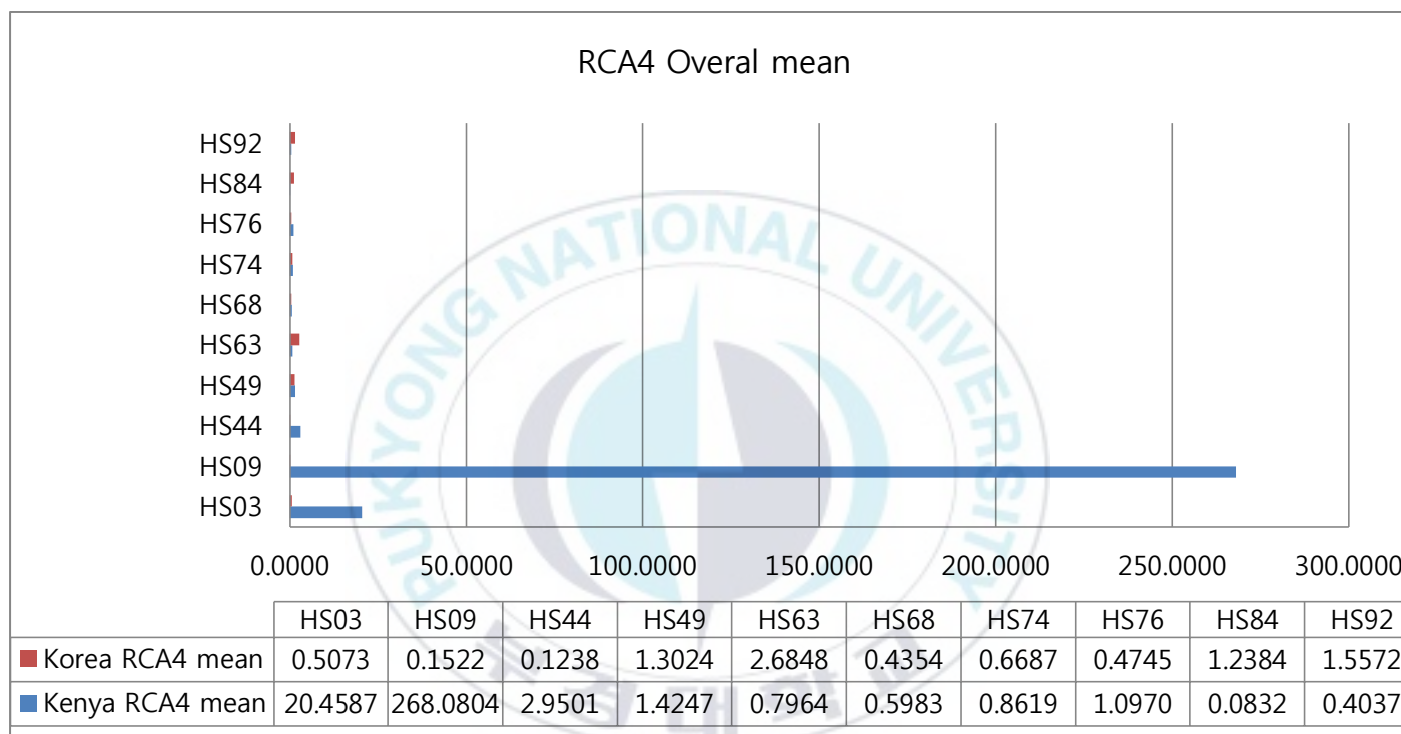


Source: Calculations based on data from the World Bank

⁶⁰ Note (a) Figure 4.10 Upper line-is a better performing sector for Kenya and lower line same sector for Korea, (b) Figure 4.11 Upper line-is a better performing sector for Korea and lower line same sector for Kenya as bilateral trading partners.

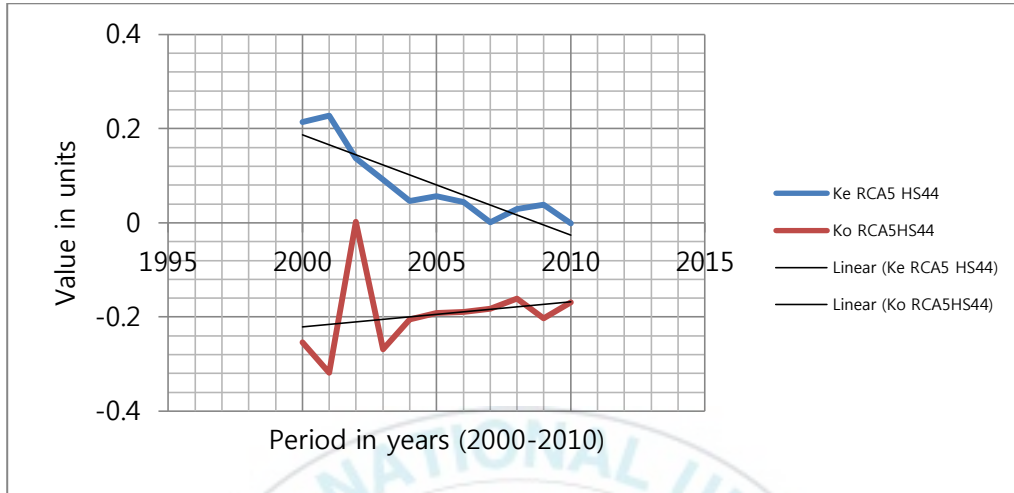
The main objective of RCA_4 is to empirically analyze the ratio of a country's exports of a commodity to the imports of the same commodity. The results take positive values whereby values greater than 1 implies that exports of that sector are more than imports of the same (No. of times). Results generate during the period under study (11 years -see table below) show that Kenya exports more than imports in HS03 –Fish, crustaceans, mollusks, aquatic invertebrates, HS09 – Coffee, tea, mate and spices, HS44 – Wood and articles of wood, wood charcoal, HS49 – Printed books, newspapers, pictures, HS74 – Copper and articles thereof and HS76 –Aluminum and articles thereof sectors. For Korea only two sectors (HS03 –Fish, crustaceans, mollusks, aquatic invertebrates and HS09 – Coffee, tea, mate and spices) exports were more than imports. Strangely enough both partners exported HS09 more than it imported (Kenya HS09 – 297.8684 and Korea HS09 – 27.07894), while, they imported more of HS 84-Nuclear reactors, boilers machinery etc. more than they exported it, for Kenya HS84 -.0.088327 and Korea HS84-0.00803(See table: 4 below) (For more detailed empirical results see appendix A 7 and A8).

Figure: 4.12 RCA_4 for overall sectoral mean of Kenya and Korea



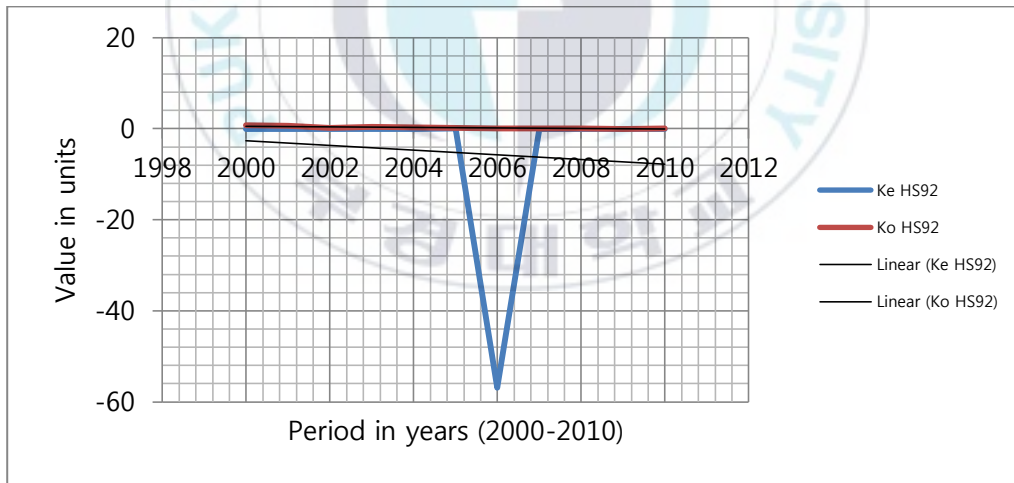
Source: Calculations based on data from the World Bank

Figure: 4.13 RCA_5 for selected sectors HS44 of Kenya and Korea



Source: Calculations based on data from the World Bank

Figure: 4.14 RCA_5 for selected sectors HS76 of Kenya and Korea⁶¹



Source: Calculations based on data from the World Bank

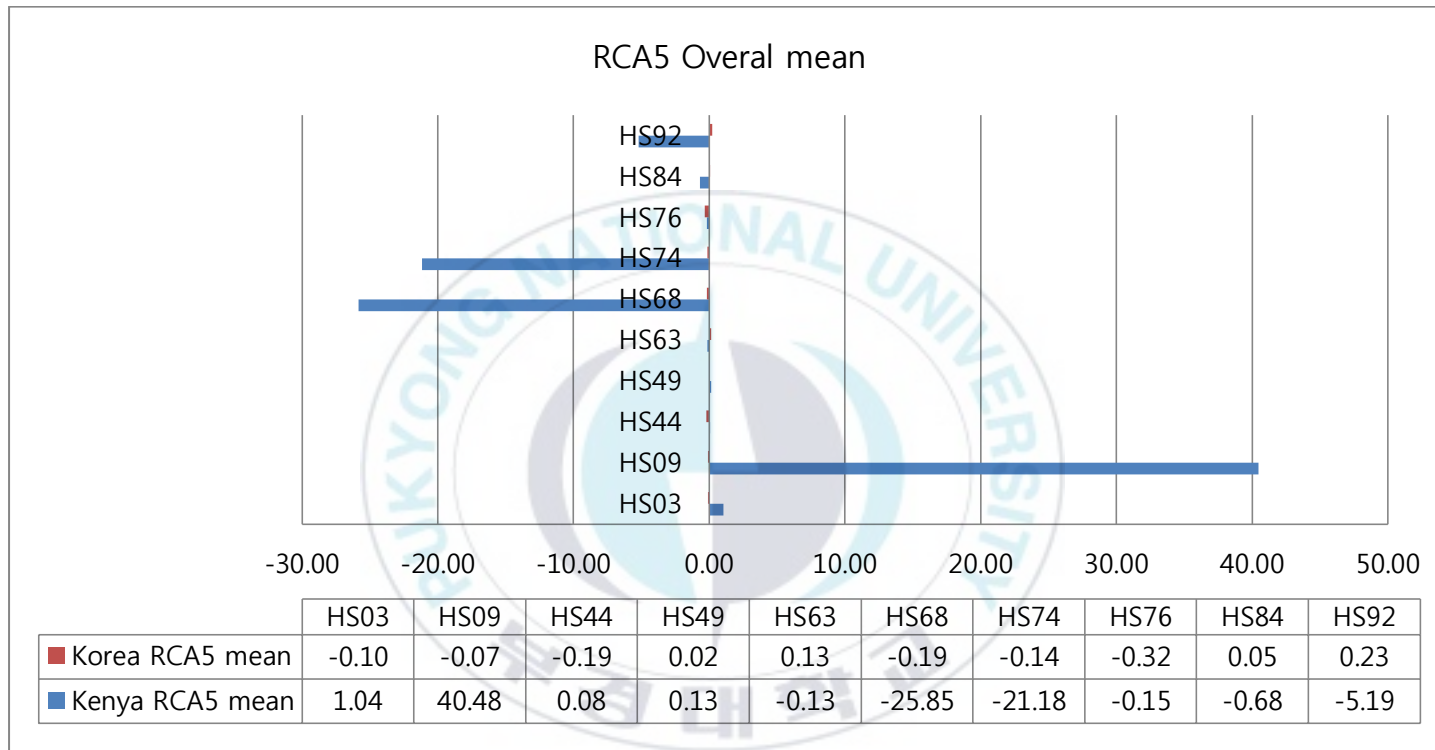
⁶¹ Note (a) Figure 4.13 Upper line-is a better performing sector for Kenya and lower line same sector for Korea, (b) Figure 4.14 Upper line-is a better performing sector for Korea and lower line same sector for Kenya as bilateral trading partners.

This is the fifth index (RCA_5) and is employed to find out the overall trade comparative advantage or disadvantage of the specific sectors under study. In case of positive values reveal a comparative advantage while negative values reveal a disadvantage.

Sectors advantageous for Kenya include; HS03 –Fish, crustaceans, mollusks, aquatic invertebrates (0.775), HS09 – Coffee, tea, mate and spices (31.604), HS44 – Wood and articles of wood, wood charcoal (0.0728), HS49 – Printed books, newspapers, pictures (0.2648), the disadvantageous sectors are; HS63(-0.1271), HS68 (-31.5913), HS74 (-24.5782), HS76 (-0.16212), HS84 (-0.79902) and HS92 (-6.3896). Sectors advantageous for Korea are; HS03 –Fish, crustaceans, mollusks, aquatic invertebrates(0.07045), HS09 – Coffee, tea, mate and spices (2.8731), HS44 – Wood and articles of wood, wood charcoal (0.00662), HS49 – Printed books, newspapers, pictures (0.0241), the disadvantageous sectors are; HS63(-0.01155), HS68 (-2.8719), HS74 (-2.2344), HS76 (-0.0147), HS84 (-0.0726) and HS92 (-0.5763).

Analysis results for RCA_5 show that both partners maintained competitive advantage on same industries albeit at different degrees as explained above. For Kenya HS09 – Coffee, tea, mate and spices (31.604) has maintained strong competitive power followed by HS03 –Fish, crustaceans, mollusks, aquatic invertebrates (0.775) . Sectors that decline in competitiveness include; HS68 – Stone, plaster, cement, asbestos, mica etc. articles (-31.5913), HS74 – Copper and articles thereof (-24.5782) and HS92 – Musical instruments, parts and accessories (-6.3896). Sector that maintained strong competitiveness for Korea HS09 – Coffee, tea, mate and spices (2.8731) while sectors HS68 (-2.8719), HS74 (-2.2344) showed overall decreasing competitiveness.(for more detailed empirical results see annex 9 and 10).

Figure: 4.15 RCA_5 for overall sectoral mean of Kenya and Korea



Source: Calculations based on data from the World Bank

Table: 4.2 Sectoral mean for all RCA's of Kenya and Korea

	HS03	HS09	HS44	HS49	HS63	HS68	HS74	HS76	HS84	HS92
RCA1 Kenya	0.000938	0.037145	0.000128	0.000772	0.000802	8.7E-05	0.00011	0.000284	1.82E-05	1.74E-05
RCA1 Korea	0.017008	0.000721	0.000812	0.005144	0.017289	0.314306	0.02707	0.01399	0.024373	0.041155
RCA2 Kenya	0.990618	39.19969	0.13721	0.697373	0.249067	0.124765	0.239286	0.283154	0.375503	0.018033
RCA2 Korea	0.207338	0.00772	0.01042	0.060963	0.216678	0.115397	0.321542	0.165826	0.294214	0.526417
RCA3 Kenya	0.8113	0.973593	-0.00984	-0.36759	-0.49509	0.651646	-0.43369	-0.0228	-0.77217	-0.71102
RCA3 Korea	-0.34864	-0.86028	-0.92327	-0.03478	0.441057	-0.35849	-0.19015	-0.3812	0.148025	0.2132
RCA4 Kenya	20.45874	268.0804	2.950061	1.424733	0.796374	0.598285	0.861854	1.096968	0.083225	0.403711
RCA4 Korea	0.507264	0.15217	0.123842	1.302358	2.684819	0.435352	0.668699	0.474485	1.238443	1.557169
RCA5 Kenya	1.035347	40.48383	0.080367	0.125157	-0.13245	-25.853	-21.1778	-0.15313	-0.68356	-5.19395
RCA5 Korea	-0.10162	-0.07407	-0.19444	0.024629	0.126198	-0.18605	-0.13634	-0.31961	0.049446	0.227191

Source: Calculation based on data from the World Bank⁶²

⁶² Refers to Authors own calculations and the source of the data. In this case it is the World Bank data base (wits).

4.4 Conclusion

This research is intended to analyze the international trade competitiveness of both Kenya and Korea, which was empirically analyzed for the period 2000 to 2010. The paper employed several and alternative RCA indices and therefore caution is paramount when interpreting the results. Reliability and stability analysis carried out across all indices are positive and therefore the five RCA indices results are reliable.

Empirical results regarding all indices tabulated reveal that Kenya had a revealed comparative advantage on five sectors and revealed comparative disadvantage on five sectors out of the ten sectors under analysis and vice versa for Korea. Results indicate that Kenya had advantage mostly on agricultural and raw material sectors while Korea had advantage on manufactured and technology intensive sectors. Kenya had advantage on HS03 –Fish, crustaceans, mollusks, aquatic invertebrates, HS09 – Coffee, tea, mate and spices, HS44 – Wood and articles of wood, wood charcoal, HS49 – Printed books, newspapers and picturesHS76 –Aluminum and articles thereof while Korea was advantageous on sectors; HS63 – Other made textile articles, sets, worn clothing, HS68 – Stone, plaster, cement, asbestos, mica etc. articles, HS74 – Copper and articles thereof, HS84 – Nuclear reactors, boilers machinery etc., and HS92 – Musical instruments, parts and accessories.

The author argues that RCA indices are very useful in analyzing the international trade comparative advantage or disadvantage for Kenya and Korea despite the few limitations and therefore the empirical results from the RCA calculations offer vital information for the analysis of bilateral trade engagement between the two bilateral trade partners.

CHAPTER 5 GRAVITY MODEL

5.1 Gravity Model of Trade

Globalization has brought many economic opportunities and challenges in equal terms. Due to technological advancement, trade between distant regions has been made reasonably and economically viable. The time it takes to transport goods from one point to another has been shortened tremendously. Furthermore trade liberalization through regionalism has reduced or eliminated many artificial barriers to trade. However, nontariff barriers to trade remain the biggest hurdle to trade especially to less developed economies.

It is commonly agreed that export trade plays a very crucial part in the economic development of any country. Trade liberalization through regionalism has been a catalyst to increased import and export trade. To many economies exports take the major share of the current account which brings money into the economy and therefore countries should find appropriate ways to have sustainable export trade.

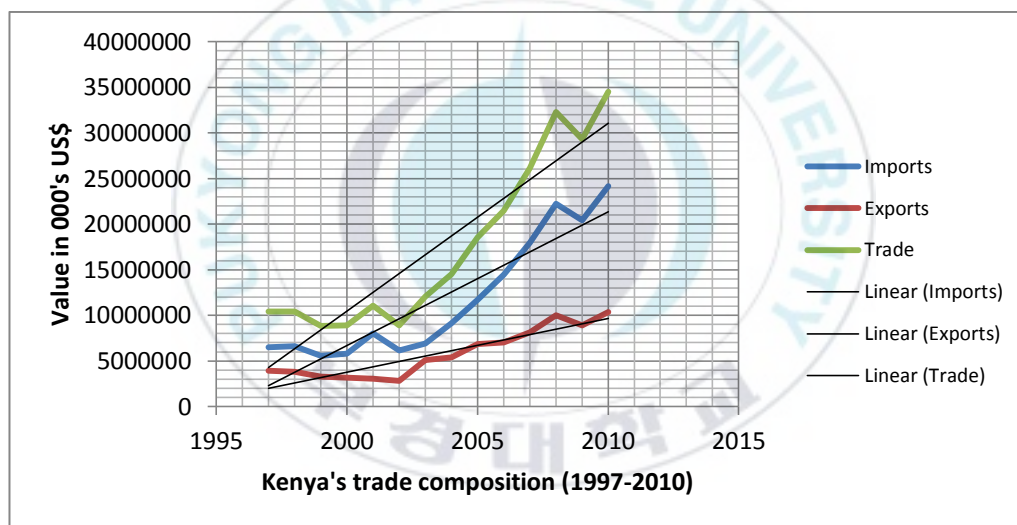
Kenya's traditional trade partners are the neighboring countries which include, Tanzania, Uganda,⁶³ Rwanda, Burundi, north and south Sudan, Ethiopia Somalia and DRC Congo and also Europe, North America and the Middle East. However the government's "Look East Policy" aims to exploit the huge potential and opportunities provided by the "Asian tigers" such as China, Korea and Japan. Unable to man all its borders, coupled with manual trade data recording makes it impossible to account for all trade by many developing countries which Kenya is

⁶³ See <http://www.theeastafrican.co.ke/news/Tanzania-edges-Uganda-as-Kenya-s-biggest-market-/-/2558/2435624/-/3o1uv4/-/index.html>.

not an exception. However the available data will provide valuable insights into the real determinants of exports for the two bilateral trade partners.

This part of the study specifically examines the determinants of Kenya's (ROK) and Korea's (ROK) exports in the global market. Following this, the research will apply the gravity model approach to trade for the analysis. Empirical estimation of the determinants of exports of the two bilateral partners will be carried out on data for the period 1997-2010. Preliminary analysis shows that Kenya is a major importing country while Korea is a major exporting country.

Figure: 5.1 Components of Kenya's trade (exports and imports, 1997-2010)



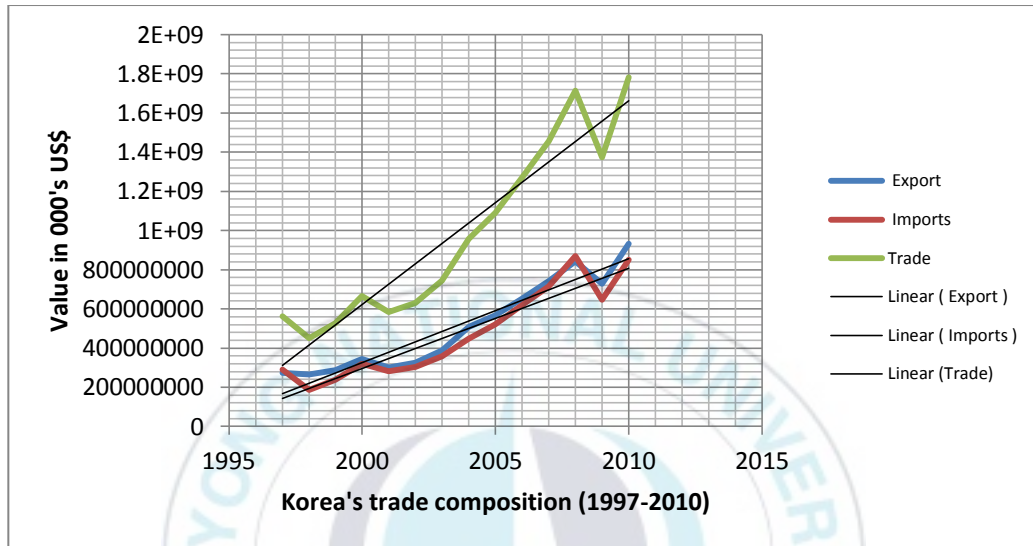
Source: Calculations based on UN Comtrade database statistics.

Note: Upper line represents total trade, middle line is for imports and lower line is for exports

Figure 5.1 shows the share of Kenya's imports and exports to the overall trade. The rate of export growth seems to be lower compared to imports as the linear lines depict. Since 1997 the gap between imports and exports has been widening rapidly. It implies that Kenya experienced a trade deficit during the period under study. This is bound to have affected the level of economic development, job

creation and balance of payment.⁶⁴ Above all Kenya was bound to have a trade deficit for the whole period under investigation.

Figure: 5.2 Components of Korea's trade (exports and imports, 1997-2010)



Source: Calculations based on UN Comtrade database statistics .

Note: Upper line represents total trade, middle line is for exports and lower line is for imports

Figure 5.2 shows the contribution of exports and imports to Korea's trade during the period 1997-2010 respectively. From 1997-2010 the gap between the share of imports and exports was very insignificant for the whole period under investigation compared to Kenya's case. The mean lines show that exports are more than imports. Furthermore Korea has been experiencing a budget surplus for the whole period under study.⁶⁵ Nevertheless, it is worth noting that the gap

⁶⁴ Karamuriro and Karakuza (2015).

⁶⁵ In the 1980's the Korean government adopted export oriented policies. The figure shows export growth was more compared to import growth during the period under study. With improved bilateral relationship Kenya can learn Korea's export policies and tailor them to suit her condition.

between exports and imports has remained uninterrupted. An intriguing feature is that if exports increase imports also increase and vice versa (exports and imports move in the same direction and almost at the same degree). Therefore the Korea government was able to maintain a trade surplus since 1997 to 2010 (the whole research period under investigation). The tables below show the major trading partners for Kenya and Korea. The selection was based on total trade value for all their bilateral trading partners during the period under review.

Table: 5.1 Kenya's trading partner ranking (1997-2010)

Partner 1-20	Partner 21-40	Partner 41-60	Partner 61-70
United Kingdom	Sudan	Australia	Oman
United Arab Emirates	Bahrain	Kuwait	Qatar
India	Korea, Rep.	Argentina	Syrian Arab Republic
United States	Spain	Brazil	Kazakhstan
Uganda	Congo, Dem. Rep.	Yemen	Djibouti
China	Rwanda	Sierra Leone	Portugal
South Africa	Switzerland	Senegal	Austria
Japan	Sweden	Denmark	Ecuador
Netherlands	Russian Federation	Burundi	Gabon
Germany	Israel	Malawi	Poland
Tanzania	Thailand	Swaziland	
Saudi Arabia	Finland	Sao Tome and Principe-	
France	Ireland	Turkey	
Pakistan	Canada	Jordan	
Egypt, Arab Rep.	Zambia	Nigeria	
Indonesia	Malaysia	Romania	
Italy	Hong Kong, China	Mauritius	
Ukraine	Afghanistan	Nepal	
Singapore	Iran, Islamic Rep.	Norway	
Belgium	Ethiopia	Ghana	

Source: Data from World Bank (WITS)

Note: 1st Column from top to bottom is rank 1 to rank 20, second column rank 21 to rank 40, third column is rank 41 to rank 60 while the fourth rank is rank 61 to rank 70

Table: 5.1 Korea's trading partner ranking (1997-2010)

Partner 1-20	Partner 21-40	Partner 41-60	Partner 61-70
China	Netherlands	Finland	Angola
United States	France	Iraq	Uzbekistan
Japan	Kuwait	Sweden	Cyprus
Hong Kong, China	Brazil	Ireland	Colombia
Saudi Arabia	Vietnam	New Zealand	Mali
Germany	Mexico	Egypt, Arab Rep.	Czech Republic
Australia	Malawi	Israel	Bermuda
Singapore	Chile	Slovak Republic	Venezuela
Indonesia	Oman	Nigeria	Syrian Arab Republic
United Arab Emirates	Panama	Austria	Liberia
United Kingdom	Spain	Hungary	
Russian Federation	Switzerland	Ukraine	
India	Belgium	Denmark	
Iran, Islamic Rep.	South Africa	Bahamas, The	
Thailand	Turkey	Pakistan	
Qatar	Lesotho	Argentina	
Philippines	Malta	Brunei	
Canada	Norway	Peru	
Malaysia	Poland	Bangladesh	
Italy	Greece	Algeria	

Source: Data from World Bank (WITS)

Note: 1st Column from top to bottom is rank 1 to rank 20, second column rank 21 to rank 40, third column is rank 41 to rank 60 while the fourth rank is rank 61 to rank 70

The tables above (table 5.1 and 5.2) show the major trading partners between Kenya and Korea. Both partner states have trading partners spread along the globe. Furthermore out of the ten major trading partners they share five as major trading partners which include; China, German, Japan, United Arab Emirates and the United States. Another outstanding feature is that neighboring partners form part of their major trading partners. For instance, Uganda and Tanzania for Kenya and China and Japan for Korea. During the observation period Korea was in the 26th

position in Kenya's trading list, while Kenya was at 104th position in Korea's trading list.

For imports both Kenya and Korea share five out of the ten major sources of imports which include; China, Indonesia, Japan, Germany and the United States. None of the Kenya's neighboring countries were among her ten major source of imports. Furthermore for Korea, her neighbors including China Japan and Hong Kong formed part of her major source of imports. Korea was in 18th position as Kenya's source of imports, while Kenya was 134th position as Korea's source of imports.

Major export countries for both include neighboring countries. During the period under study Uganda and Tanzania⁶⁶ which are members of the EAC were in the sixth and eleventh position as Kenya's major export destination while S. Africa was in the seventh position. Sudan, Somalia and Congo DRC were also part of the major export destination for Kenya. Korea's neighboring export destinations included China, Japan and Hong Kong. United Kingdom and United States are shared by both countries as part of their top ten major export destinations.

There are a variety of reasons as to why countries engage in international trade as explained by the classical and the new trade theories. The classical trade theory argues that countries which have similarity in factor endowments trade more compared to those less similar. However the classical trade theory is unable to explain trade within the same industry which is especially common in the developed countries, and also the huge volume of trade between countries which

⁶⁶ See <http://www.theeastafrican.co.ke/news/Tanzania-edges-Uganda-as-Kenya-s-biggest-market-/-/2558/2435624/-/3o1uv4/-/index.html>.

are similar in factor endowment. To address this inability many economic researchers established the new trade theory in nineteen eighties (1980's)⁶⁷. They argued that even if countries have same technology and economic resource they do trade. However these two theories could not specifically address the real determinants of international trade.

Towards the end of 19th century, Ravenstein initiated the application of gravity in the study of migration patterns in the United Kingdom (1889). A Century later Tinbergen and Poyhonen gestated the gravity model in the empirical study of bilateral trade. Its success has been prodigious and has been applied time and again in the empirical analysis of international trade.⁶⁸

Many economists describe gravity model as a very crucial tool in the diagnosis of international trade. Tinbergen in 1962 guided by Newton's Law of gravity applied the law of gravity in the analysis of international trade: where he explained that the volume of bilateral trade could be explained by the gravity model. Initial modification of the gravity model has proved one of the most outstanding empirical economic models. Continued modification of the model has shaped it into a powerful and accurate tool in the estimation and interpretation of economic data. A very comprehensive investigation by Thai Tri Do⁶⁹ on bilateral trade between Vietnam and twenty three European countries applied fixed effect, pool estimation and random effect gravity models. The empirical results after *F* test for the null hypothesis found pooled data to have bias while *Hausman* test between fixed and random tests suggested that fixed effect method to be more reliable than

⁶⁷ See <https://www.aeaweb.org/aer/top20/70.5.950-959.pdf>.

⁶⁸ Salvatici (2013).

⁶⁹ Do (2006).

random effects model.

According to a study on the determinants of exports in developing countries by Majeed and Ahmad (2006), FDI was found to have a positive but insignificant correlation to exports. He further argues that if the main aim of FDI is to capture domestic market the so called “tariff jumping type investments” then it might not lead to export promotion. The study also finds GDP and labor to have positive and significant correlation to export growth.⁷⁰

Uprasen, (2014) applied fixed effects PPML method to investigate Korea-Chile FTA for trade diversion. He argued that there is increase in trade between the two bilateral trade partners; however diversion of trade within Korea’s major trade partners such as the USA and the UK and also within Korea’s minor trade partners who have similar trade structures to Chile such as the Philippines was also detected.⁷¹

A study by Karamuriro and Karakuza (2015)⁷² using the gravity model to find determinants of Uganda’s export performance applied fixed effects, random effects and generalized method of moment. GDP for Uganda and for partner were found to have a statistically significant positive impact on Uganda’s Export performance. Empirical results showed GDP per capita income difference and Real exchange rate also effected Uganda’s exports positively which implied that currency devaluation would lead to improved exports for Uganda.

According to a research on the European region by Egger and Pfaffermayr. on

⁷⁰ Majeed and Ahmad (2006).

⁷¹ Uprasen (2014).

⁷² Karamuriro and Karakuza (2015).

“structural estimation of gravity Models with Path-Dependent Market Entry” especially for first time entry firms into export market concluded that, there is huge difference between dynamic and static gains from trade. Further the study found that market size, productivity and trade liberalization were fundamental to successful bilateral trade. In essence and specifically the research found out that labor productivity was the most significant determinant of bilateral exports in quantitative terms.⁷³

Deardoff (1998) found that the degree of elasticity of substitution of goods is a fundamental factor for trade with distant partners. For example he argues that the higher the elasticity of goods substitution the higher the trade no matter the distance. Furthermore, a reduction in logistical costs will lead to trade diversion from close neighbors to distant trade partners. Hence trade with close neighbors will be bound to contract.⁷⁴

Many empirical analyses on the impacts of exchange rate variability have found mixed results such as Olufayo and Biabafemi (2014)⁷⁵, found negative impact on exchange rate variability on oil and non-oil sectors in Nigeria. The Nigerian Floating exchange rate regime was found to create exchange rate instability. Uzturk (2006) literature review on the impacts of exchange on trade found that many empirical results found mixed outcomes ranging from significantly negative to significantly positive effects.⁷⁶

De Grauwe (1988) argues that even though exchange rate risks has a negative

⁷³ Egger and Pfaffermayr (2011).

⁷⁴ Deardoff (1998).

⁷⁵ Olufayo and Biabafemi (2014).

⁷⁶ Uzturk (2006).

effect on welfare based on supply of export under risk, it is also capable to motivate the exporter to increase exports and therefore, applying the current theories of production and consumption on the risk effects of exchange rate variability that there was ambiguity. However by means of political economy exchange rate variability was found to have reduced the flow of international trade in the long-run.⁷⁷

Coric and Pugh (2006) applied Meta Regression Analysis (MRA) on the effects of exchange rate variability on International trade and found exchange regime effect, country effect, model specification, the degree of risk averseness by the exporter as well as in addition to level of aggregation as it may affect the weight and the sign of the estimated trade effects. De Grauwe (1988) and Baum and Caglayan (2006) studies found similar outcomes. Monetary policies to control exchange rate volatility and development of hedging markets have been found to reduce exchange rate risk and therefore taking similar moves can encourage exports. Empirical literature has generated the wide range of possible outcomes which include positive, zero negative and ambiguous and thus has not yielded consensus.⁷⁸

International markets like any liberalized market operate under the market forces of demand and supply and therefore there are always two sides to consider in the interpretation of empirical signs and coefficient weights. It is worth noting that there is still no consensus by researchers on whether to use the exporters' supply side or the importers demand side as applies in the current case.⁷⁹

⁷⁷ De Grauwe (1988).

⁷⁸ Coric and Pugh (2006).

⁷⁹ Coric and Pugh (2006), and De Grauwe (1988).

5.2 Method

In this section the study explicates a framework of estimation to investigate the real factors and their weights that impact on exports by Kenya and Korea. Export promotion strategies play a major role towards economic regionalism and bilateral trade arrangements. Developing countries usually experience fiscal and trade deficits while rich countries enjoy budget and trade surplus. Export promotion is one way of overcoming the current account deficit. However export development is hampered by endogenous and exogenous factors. Accordingly, we first diagnosticate the probable factors that determine exports⁸⁰. To actualize this, the gravity model of trade which is guided by the gravity theory will be applied for the estimation of our econometric model with *Eview8* as the supporting software. The gravity theory has been applied by several social scientists in the analysis of different issues. Tinbergen (1962) guided by Newton's Law of gravity applied the law of gravity in the analysis of international trade: Below is the primitive structure of the law of gravity according to Newton and a correlation to bilateral trade signify that aggregate goods or labor or other production factors at source is attracted by a huge demand for goods or labor or production factors at destination, however the possible flow is diminished by the distance between the source and the destination.⁸¹

$$F_{ij} = G \frac{M_i M_j}{D_{ij}} \quad (\text{Eq. 5.1})$$

Where F_{ij} refers to trade flow from region i to region j , M_i and M_j represents region i 's and region j 's product of the economic mass, D_{ij} stands for distance

⁸⁰ Majeed & Ahmad (2006).

⁸¹ Salvatici (2013).

between the two regions (i and j) while G is a constant. Traditionally natural logarithms “ \ln ” in all variables is applied when carrying out empirical analysis using the gravity model. This is for better analysis. The new formula in log form is rewritten as;

$$\ln F_{ij} = \alpha + \beta_1 \ln M_i + \beta_2 \ln M_j - \beta_3 \ln D_{ij} + \varepsilon_{ij} \quad (\text{Eq. 5.2})$$

Where F_{ij} refers to bilateral trade flow between region i and region j , α denotes a constant value, while M_i and M_j stands for economic size of both regions i and j (or countries). Furthermore D_{ij} refers to the distance between the two regions (or countries). Economic mass may be represented by a regions GDP, GDP per capita and or population.

5.3 Data and Estimation Procedures

This study found it prudent to apply annual panel data for Kenya and Korea and their trading partners for the period 1997 to 2010. Due to its characteristics; panel data helps eliminate many weaknesses of time series and cross-sectional data. It has the power to bring out the true connection between variables over time and has been proven to minimize colinearity among independent variables, and above all controls for unobservable individual heterogeneity (Christophe Hurlin 2010), (Baltagi 2005), (Josef Bruderl 2005) thus the estimated results are more reliable.⁸²

Exports from Kenya and or Korea to their bilateral trading partners were used as the dependent variable in the estimation and were in current US dollars. Export

⁸² Damodar (2011).

data was drawn from the World Bank database UNComtrade, and the Korean International Trade Agency. Explanatory Variables applied included distance generated from www.distancefromto.net, in kilometers, GDP and GDP per capita were in current US dollars from the World Bank and the World Development indicators. The study also employed labor productivity by multiplying labor force and country manufacturing value added. Labor force and country manufacturing value added data was drawn from the World Development Indicators (WDI). While labor force was in number of persons, manufacturing value added was a % of GDP. Real exchange rate was deducted from the World Bank database and calculated as a ratio between the exporting country to that of the importing country. In this study Kenya and Korea are the exporting countries while their bilateral trading partners are the importing countries. The bilateral trading partners were selected from total trade with the exporting countries for the period 1997 to 2010. Further, three sets of 70, 50 and 30 top trading partners were selected for comparative purposes.

This research uses balanced panel data to carry out empirical estimation to investigate the real determinants for Kenya's and Korea's export trade in relation to their main trading partners. The gravity models in the research were initially estimated using three scenarios; Pooled regression, Fixed Effects regression (FE) and Random (RE) Effect regression models. Pooled data model has the capacity to simultaneously estimate changes of variables over time as well as between different units as argued by Ramos and Rodrigues.⁸³ The pooled model involves a combination of Cross-sectional data and time series data and therefore it enable widening the scope of the study. Its ability to analyze a variety of exogenous variables that affect the dependent variable in a single moment makes it a very

⁸³Ramos and Rodrigues (2010).

useful tool in terms of time and cost reduction needed to carry out a research.

Fixed effects regression model is one of the commonly applied models in econometric analysis. Unlike the Pooled OLS Regression Model where all variables are assumed to have similar characteristics, the FE Model creates an intercept for each variable but a similar slope, since normally every variable is unique by itself. Many researchers argue that estimation by Fixed Effect Model provides more reliable results compared to RE Model and Pooled OLS models. One of the main limitations of the FE Model is to estimate data which is invariant overtime. Furthermore, our model includes variables which have data that is invariant over time such as distance which is a major independent variable and some binary variables such as FTA, border and economic blocs (e.g. COMESA).

A third model, the Random effect (RE) model or the Error Components Model (ECM) is employed in estimation (consists of more than one error components). This model takes a mean value for all variables intercepts to be the representative intercept. Additionally the model holds that individual error terms are neither correlated nor auto-correlated among variables as well as over time. Another major (unrealistic) assumption of this model is that there is no correlation between the explanatory variables. Furthermore RE Model has the power to remove heteroskedasticity a major problem associated with cross-sectional data. It has in build capacity to also estimate time invariant variables such as distance, FTA, language, border and membership to regional economic blocs which will be applied in our models as dummy variables.

Table: 5.3 Models Capabilities (Pooled OLS, Fixed Effect and Random Effects Models)⁸⁴

Aspect	Pooled OLS	Fixed Effect	Random Effect
Heterogeneity (Variation between variables)	x	√	√
Variation within individual variables	x	x	√

The above table shows the possible capabilities of the models under application; Pooled OLS, FE and RE models. In order to find the most appropriate model for our data the *Hausman* test was simulated. This is to find which among the Fixed Effect regression model or the Random Effect Model is most suitable for the empirical analysis of our data.

The *Hausman* test hypothesis is that;

H_0 : That no correlation between independent variables and random effects (the null hypothesis), while the alternative hypothesis H_A that there is correlation between independent variables and random effects. If the *Hausman* test p-value for the *Chi. sq* is statistically significant then the null hypothesis is inconsistent and therefore the fixed effects estimator is consistent and hence preferred. Furthermore if the p-values for the *Chi. Sq* are insignificant it means that there is no correlation between the independent variables and the random effects. Hence Random Effects Model is a suitable model for the empirical analysis.

This section reports the empirical results for 70, 50, and 30 trading partners from the year 1997 to 2010 for both Kenya and S. Korea. Guided by the gravity theory, the study employed econometric method and Eviews as supporting software for the analysis of the data. The estimation results are presented below beginning with

⁸⁴ Mohd Isa (2014).

Kenya and Korea in that order.

In order to find the most appropriate model since three econometric models were applied the *Hausman* test was simulated. The test results showed that the Random Effect Model was the most appropriate model. Thus, therefore the RE model is employed in reporting while the Fixed Effect and the Pooled OLS models are applied as reference models.

Below are the expected signs for the variables used in the current econometric models.

5.4 Empirical Estimation and Findings

5.4.1 Determinants of Kenya's Exports

This section shows empirical results for the determinants of Kenya's exports (EXP_{ijt}) presented in three parts; 70 country analysis, 50 country analysis and three 30 country analysis in that order. Variables under estimation include DISTANCE ($DIST_{ij}$) between the Kenyan capital and trading countries capitals, a product of Kenya's and trading partner's (GDP_{i-jt}), Kenya and partner's GDP per capita ($GDPPC_{it}$) and ($GDPPC_{jt}$), Kenya's currency exchange rate to that of trading partners (EXR_{ijt}), Foreign direct investment inflow to Kenya (FDI_{it}), while border ($BORDER_{ij}$) and ($COMESA_{ijt}$) as trading bloc binary variables. Empirical results of the three categories display a common trend in terms of the variable impact on Kenya's exports. For example as expected, distance has shown

Table: 5.4 Variables and their expected signs.⁸⁵

Variable	Expected Sign	Rationale
Distance ⁸⁶	-	-Transportation costs (costs increases with increase in distance).
GDP Product (Exporter's*	+	-Exporter's GDP determines the supply (potential) side in foreign markets.
Importer's)	+	-while importers GDP determines market size (large economies tend to consume (import) more.
GDP per capita, Exporter	+	-A high productivity hence high capacity for more exports.
	-	-High per capita means increased demand or capacity to absorb domestic goods reducing surplus for export
GDP per capita, Importer	+	-A high productivity implies higher demand for imports.
	-	- increases demand for imported high value goods. Hence reduced import of low value goods
Real exchange rate ⁸⁷	+	Depreciation of exporting country's currency promotes exports and hinders imports and vice versa
	-	-Exchange rate volatility reduces trade by creating uncertainty& risk about future profit from export trade (destabilizing macroeconomic performance) ⁸⁸
Labor productivity exporter	+	-Means ability to produce and supply more at less cost.
Foreign Direct Investment	+	Provision of capital stock and technology or innovation encourages exports however,
	-	"Tariff jumping FDI" -may have negative impact.
Free Trade Agreement	+	Trade agreements reduce barriers to trade. Hence possible for increased trade volumes especially exports
BORDER	+	Proximity reduces logistical costs lowers prices of exports. ⁸⁹
Trading Bloc	+	Reduces barriers to trade. Hence possible for increased trade.

Sources: NG and Said(n.d.). - labor productivity, Deardoff (1998) - Distance, Coric and Pugh (2006)., Busse and Groning (2012)- border

⁸⁵ Karamuro and Karakuza (2015).

⁸⁶ Deardoff (1998).

⁸⁷ Coric & Pugh (2006).

⁸⁸ Olufayo and Babafemi (2014).

⁸⁹ Busse and Groning (2012).

Econometric model for Kenya is as below;

$$\begin{aligned}
 \ln(EXP_{ijt}) = & \beta_0 + \beta_1 \ln(DIST_{ij}) + \beta_2 \ln(GDP_{i-jt}) + \beta_4 \ln(GDPPC_{it}) \\
 & + \beta_5 \ln(GDPPC_{jt}) + \beta_6 \ln(EXR_{ijt}) + \beta_7 \ln(FDI_{it}) \\
 & + \beta_8 \ln(BORDER_{ij}) + \beta_9 (COMESA_{ijt}) + \varepsilon_{ijt}
 \end{aligned}$$

(Eq.5.3)

Dependent variables:

EXP_{ijt} : denotes Exports by country i to its trade partner j as importer in time t usually one year.

Explanatory Variables:

$DIST_{ij}$: denotes distance from exporter's capital city i to importer's to capital city j .

GDP_{i-jt} : denotes a product of GDP for exporter i and importer j in time t .

$GDPPC_{it}$: denotes GDP per capita of exporter i in time t .

$GDPPC_{jt}$: denotes GDP per capita for Importer j in time t .

EX_R_{ijt} : denotes real exchange rate between exporter's currency i to that of importer.

FDI_{it} : denotes total FDI inflow to exporter i in time t .

$BORDER_{ij}$: denotes shared border between exporter (i) and

importer (j) (a binary variable).

$COMESA_{it}$: refers to regional trading bloc (a binary variable)
ε_{ijt}	: denotes error or disturbance term/s
\ln	: denote natural logarithm.
i	: denotes Korea as exporter.
j	: denotes Korea's bilateral trading partners.
t	: denotes period under observation which is 1997-2010.
β	: denotes a coefficient.
β_0	: denotes the intercept coefficient.

Estimation on trade with 70 bilateral partners, 50 bilateral partners and 30 bilateral trade partners has been carried out. The 70 bilateral trade partners covered 93.5%, 50 countries a 90% and 30 bilateral trading partners a 81.3 per cent of Kenya's total trade during the period under investigation. All the results have been found to be in line with the expected signs. Empirical outcomes bear many similarities albeit minor differences mostly in terms of weight of each explanatory variable on the dependent variable.

Table: 5.5.1 Estimation of Kenya's exports for 70 trading partners (1997-2010)

Variable-Ko70	Pooled OLS	Fixed Effects	Random Effects
C	-34.44668*** (12.72471)	-33.0013*** (13.03103)	-30.87363*** (14.43333)
LDISTIJ	0.064433 (0.09938)	- (-)	-0.2927 (0.664647)
LGDPJ_J	1.130661*** (0.408414)	1.108094*** (0.423886)	1.114936*** (0.408505)
LGDPPCI	-0.765895 (0.779908)	-0.696025 (0.819499)	-0.717208 (0.785381)
LGDPCCJ	-0.70322 (0.641766)	-0.717811 (0.663059)	-0.713387 (0.640635)
LEXRJ	-1.668914*** (0.457868)	-1.593553*** (0.482987)	-1.616401*** (0.465341)
LFDII	-0.028974 (0.045751)	-0.02608 (0.048319)	-0.026958 (0.046437)
BORDER	3.569266*** (0.178696)	- (-)	3.209507*** (1.677069)
COMESA	1.180522*** (0.101935)	- (-)	0.357918*** (0.156308)
Number of observations	980	980	980
R-Squared	0.14713	0.868571	0.259008
Adjusted R -squared	0.140104	0.857824	0.252903
S.E of regression	2.322585	0.944411	0.944745
F-test	20.93864	80.82235	42.4256
Prob (f-statistic)	0	0	0

Sources: Estimation based on data from the World Bank, World Development Indicators, UN Comtrade, <http://www.distancefromto.net/> and www.comesa.int/.

Note: Statistical significance is presented with asterisks just after the intercept while, ***, ** and * implies 1%, 5% and 10 % significance in a 2 tailed t-test. Standard errors of the calculated coefficients are in parenthesis just below the coefficients.

Table: 5.5.2 *Hausman* test for Kenya's 70 trading partners (*Eviews 8*)

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	6	1.000

Hausman test summary above indicate that the Chi. Sq Statistic is 0.000000 and the Chi. Sq d.f. is 6 and the p-value is 1.000. Krishnankutty and Kiran (2014) argue that the results do not give any meaningful information. However Mohd Isa (2014) and Aval (2015) finds similar results reliable and a proof that there is no correlation between the independent variables and the random effects.

The table 5.4.1 above represents empirical analysis for Kenya's bilateral trade with 70 trading partners. Coefficient for the intercept is -30.87363 statistically significant at the 1% level. The coefficient for distance is negative which is in line with our expectation, however, it is insignificant. A product of GDP for Kenya and trade partner slope is 1.114936 statistically significant at 1% level. Hence GDP growth is one of the key determinants of Kenya's exports; the other two reference models show the same direction. Sign for GDP per capita for Kenya and trading partners are all negative, however, they are insignificant. Exchange rate volatility is also a major determinant of Kenya's exports. If exchange rate volatility hikes by a single percentage exports would change by -1.616401 at 99% confidence level. FDI sign is negative as expected, however, it is insignificant. Reference models show same outcome. Coefficient for BORDER and COMESA are 3.209507 and 0.357918 statically significant at 1% level. All the three models show a similar trend.

Table: 5.6.1 Estimation of Kenya's exports for 50 trading partners (1997-2010)

Variable-Ko50	Pooled OLS	Fixed Effects	Random Effects
C	-48.36139*** (11.15948)	-51.48961*** (11.7052)	-47.28464*** (11.42821)
LDISTIJ	-0.435415*** (0.063905)	- (-)	-0.535188 (0.407867)
LGDPJ_J	1.75589*** (0.372264)	1.74282*** (0.389222)	1.748796*** (0.37368)
LGDPCCI	-1.406917* (0.763342)	-1.366452* (0.800183)	-1.384955* (0.769393)
LGDPCCJ	-1.771868*** (0.516816)	-1.780319*** (0.53525)	-1.776455*** (0.517972)
LEXRIJ	-2.179745*** (0.52457)	-2.1361*** (0.549097)	-2.156057*** (0.532216)
LFDII	-0.01275 (0.048792)	-0.011074 (0.051086)	-0.01184 (0.049322)
BORDER	1.713314*** (0.073194)	- (-)	1.700757*** (0.625588)
COMESA	0.488357*** (0.148107)	- (-)	0.223311 (0.193765)
Number of observations	700	700	700
R-Squared	0.212799	0.846993	0.282642
Adjusted R -squared	0.203686	0.834183	0.274337
S.E of regression	1.827087	0.833741	0.833701
F-test	23.34926	66.12029	34.03206
Prob (f-statistic)	0	0	0

Sources: Estimation based on data from the World Bank, World Development Indicators, UN Comtrade, <http://www.distancefromto.net/> and www.comesa.int/ .

Note: Statistical significance is presented with asterisks just after the intercept where, ***, ** and * implies 1%, 5% and 10 % significance in a 2 tailed t-test. Standard errors of the calculated coefficients are in parenthesis just below the coefficients.

Table: 5.6.2 *Hausman* test for Kenya's 50 trading partners (Eviews 8)

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	6	1.000

Hausman test summary above indicate that the Chi. Sq Statistic is 0.000000 and the Chi. Sq degree of freedom is 6 and the p-value is 1.000. Some researchers such as Krishnankutty and Kiran (2014) altercate that the results do not give any concrete outcome to nullify the alternative hypothesis. Nevertheless, Mohd I., (2014) and Aval (2015) acknowledge similar results as reliable and a proof that there is no correlation between the independent variables and the random effects. Hence the null hypothesis is acceptable.

Table: 5.5.1 above bear's empirical results for Kenya with 50 bilateral trading partners. Coefficient for the intercept is -47.28464 statistically significant at 99% confidence interval. As expected β_1 sign for distance is negative though insignificant. Nevertheless the reference model coefficient for distance is negative and statistically significant. Coefficient for the product of Kenya's and of trading partners GDP's is positive and statistically significant at 1% level. Slope for Kenya's GDP per capita is -1.384955 significant at 90% confidence interval. Per capita rise by 1% would result to 1.384955% decrease in exports . Coefficient for GDP per capita for partner is -1.776455 statistically significant at 1% level. Real exchange rates volatility between Kenya and partner show a negative impact to exports a case supported by the two reference models. A 1% rise in exchange rate volatility would reduce exports by 2.156057% at 99% confidence interval. The beta for FDI is positive but insignificant. Slope for BORDER is 1.700757 at 99% confidence interval. Even though this model show COMESA is positive but insignificant our reference model supports our expectations.

Table: 5.7.1 Estimation of Kenya's exports for 30 trading partners 1997-2010

Variable-ko30	Pooled OLS	Fixed Effects	Random Effects
C	-10.3316 (14.96962)	-8.432718 (14.99851)	-7.206732 (15.55706)
LDISTIJ	-0.152981*** (0.059057)	- (-)	-0.285156 (0.32578)
LGDPI_J	0.717294 (0.819929)	0.550005 (0.833003)	0.606007 (0.823862)
LGDPPCI	-0.123829 (1.494903)	0.160233 (1.525254)	0.065139 (1.503265)
LGDPPCJ	0.007885 (1.002099)	0.215268 (1.011834)	0.145844 (1.005601)
LEXRJ	-1.986204* (1.023045)	-1.767313* (1.04423)	-1.840589* (1.028165)
LFDII	-0.057719 (0.035275)	-0.058703 (0.036369)	-0.058374* (0.035219)
BORDER	1.427068*** (0.150841)	- (-)	1.482177* (0.891393)
COMESA	0.668632*** (0.239244)	- (-)	0.223834 (0.222967)
Number of observations	420	420	420
R-Squared	0.247461	0.837557	0.357239
Adjusted R -squared	0.232813	0.823212	0.344728
S.E of regression	1.572903	0.755055	0.755125
F-test	16.89392	58.38423	28.55364
Prob (f-statistic)	0	0	0

Sources: Estimation based on data from the World Bank, World Development Indicators, UN Comtrade, <http://www.distancefromto.net/> and www.comesa.int/.

Note: Statistical significance is presented with asterisks just after the intercept where, ***, ** and * implies 1%, 5% and 10 % significance in a 2 tailed t-test. Standard errors of the calculated coefficients are in parenthesis just below the coefficients.

Table: 5.7.2 *Hausman* test for Kenya's 30 trading partners (Eviews 8)

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	6	1.000

The Hausman test results indicate that the alternative hypothesis was rejected at 99 % confidence interval. Krishnankutty and Kiran (2014).⁹⁰ finds the results not credible enough proof of the suitability of the Random Effects Model. Furthermore not everyone disagrees with such outcome as Mohd Isa (2014) and Aval (2015)⁹¹ finds similar results reliable and a proof that there is no correlation between the independent variables and the random effects.

The above table 5.6.1 represents empirical results for the econometric analysis of Kenya's exports with 30 major trading partners. Coefficient for distance is negative which is in line with the study's expectations. Even though this model shows that it is not significant, this reference model shows that it is significant. A product of Kenya's and trading partners GDP is positively correlated with her exports. It however has an insignificant impact. GDP per capita for Kenya and for trading partners has an inverse correlation. Real exchange rate has a negative impact on exports with a slope of -1.840589 meaning a percentage rise in depreciation will lead to 1.840589% decrease in Kenya's exports. Coefficient for FDI is negative and statistically significant at -0.058374 and which means an increase in FDI inflow by one percent will lead to 0.058374% decrease in Kenya's exports. Coefficient for COMESA trading bloc is positive but insignificant. Furthermore the reference model values are positive and statistically significant.

⁹⁰ Krishnankutty and Kiran (2014).

⁹¹ Mohd Isa (2014) and Aval (2015).

Estimation Summary for Kenya's Exports

Hausman tests were employed on all sets. The results proved that the RE model was better suited for the current data analysis. Values for R^2 for 70, 50 and 30 country set were 0.259008, 0.282642 and 0.357239 respectively. Standard Error (S.E) of regression was Lowest for 30 countries analysis, while p-value for F-stat was statistically significant at 1% level for all sets. The F-statistic values were highest for 70 countries at 42.4256, 34.03206 for 50 countries and 28.55364 for 30 country set.

Signs for the results from the three sets of analysis are consistent with study's expectations. From the estimated results, distance had negative and significant impact meaning Kenya's exports are affected by distance. GDP affects Kenya exports positively while her GDP per capita and Partners has an inverse correlation. Exchange rate volatility has remained a strong export determinant of her exports (negatively). S.E of regression is highest at 70 country set at 0.944745, 0.833701 for 50 country set and lowest at 30 country set at 0.755125 F-stat follows the same trend highest at 70 partner set and lowest at 30 partner set. Statistical significance is 1% level for F-stat for all sets.

5. 4.2 Determinants of Korea's Exports

Bilateral trade relations Kenya and Korea have rapidly risen. This can be supported by the increase in the volume of trade, the increase in the volume of Official Development Aid (ODA) to Kenya, increased numbers of tourists from the Far East nation to Kenya, cultural and educational exchange programs, the introduction of direct flights by the Korean national carrier to the East African nation and the high level government to government diplomatic engagement as

witnessed from 2012⁹². Though diplomatic relations began soon after Kenya got independence bilateral trade did not pick up momentum until mid-2000. Korea's economy since 1980's has been export driven while Kenya's economy is the only economy driven by domestic market rather than minerals as is the case within the sub-Saharan region.

In this study the author aims to investigate what the real determinants of Korea's exports are and the weights of their impacts. As for Kenya, Korea's analysis will be in 3 groups (70 top trading partners, 50 top trading partners and 30 top trading partners in that order).

Data Variables and Model Applied

The Korean Integrated Trade Association is a Korean government body mandated with report crucial and related trade data on a quarterly basis to the Korean government. This makes it possible to get accurate and timely trade data for analysis. Since it is a comparative analysis availability of data for both partners was of paramount necessity. Trade data for Korea was available even for 2013; however since Kenya's trade data for 2011 and 2012 was not available the study chose data from 1997 up to 2010 for consistency's sake.

In the model FTA is the only binary variable. FTA variable took one if only the signed FTA was in effect while it took zero if it was not yet effective. Korea's FTA's status is presented by the table below.

⁹²Kitau (2013).

Table: 5.8 Status of FTA's between Korea and Bilateral trade partners

FTAs in effect	Date of Effect	Concluded FTAs	FTAs under negotiation	FTAs under consideration
Korea-Chile FTA	Apr. 1, 2004	Korea-Turkey FTA	Korea-Canada FTA	Korea-MERCOSUR FTA
Korea-Singapore FTA	Mar. 2 2006	Korea-Colombia FTA	Korea-Mexico FTA	Korea-Israel FTA
Korea-EFTA FTA	Sept. 1, 2006		Korea-GCC FTA	Korea-Central America FTA
Korea-ASEAN FTA	Jun. 1, 2007		Korea-Australia FTA	Korea-Malaysia FTA
Korea-India CEPA	Jan. 1, 20010		Korea-New Zealand FTA	
Korea-EU FTA	Jul. 1, 2011		Korea-China FTA	
Korea-Peru FTA	Aug. 1, 2011		Korea-Vietnam FTA	
Korea-U.S. FTA	Mar. 15, 2012		Korea-Indonesia FTA	
			Korea-China-Japan FTA	
			Korea-Japan FTA	

Source: Ministry Of Foreign Affairs and Trade- Korea,

There is a slight difference in the model for Kenya and Korea. The Korean model added one more explanatory variable and one binary variable instead of two. The Korean model includes distance ($DIST_{ij}$), a product of GDP per capita for Kenya and for partner (GDP_{i-jt}), GDP per capita for Korea and for her trading partners ($GDPPC_{it}$) and ($GDPPC_{jt}$) respectively, Exchange rate ($EX_{R_{ijt}}$) as a ratio between exporter's i currency to that of importer j . Labor productivity of the exporter was also included ($LAB_{PRDCTIV_{it}}$) as a ratio of GDP to employed persons in a given time t . Exporter's FDI inflow and FTA has also been factored in (FDI_{it}) and (FTA_{ijt}) respectively. The study has been carried out based on top bilateral trading partners beginning with 70 major trading partners, 50 major trading partners and 30 major trading partners.

$$\begin{aligned} \ln E_{ijt} = & \beta_0 + \beta_1 \ln(DIST_{ij}) + \beta_2 \ln(GDP_{i-t}) + \beta_3 \ln(GDPPC_{it}) \\ & + \beta_4 \ln(GDPPC_{jt}) + \beta_5 \ln(EX_R_{ijt}) + \beta_6 \ln(LABPRDCTIV_{it}) \\ & + \beta_7 \ln(FDI_{it}) + \beta_8 (FTA_{ijt}) + \varepsilon_{ijt} \end{aligned}$$

(Eq. 5.4)

Dependent variables:

$Exports_{ijt}$: denotes Exports by Exporter i to importer j in time t .

Explanatory Variables:

$DIST_{ij}$: denotes distance from exporter (capital city) i to that of importer j .

GDP_{i-t} : denotes product of GDP for Exporter i and importer j in time t , usually one year.

$GDPPC_{it}$: denotes GDP per capita for exporter i in time t .

$GDPPC_{jt}$: denotes GDP per capita for importer j in time t .

EXR_{ijt} : denotes real exchange rate between exporter i and importer j in time t , usually one year.

$LABPRDCTIV_{it}$: denotes Exporter's i labor productivity in given time t .

FDI_{it} : denotes Foreign Direct Investment inflow to exporter i in time t usually one year.

FTA_{ijt} : denotes effective Free Trade Agreement between exporter i and importer j in time t usually one year.

- ε_{ijt} : denotes error or disturbance term/s in time t .
- \ln : denote natural logarithm.
- i : denotes Korea as exporter.
- j : denotes Korea's bilateral trading partners.
- t : denotes period under observation which is 1997-2010.
- β : denotes a coefficient.
- β_0 : denotes the intercept coefficient.

Empirical Estimation Results for Korea's Exports

Three sets of estimation have been simulated based on the share of total trade for Korea as has been done with Kenyan analysis, as bilateral partners for comparison purpose. For 70 countries represent over 92 percent of Korea's exports within the stipulated period under study, 50 represent over 88 percent while 30 partners represent over 81 percent. As previously explained, three econometric models are simulated and the most suitable model chosen for the current reporting. They include Pooled OLS regression, Fixed Effect and Random Effect regression. All the estimation results have been evaluated to be in accordance with the current economic theories. Therefore the author has presented the results based on the weight of exports from the highest weighted (92 %) to the lowest (81 %) in that order. According to *Hausman* test, results Random Effect model was found to be most reliable. Here, Pooled OLS and FE model are applied as reference models.

Table: 5.9.1 Estimation of Korea's exports for 70 trading partners 1997-2010

Variable	Poole OLS	Fixed Effects	Random Effects
C	-28.37739** (13.20292)	-37.25041*** (12.9052)	-26.16337* (14.22875)
LDISTIJ	-1.253133*** (0.027181)	- (-)	-1.255231*** (0.276994)
LGDPI_J	0.930602*** (0.354477)	0.872245** (0.348645)	0.875933** (0.345821)
LGDPPCI	-2.543785* (1.36604)	-2.307615 (1.478357)	-2.322541* (1.393993)
LGDPPCJ	-0.253126 (0.473593)	-0.208717 (0.475126)	-0.211524 (0.464709)
LEXRIJ	0.763684*** (0.218811)	0.752402*** (0.237402)	0.753115*** (0.229304)
LLABPRDCTI	2.599305* (1.310787)	2.411372* (1.400901)	2.42325* (1.317078)
LFDII	0.022995 (0.026798)	0.030352 (0.030382)	0.029887 (0.028992)
FTA	-0.140095** (0.082653)	- (-)	-0.008854 (0.053377)
Number of observations	980	980	980
R-Squared	0.225971	0.915577	0.486375
Adjusted R -squared	0.219594	0.908573	0.482143
S.E of regression	1.649422	0.56456	0.564598
F-test	35.43447	130.7192	114.9353
Prob (f-statistic)	0	0	0

Sources: Estimation based on data from the World Bank, World Development Indicators, UN Comtrade, MOFAT, <http://www.distancefromto.net/>.

Note: Statistical significance is presented with asterisks just after the intercept where, ***, ** and * implies 1%, 5% and 10 % significance in a 2 tailed t-test. Standard errors of the calculated coefficients are in parenthesis just below the coefficients.

Table: 5.9.2 Hausman test for Korea's 70 trading partners (Eviews 8)

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	7	1.000

The above table displays of the *Hausman* test for Korea's 70 bilateral trading analyses. The results reject the alternative hypothesis⁹³ since the p-value for the Chi-sq is statistically insignificant at 99% confidence interval.

Table 5.11 above represents a summary of the empirical analysis for the determinants of Korea's Export trade with 70 bilateral partners using Random Effect model and two reference models. Distance is found to be inversely related to Korea's Export trade, with β of -1.255231 statistically significant at 1% level. Coefficient for the product of Korea's and trading partners GDP is positive and statistically significant at 5% level. A 1 percent rise in product of GDP would result to 0.875933% growth in Exports. Korea's GDP per capita has a negative correlation with its exports while, partner GDP per capita has a no significant impact. A rise in Korea's GDP per capita by 1% will lead to -2.322541% growth of her exports. Coefficient for Exchange rate is 0.753115 at 99% confidence interval. Labor productivity sign is positively significant at 90% confidence interval. Korea's exports will rise by 2.42325% if her Labor productivity rose by one percent. Sign for FDI is positive as expected but statistically insignificant. Even though our model shows that FTA has a positive but insignificant impact on Korea's exports our reference model shows it has a positive and significant impact. Directions for all the variables signs are in accordance with our expectations.

⁹³ Mohd Isa (2014) & Aval (2015).

Table: 5.10.1 Estimation of Korea's exports for 50 trading partners 1997-2010

Variable	Pooled OLS	Fixed Effects	Random Effects
C	-121.1086*** (1.79E+01)	-138.5545*** (19.01177)	-124.8659*** (18.26892)
LDISTIJ	-1.35E+00*** (2.12E-02)	- (-)	-1.347735*** (0.226206)
LGDPJ_J	3.797768*** (4.78E-01)	3.946387*** (0.506167)	3.899498*** (0.484668)
LGDPPCI	-9.822225*** (2.541629)	-10.32237*** (2.730405)	-10.16458*** (2.580833)
LGDPCCJ	-2.696748*** (5.03E-01)	-2.800481*** (0.528703)	-2.767754*** (0.511293)
LEXRJ	-0.729119*** (2.25E-01)	-0.760552*** (0.232607)	-0.750635*** (0.221556)
LLABPRDCTI	6.173768*** (2.33383)	6.514184*** (2.509209)	6.406784*** (2.376073)
LFDII	0.02205 (4.93E-02)	0.011546 (0.053129)	0.01486 (0.050175)
FTA	0.231825*** (6.31E-02)	- (-)	0.073139 (0.05999)
Number of observations	700	700	700
R-Squared	0.273766	0.273766	0.519521
Adjusted R -squared	0.265358	0.265358	0.513959
S.E of regression	1.540591	1.540591	0.515677
F-test	32.56042	32.56042	93.39362
Prob (f-statistic)	0	0	0

Sources: Estimation based on data from the World Bank, World Development Indicators, UN Comtrade, MOFAT, <http://www.distancefromto.net/>.

Note: Statistical significance is presented with asterisks just after the intercept where, ***, ** and * implies 1%, 5% and 10% significance in a 2-tailed t-test. Standard errors of the calculated coefficients are in parenthesis just below the coefficients.

Table: 5.10.2 *Hausman* test for Korea's 50 trading partners (*Eviews 8*)

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	7	1.000

The above table is the *Hausman* test. The *Chi. Sq* Statistic is 0.000000 while the *Chi. Sq* degree of freedom is 7 with prob. of 1.000. Since the *p-value* is insignificant it accept that on the null hypothesis that RE is a suitable model for the data analysis against the alternative hypothesis that FE is better suited than RE. Pooled OLS and FE models will be applied as reference models only.

In this analysis the study is pooled data of 50 countries within a span of 14 years meaning we have 700 observations. The coefficient for the intercept is -124.8659 statistically significant at 1% level. Sign for distance is negative which is consistent with the expectation, and is significant at 99% confidence interval. Coefficient for the product of Korea's trading partners GDP is positive at 3.899498 units, statistically insignificant at 1% level. The elasticity for Korea's GDP per capita is -10.16458 while for her partners is -2.767754 both significant at 1 % level. Therefore a rise in per capita for Korea or her trading partners will have a negative impact on her exports. Exchange rate volatility has a negative correlation to Korea's exports. The beta for exchange rate is -0.750635. Reference models show similar signs. Labor productivity with a coefficient of 6.406784 has the second highest impact on exports after exporters (Korea's) GDP per capita. All three models show FDI has a positive but insignificant impact. FTA sign is positive but insignificant. However, the study's reference model supports the expected results.

Table: 5.11.1 Estimation of Korea's exports for 30 trading partners 1997-2010

Variable	Fixed Effects	Random Effects	Panel Least Squares
C	-99.48005*** (11.25281)	-110.9823*** (11.95908)	-97.5719*** (11.79348)
LDISTIJ	-1.011269*** (0.020071)	- (-)	-1.01336*** (0.388504)
LGDPI_J	3.245377*** (0.288078)	3.317596*** (0.305311)	3.194122*** (0.284245)
LGDPPCI	-7.311618*** (1.8012)	-7.496192*** (2.007507)	-7.180623*** (1.704855)
LGDPPCJ	-1.986899*** (0.314173)	-2.033416*** (0.330283)	-1.953885*** (0.311278)
LEXRIJ	-0.880461*** (0.185225)	-0.885603*** (0.194435)	-0.876812*** (0.184146)
LLABPRDCTI	3.970506** (1.71273)	4.074626** (1.918341)	3.896611** (1.615693)
LFDII	-0.002478 (0.032153)	-0.007023 (0.035248)	0.000748 (0.0306)
FTA	0.147806*** (0.042142)	- (-)	0.252706*** (0.056437)
Number of observations	420	420	420
R-Squared	0.273766	0.971376	0.730115
Adjusted R -squared	0.265358	0.968767	0.724862
S.E of regression	1.540591	0.303091	0.299922
F-test	32.56042	372.3174	138.9842
Prob (f-statistic)	0	0	0

Sources: Estimation based on data from the World Bank, World Development Indicators, UN Comtrade, MOFAT, <http://www.distancefromto.net/>.

Note: Statistical significance is presented with asterisks just after the intercept where, ***, ** and * implies 1%, 5% and 10 % significance in a 2 tailed t-test. Standard errors of the calculated coefficients are in parenthesis just below the coefficients.

Table: 5.11.2 *Hausman* test for Korea's 30 trading partners (Eviews 8)

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	7	1.000

The Hausman test results rejected the alternative hypothesis that FE model is the an appropriate model for the analysis of data for 30 countries trading with Korea. It therefore means use of the RE model will offer this study the most reliable results for the analysis and policy drafting.

Table 5.15 contains empirical analysis results for Korea's export trade with 30 bilateral partner states. Beta one for distance is -ve and corresponds to the gravity trade model theory. Distance has a coefficient of -1.01336 statistically significant at 1% level. Coefficient for the product of Korea's and trading partners GDP is 3.194122 statistically significant at 1% level. Thus a 1% rise in GDP would make Exports to go up by 3.194122 %. Coefficient for Korea's GDP per capita is -7.180623 while that for partner is -1.953885 both statistically significant at 1% level. Hence an increase in Korea's and trading partners GDP per capita has an inverse relationship to its export trade. Sign for Exchange rate volatility is negative. Empirical outcomes show that Korea's labor productivity coefficient is positive and statistically significant at 5% level. A rise of productivity by one per cent will result to 3.896611% jump in exports. Sign for FDI is positive but insignificant our reference models show similar direction. With a coefficient of 0.252706 statistically significant at 1% level, FTA has been found to improve Korea's exports with her trading partners.

Estimation Summary for Korea's Exports

Hausman test results indicate that the null hypothesis is accepted which means that Random Effect Model was more appropriate compared to the Fixed Effect Model. Nevertheless, FE Model is unable to estimate time invariant variables such binary variables and distance which is one of the main explanatory variables in the current model. All variables coefficients were in line with the expected signs. R^2 Value for 70 countries was the lowest at 0.486375 while the other two models (50 and 30) were 0.519521 and 0.730115 respectively. Meaning variables employed in the 30 trading partner analysis could account for Over 73% for Korea's trade with partners whereas about 27% could be accounted for by the error term. 70 country set has the highest S.E term of 0.564598 while 30 partner set had the lowest at 0.299922. F-stat for 70, 50 and 30 partner set was 114.9393, 93.39362 and 138.9842 respectively all statistically significant at 1% level.

5.5 Conclusion

The main objective of this research is to find the determinants for Kenya's and Korea's exports to the world. This was done in three parts, 70 top trading partners, 50 top trading partners and 30 top trading partners. In this regard gravity model was utilized in the estimation by use of EViews 8 as supporting software. The research used balanced panel data within a fourteen year period from 1997 to 2010. To find out the most suitable model Hausmann test was simulated. The Hausman test results summary for all sets for both Kenya and Korea showed that; the Chi-Sq Statistic to be 0.000000 while the Chi-Sq. d.f for Kenya was 6 and 7 for Korea all with a statistical significance of 1.0000.

Krishnankutty and Kiran (2014) argue that the results do not give any meaningful information that could prove either FE or RE models to be best suited. However

Mohd Isa (2014) and Aval (2015) find similar results reliable and a proof that there is no correlation between the independent variables and the random effects. Therefore hausman test results have rejected the alternative hypothesis that the LSDV model is the most appropriate in place of the null hypothesis that the Error Correction Model has more capacity for the analysis of the current data. The author therefore used the Pooled OLS and the LSDV models for reference while the ECM in this research has been utilized in the reporting.

The table below shows variables signs after econometric estimation. Signs for Random Effects model are in bold



Table: 5.12 Variable signs after estimation “Poole OLS, FE and RE Models”

			Variables											
Country	Set	Model	C	DIS TLJ	GDP LJ	GDP PCI	GDPP CJ	EX_R LJ	LABPR DCTI	FD II	FT A	BORD ER	COM ESA	
Kenya	70	Pooled OLS	-		+			-	n/a		n/a	+	+	
		FE	-		+			-	n/a		n/a			
		RE	-		+			-	n/a		n/a	+	+	
	50	Pooled OLS	-	-	+	-	-	-		n/a		n/a	+	+
		FE	-		+	-	-	-		n/a		n/a		
		RE	-		+	-	-	-	n/a		n/a	+		
	30	Pooled OLS		-					-	n/a		n/a	+	+
		FE							-	n/a		n/a		
		RE							-	n/a	-	n/a	+	
Korea	70	Pooled OLS	-	-	+	-		+	+		-	n/a	n/a	
		FE	-		+			+	+			n/a	n/a	
		RE	-	-	+			+	+			n/a	n/a	
	50	Pooled OLS	-	-	+	-	-	-		+		+	n/a	n/a
		FE	-		+	-	-	-		+			n/a	n/a
		RE	-	-	+	-	-	-		+			n/a	n/a
	30	Pooled OLS	-	-	+	-	-	-		+		+	n/a	n/a
		FE	-		+	-	-	-		+			n/a	n/a
		RE	-	-	+	-	-	-		+		+	n/a	n/a

Note: There are different formulas for Kenya and Korea. Only variables which have statistically significant values have been shown. n/a applies where that variable has not been included in the econometric analysis(since we have different formulas for Kenya and Korea). Where the results are insignificant it has been left blank.

CHAPTER 6 CONCLUSION AND IMPLICATIONS

6.1 Conclusion

This research has investigated the international trade competitiveness of Kenya and Korea and analyzed the real determinants for their exports. RCA was applied in the analysis of international trade competitiveness while the gravity model of trade was utilized in the analysis of the actual determinants of Kenya's and Korea's Exports. The empirical results have provided useful economic perspicacity.

Five RCA models were utilized to empirically analyze the international trade competitiveness of Kenya and Korea based on top ten major trading sectors between both bilateral partners. Data was drawn from the World Bank data base (the world integrated trade system- WITS) from 2000 to 2010. The ten sectors included; HS03 –Fish, crustaceans, mollusks, aquatic invertebrates, HS09 – Coffee, tea, mate and spices, HS44 – Wood and articles of wood, wood charcoal., HS49 – Printed books, newspapers, pictures, HS63 – Other made textile articles, sets, worn clothing, HS68 – Stone, plaster, cement, asbestos, mica etc. articles, HS74 – Copper and articles thereof., HS76 –Aluminum and articles thereof., HS84 – Nuclear reactors, boilers machinery etc. and HS92 – Musical instruments, parts and accessories. Kenya was found to have Revealed Comparative Advantage in; HS03 –Fish, crustaceans, mollusks, aquatic invertebrates, HS09 – Coffee, tea, mate and spices, HS44 – Wood and articles of wood, wood charcoal., HS49 – Printed books, newspapers, pictures and HS76 –Aluminum and articles thereof.,

mostly agricultural and raw material sectors (Low value sectors). Conversely, Korea was established to trade HS63 – Other made textile articles, sets, worn clothing, HS68 – Stone, plaster, cement, asbestos, mica etc. articles, HS74 – Copper and articles thereof., HS84 – Nuclear reactors, boilers machinery etc. and HS92 – Musical instruments, parts and accessories specifically capital and technologically intensive sectors (high value goods).

Through an augmented gravity trade model, investigation into the factors promoting or hindering exports for Kenya and Korea were estimated whereby the Pooled OLS regression, Fixed Effect(LSDV) regression and the Random Effect (ECM) regression models have been simulated. Data sets were from 1997 to 2010. Three country sets of 70, 50 and 30 countries comprising of top bilateral trading partners were applied for comparative purposes. Hausman test analysis did not reject the null hypothesis that the Random effect (ECM) model was most suitable for the analysis. Therefore the Random effect model has been applied in the reporting while the Pooled OLS and FE regression models have been utilized as reference models. Empirical outcomes from the RE model illustrated that distance, GDP per capita for exporter (Kenya or Korea) and GDP per capita for importer had negative and statistically significant impact on Kenya's and Korea's export flows.

A product of GDP for exporter and that of importer was found to have statistically significant positive effect on exports for both Kenya and Korea in all country sets. Exchange rate between Kenya and trading partners was shown to have significant negative impact on her exports. Furthermore, exchange rate for Korea had mixed effect on Korea's exports. For 70 countries set, exchange rate had a statistically significant positive impact, however for 50 and 30 countries sets there was significant negative effect on her export growth due to bilateral exchange rate

variability. Labor productivity and FTA were found to be key determinants of Korea's export trade. Adjacency or Border and membership to COMESA as a regional trading bloc were applied as binary variables for Kenya and they were shown to have a positive correlation to Kenya's export trade flows.

6.2 Policy Implications

The study accentuates Kenya's and Korea's international trade competitive power as well as the constituents that manipulate Kenya's or Korea's export trade flows. The components that have favorable effects on Kenya's and Korea's economic growth should be adopted while appropriate measures should be designed to neutralize the negative effects of factors unfavorable to both countries export flows. The study shows Kenya has more capacity on agricultural sectors and raw materials sectors. This outcome proposes that in order to promote Kenya's international trade competitiveness, agricultural and mineral sectors should be supported either through appropriate institutional policies, incentives, and value addition initiatives and or infrastructural development strategies among others. Empirical results show distance to have statistically significant and negative effect on both countries (Kenya and Korea) export development, while, Border and joining of COMESA economic bloc has a significant positive correlation to Kenya's export enhancement. The outcome proposes that intensifying close bilateral relationship with neighboring countries and expanding regional economic integration will enhance Kenya's export trade flows.

The econometric results showed that a product of GDP for exporter and importer on exports by both countries have a strong positive correlation to export flows by both partners. This therefore suggests promotion of sustainable economic growth in order to boost exports while at the same time focusing on large economies for

increasing exports. Empirical results on GDP per capita for exporter and importer have shown negative impact on exports for Kenya and Korea. This outcome may suggest that increase in Kenya's GDP per capita will increase domestic consumption hence less surplus for export and therefore the Kenyan government should support the major export sectors to meet domestic demand and have surplus for export. Since increase GDP per capita tends to increase consumption of high value goods at the expense of low value goods, to enhance her export flows Kenya should in addition provide incentives to attract value addition enterprise.

Exchange rate variability is one of the factors with significant negative effect on Kenya's export trade, however; it had mixed impact on Korea's exports. Empirical literature has generated wide range of possible outcomes which include positive, zero negative and ambiguous and thus has not yielded consensus. Coric B. & Pugh G. (2006) applied MRA on the effects of exchange rate variability on international trade and found exchange regime effect, country effect, model specification, the degree of risk averseness by the exporter as well as in addition to level of aggregation as it may affect the weight and the sign of the estimated trade effects. De Grauwe (1988) and Baum and Caglayan (2006) studies found similar outcomes. Monetary policies to control exchange rate volatility and development of hedging markets have been found to reduce exchange rate risk and therefore taking similar moves can encourage exports.

The study shows that FDI on Kenyan exports has negative and significant effect. Improvement of investment climate for outward FDI especially by Kenya would improve her export flows and thereby reduce trade imbalance. Labor productivity for Korea has been found to positively affect her exports. This suggests that improvement of labor productivity through technological innovation (automation)

and skills training would have a great impact in the growth of her export trade and the overall economic development and therefore Kenya can borrow a leaf from Korea on how to improve her labor productivity. The engagement by Korea on FTA has been found to accelerate her exports and therefore Kenya is able to learn from Korea on the best practice in the establishment of FTA's.

Korea has been an export driven economy since the 1980's. Her economic development has been phenomenal and is cited by the UN as a model for the developing world. Her Industrial capacity is huge and is held as among the top technological centers in the world. Kenya's potential has not yet been harnessed. Her Agricultural production capacity is her human resources, and natural resources are under-utilized. The growing middle income segment is a potential market for high value products. Kenya is the commercial and financial hub in East and Central Africa and is touted as one of the most preferred entry point into the African market. This suggests that; strengthened bilateral ties between Kenya and Korea can be mutually beneficial.

The empirical outcomes of this study are important for trade policy formulation and bilateral trade engagement so as to ensure Kenya exploits her economic potential by harnessing the benefits of globalization for the economic and social welfare of her people. Furthermore, this study comes at the most crucial period as both bilateral partner states upgrade their foreign policies in order to overcome the challenges and exploit the benefits of globalization.

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APPENDIXES

A1: RCA1 mean of Kenya

Ke	HS03	HS09	HS44	HS49	HS63	HS68	HS74	HS76	HS84	HS92
2000	0.000958	0.041531	0.000162	0.000276	0.000531	0.000097	0.000037	0.000171	0.000003	0.000007
2001	0.001184	0.043461	0.000160	0.000087	0.000643	0.000084	0.000016	0.000163	0.000007	0.000006
2002	0.001183	0.042141	0.000142	0.001072	0.000725	0.000080	0.000055	0.000242	0.000008	0.000006
2003	0.001181	0.040821	0.000124	0.002057	0.000808	0.000075	0.000094	0.000320	0.000008	0.000005
2004	0.000974	0.033768	0.000108	0.000129	0.000711	0.000172	0.000019	0.000256	0.000009	0.000009
2005	0.001034	0.035226	0.000101	0.000560	0.001000	0.000076	0.000102	0.000271	0.000018	0.000108
2006	0.000866	0.034583	0.000134	0.000673	0.001070	0.000083	0.000128	0.000277	0.000027	0.000014
2007	0.000851	0.031421	0.000126	0.000937	0.001085	0.000079	0.000185	0.000303	0.000021	0.000004
2008	0.000792	0.033057	0.000123	0.000974	0.000745	0.000058	0.000205	0.000375	0.000020	0.000009
2009	0.000667	0.035409	0.000132	0.001091	0.000700	0.000083	0.000201	0.000424	0.000035	0.000008
2010	0.000631	0.037180	0.000095	0.000636	0.000800	0.000069	0.000169	0.000322	0.000044	0.000014

A2: RCA1 mean of Korea

Ko	HS03	HS09	HS44	HS49	HS63	HS68	HS74	HS76	HS84	HS92
2000	0.02603	0.00065	0.00168	0.00713	0.02607	0.27342	0.02716	0.01299	0.02781	0.06756
2001	0.02112	0.00089	0.00132	0.00708	0.02429	0.29128	0.02506	0.01218	0.02266	0.05585
2002	0.01834	0.00114	0.00097	0.00442	0.02435	0.18137	0.02615	0.01299	0.02599	0.05492
2003	0.01609	0.00086	0.00097	0.00417	0.01865	0.22336	0.02827	0.01417	0.02587	0.04831
2004	0.01693	0.00077	0.00095	0.00450	0.01619	0.27797	0.02966	0.01517	0.02666	0.04829
2005	0.01423	0.00069	0.00067	0.00453	0.01468	0.30850	0.02808	0.01495	0.02355	0.04147
2006	0.01194	0.00058	0.00044	0.00404	0.01299	0.31074	0.02772	0.01362	0.02293	0.03408
2007	0.01367	0.00048	0.00043	0.00412	0.01320	0.31232	0.02671	0.01324	0.02335	0.02936
2008	0.01531	0.00042	0.00046	0.00465	0.01371	0.33926	0.02637	0.01390	0.02130	0.02683
2009	0.01651	0.00058	0.00058	0.00498	0.01417	0.35165	0.02648	0.01534	0.02244	0.02150
2010	0.01693	0.00086	0.00046	0.00698	0.01188	0.58749	0.02610	0.01533	0.02555	0.02453

A3: RCA2 mean of Kenya

Ke	HS03	HS09	HS44	HS49	HS63	HS68	HS74	HS76	HS84	HS92
2000	1.45666	63.12010	0.24677	0.42001	0.80749	0.14760	0.05566	0.26026	0.21388	0.01027
2001	1.45666	68.95843	0.25401	0.13768	1.02054	0.13377	0.02497	0.25905	0.09638	0.01017
2002	1.87870	55.90250	0.19227	1.14816	0.93408	0.10646	0.06167	0.29742	0.09124	0.00797
2003	1.55918	42.84657	0.13052	2.15865	0.84763	0.07915	0.09838	0.33579	0.08611	0.00576
2004	1.23965	37.38200	0.11951	0.14232	0.78699	0.19047	0.02151	0.28353	0.07585	0.01039
2005	1.07828	33.15302	0.09533	0.52710	0.94100	0.07122	0.09611	0.25520	0.37660	0.10178
2006	0.97324	34.89978	0.13514	0.67927	1.08005	0.08423	0.12902	0.27944	0.46173	0.01403
2007	0.87401	29.27800	0.11771	0.87327	1.01105	0.07400	0.17254	0.28248	0.61081	0.00353
2008	0.79250	25.89482	0.09642	0.76307	0.58388	0.04515	0.16090	0.29385	0.54756	0.00709
2009	0.62058	27.96185	0.10421	0.86123	0.55253	0.06520	0.15852	0.33484	0.47341	0.00621
2010	0.52651	28.50229	0.07247	0.48761	0.61291	0.05323	0.12931	0.24709	0.52331	0.01109

A4: RCA2 mean of Korea

Ko	HS03	HS09	HS44	HS49	HS63	HS68	HS74	HS76	HS84	HS92
2000	0.36049	0.00899	0.02325	0.09874	0.36111	0.13834	0.37620	0.19319	0.41354	1.00451
2001	0.33871	0.01427	0.02121	0.10506	0.38952	0.15495	0.40185	0.19536	0.36326	0.89545
2002	0.28462	0.01772	0.01512	0.06853	0.37784	0.14817	0.40581	0.20162	0.40329	0.85228
2003	0.22225	0.01192	0.01347	0.05756	0.25769	0.13056	0.39055	0.19577	0.35743	0.66747
2004	0.19807	0.00900	0.01110	0.05265	0.18941	0.10607	0.34706	0.17756	0.31197	0.56508
2005	0.16106	0.00784	0.00754	0.05126	0.16616	0.10935	0.31774	0.16914	0.26647	0.46927
2006	0.12966	0.00630	0.00474	0.04383	0.14107	0.11170	0.30102	0.14785	0.24893	0.37009
2007	0.13988	0.00496	0.00437	0.04220	0.13510	0.10019	0.27345	0.13553	0.23902	0.30054
2008	0.14208	0.00391	0.00429	0.04317	0.12725	0.08714	0.24479	0.12900	0.19777	0.24905
2009	0.16006	0.00000	0.00566	0.04831	0.13737	0.09075	0.25677	0.14877	0.21759	0.20847
2010	0.14384	0.00000	0.00389	0.05929	0.10093	0.09214	0.22173	0.13029	0.21708	0.20839

A5: RCA3 mean of Kenya

Ke	HS03	HS09	HS44	HS49	HS63	HS68	HS74	HS76	HS84	HS92
2000	0.829012	0.995989	0.555291	-0.504962	-0.585588	0.862316	-0.623206	-0.238125	-0.973660	-0.782571
2001	0.827438	0.979624	0.517274	-0.870904	-0.604516	1.440663	-0.828294	-0.483743	-0.959067	-0.893904
2002	0.834797	0.962584	0.220855	-0.902536	-0.592536	1.524878	-0.802165	0.258128	-0.943609	-0.845871
2003	0.838476	0.954063	0.072646	-0.918352	-0.586546	1.566985	-0.789101	0.629064	-0.935880	-0.821855
2004	0.842156	0.945543	-0.075564	-0.934168	-0.580556	1.609092	-0.776037	1.000000	-0.928151	-0.797839
2005	0.825460	0.974498	0.136725	-0.240606	-0.266901	0.901480	-0.296655	-0.214725	-0.885810	0.202685
2006	0.814070	0.969491	-0.206378	-0.046121	-0.358621	0.128608	-0.200166	-0.260679	0.681823	-0.629108
2007	0.758150	0.977467	-0.413814	0.072442	-0.307478	-0.235599	-0.130012	-0.332815	-0.892549	-0.910817
2008	0.822605	0.989006	-0.259651	0.196914	-0.451475	-0.436156	-0.106542	-0.160687	-0.918390	-0.735894
2009	0.768320	0.989196	-0.212337	0.300762	-0.552354	-0.544510	-0.083814	-0.225114	-0.879477	-0.828854
2010	0.763819	0.972059	-0.443242	-0.196011	-0.559470	0.350351	-0.134598	-0.222064	-0.859108	-0.777139

A6: RCA3 mean of Korea

Ko	HS03	HS09	HS44	HS49	HS63	HS68	HS74	HS76	HS84	HS92
2000	-0.075938	-0.878153	-0.856525	0.054022	0.761643	-0.193639	-0.192296	-0.408301	0.175062	0.555862
2001	-0.250520	-0.813348	-0.890568	-0.004165	0.713710	-0.313377	-0.198407	-0.417995	0.180449	0.464684
2002	-0.315531	-0.810100	-0.901546	-0.091354	0.633443	-0.390299	-0.192003	-0.387287	0.202792	0.414194
2003	-0.380542	-0.806851	-0.912524	-0.178543	0.553176	-0.467221	-0.185598	-0.356580	0.225135	0.363704
2004	-0.363665	-0.841263	-0.900953	-0.109716	0.492246	-0.460551	-0.194336	-0.355954	0.227515	0.363912
2005	-0.415714	-0.858985	-0.928149	0.753251	0.375652	-0.444094	-0.183858	-0.376329	0.159880	0.243836
2006	-0.511466	-0.876140	-0.954088	-0.248582	0.263588	-0.417141	-0.173943	-0.420086	0.135706	0.093314
2007	-0.471935	-0.899336	-0.956659	-0.248993	0.263714	-0.486071	-0.220477	-0.410002	0.111032	-0.011907
2008	-0.387297	-0.921092	-0.955221	-0.171544	0.291109	0.251514	-0.204992	-0.381678	0.087181	-0.006197
2009	-0.331657	-0.893365	-0.944165	-0.162863	0.319243	-0.545925	-0.188753	-0.306110	0.069160	-0.083160
2010	-0.330731	-0.864479	-0.955556	0.025889	0.184101	-0.476586	-0.156972	-0.372828	0.054364	-0.053045

A7: RCA4 mean of Kenya

Ke	HS03	HS09	HS44	HS49	HS63	HS68	HS74	HS76	HS84	HS92
2000	19.699436	9.16E+02	6.440778	0.605781	0.481332	0.608090	0.427498	1.133240	0.024578	0.224633
2001	27.921389	256.1556979	8.287125	0.181929	0.649869	0.732813	0.247617	0.917377	0.055090	0.147701
2002	23.885160	158.458531	4.874450	0.119908	0.735952	0.852543	0.231043	1.031067	0.059232	0.169472
2003	21.867046	109.609947	3.168113	0.088898	0.778994	0.912408	0.222756	1.087911	0.061304	0.180358
2004	19.848931	60.76136324	1.461775	0.057887	0.822036	0.972273	0.214469	1.144756	0.063375	0.191244
2005	17.878650	132.3554469	2.250941	1.046384	0.989185	0.562231	0.927261	1.105100	0.103512	2.578578
2006	20.153355	133.3410966	1.358852	1.883444	0.975121	0.000307	0.000604	0.000532	0.004792	0.000206
2007	16.013606	193.3207425	0.913318	2.546896	1.166749	0.681833	1.695934	1.102693	0.125066	0.102812
2008	22.861652	402.5673696	1.307807	3.316333	0.840900	0.464543	1.796653	1.609038	0.094660	0.338542
2009	17.445639	420.8284283	1.485020	4.251951	0.659112	0.442590	1.932166	1.445695	0.146571	0.213896
2010	17.471255	165.1193499	0.902491	1.572645	0.660867	0.351507	1.784398	1.489241	0.177296	0.293379

A8: RCA4 mean of Korea

Ko	HS03	HS09	HS44	HS49	HS63	HS68	HS74	HS76	HS84	HS92
2000	0.800073	0.060437	0.071993	1.037969	6.885034	0.629320	0.631080	0.420151	1.424425	3.503101
2001	0.562147	0.096546	0.054292	0.930172	5.614505	0.490354	0.627380	0.384976	1.350989	2.566343
2002	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
2003	0.414000	0.098630	0.042201	0.643098	3.207173	0.335034	0.633781	0.437609	1.458799	1.977419
2004	0.412621	0.076231	0.046073	0.709397	2.598721	0.326593	0.596486	0.419996	1.405107	1.896015
2005	0.379075	0.069673	0.034227	6.526260	2.023751	0.353574	0.633200	0.416206	1.268080	1.510851
2006	0.307251	0.062757	0.022335	0.572087	1.631105	0.390975	0.668899	0.388192	1.249113	1.146265
2007	0.344620	0.050912	0.021278	0.577599	1.648713	0.332205	0.613539	0.401951	1.200558	0.937995
2008	0.455538	0.042366	0.023622	0.729382	1.878573	0.346595	0.680505	0.461585	1.228461	1.018735
2009	0.446044	0.050054	0.025524	0.639792	1.722277	0.261042	0.606501	0.472152	1.020796	0.752266
2010	0.458534	0.066269	0.020721	0.960181	1.323162	0.323183	0.664325	0.416515	1.016546	0.819867

A9: RCA5 mean of Kenya

	HS03	HS09	HS44	HS49	HS63	HS68	HS74	HS76	HS84	HS92
2000	1.40348	63.07129	0.21396	0.17643	-0.62631	-0.10990	-0.06183	-0.07336	-0.20377	-0.02991
2001	1.83019	68.75660	0.22738	-0.13080	-0.29943	-0.05714	-15.54579	-0.19254	-0.18276	-0.04967
2002	1.51159	52.82372	0.13685	-0.42867	-0.18518	-0.03601	-7.80973	-0.12865	-0.16773	-0.04306
2003	1.35229	44.85728	0.09158	-0.57761	-0.12805	-0.02545	-3.94169	-0.09671	-0.16021	-0.03976
2004	1.19300	36.89084	0.04631	-0.72655	-0.07092	-0.01489	-0.07366	-0.06477	-0.15270	-0.03645
2005	0.93204	32.95716	0.05701	-0.03689	0.05340	-0.06000	-0.00470	-0.74480	-0.14984	0.06815
2006	0.84244	34.68973	0.04412	0.55295	0.07076	-283.79157	-205.81115	-0.72056	-5.86708	-56.93001
2007	0.75683	29.15616	0.00076	0.75320	0.24104	-0.03617	0.07843	0.03351	-0.14726	-0.02571
2008	0.60114	25.84452	0.02933	0.67101	-0.04502	-0.05885	0.07781	0.10508	-0.15923	-0.01005
2009	0.50380	27.90888	0.03818	0.76363	-0.21787	-0.09041	0.07662	0.09558	-0.16818	-0.01738
2010	0.46203	28.36592	-0.00142	0.36002	-0.24933	-0.10311	0.06027	0.10275	-0.16037	-0.01965

A10: RCA5 mean of Korea

	HS03	HS09	HS44	HS49	HS63	HS68	HS74	HS76	HS84	HS92
2000	0.03642	-0.09645	-0.25331	0.06532	0.31628	-0.09486	-0.16172	-0.47477	0.12557	0.75242
2001	-0.09575	-0.09657	-0.31818	-0.03408	0.33120	-0.17552	-0.18048	-0.61617	0.09259	0.59221
2002	0.07228	0.00421	0.00174	0.04259	0.05856	-0.00521	0.03184	-0.14959	-0.00497	0.11247
2003	-0.17864	-0.08114	-0.26874	0.02332	0.18395	-0.27551	-0.19106	-0.59773	0.10696	0.36768
2004	-0.16807	-0.08524	-0.20458	0.02642	0.12410	-0.23439	-0.20515	-0.41697	0.08265	0.30809
2005	-0.16053	-0.08014	-0.19172	0.04844	0.08955	-0.21103	-0.17032	-0.36694	0.04907	0.20464
2006	-0.17755	-0.07430	-0.18933	0.01700	0.06226	-0.18346	-0.13296	-0.22296	0.04161	0.09956
2007	-0.15268	-0.07346	-0.18213	0.01661	0.06229	-0.20597	-0.13881	-0.19217	0.02970	0.02783
2008	-0.08132	-0.06829	-0.16101	0.01949	0.06590	-0.18190	-0.08897	-0.15988	0.02742	0.04901
2009	-0.10998	-0.08381	-0.20291	0.01192	0.06407	-0.27647	-0.16583	-0.17673	-0.00548	-0.01658
2010	-0.10198	-0.07960	-0.16865	0.03388	0.03001	-0.20219	-0.09623	-0.14184	-0.00122	0.00176