EMIGRATION AND ITS EFFECT ON KENYA'S ECONOMIC DEVELOPMENT THROUGH THE DUALITY OF DIASPORA REMITTANCES AND BRAIN DRAIN

By

MUNYINYI, Churu Christopher

THESIS

Submitted to
KDI School of Public Policy and Management
in partial fulfillment of the requirements
for the degree of

MASTER OF DEVELOPMENT POLICY

2015

EMIGRATION AND ITS EFFECT ON KENYA'S ECONOMIC DEVELOPMENT THROUGH THE DUALITY OF DIASPORA REMITTANCES AND BRAIN DRAIN

By

MUNYINYI, Churu Christopher

THESIS

Submitted to
KDI School of Public Policy and Management
in partial fulfillment of the requirements
for the degree of

MASTER OF DEVELOPMENT POLICY

2015

Professor Kye-Woo Lee

EMIGRATION AND ITS EFFECT ON KENYA'S ECONOMIC DEVELOPMENT THROUGH THE DUALITY OF DIASPORA REMITTANCES AND BRAIN DRAIN

By

MUNYINYI, Churu Christopher

THESIS

Submitted to
KDI School of Public Policy and Management
in partial fulfillment of the requirements
for the degree of

MASTER OF DEVELOPMENT POLICY

Committee in charge:

Professor Kye Woo LEE, Supervisor _____

Professor Young Jae LIM _____

Professor Dong Chul CHO _____

Approval as of December, 2015

ABSTRACT

Globalization has impacted on nations, households and individuals in various ways. This is evidenced by the enhanced movement of factors of production - labour and capital- across international borders at much enhanced volumes than ever before. The movement of labour across boundaries, which is categorized as migration, has had profound effects, both on migrant receiving and sending countries. This effects can be categorized as brain drain in the migrant sending country, if the migrants are highly skilled or have achieved a high level of education. The receiving countries, on the other hand are said to experience a brain gain. One consequence of the movement of labour across international borders is that the migrants send a proportion of their earnings to their countries of origin. These earnings are called remittances, and they have become a significant source of international resource flows, together with FDI and ODA. The purpose of these paper is to investigate the effects of these two phenomena on Kenya's economic development. The research suggests that whereas remittances do not have significant effect on Kenya's economic development, brain drain is clearly costing the country. As such, the country should not only seek ways to promote remittances, but should also institute measures to stem the flow of human capital from Kenya, if the country is to achieve its long term development agenda.

Dedicated to Jane and Brian

Acknowledgements.

I wish to extend my gratitude to all people, governments and institutions that have contributed to my successful completion of my program at KDI School. To all my professors who, with diligence and dedication , took me through all my courses and to the KDI School staff who, with patience and forbearance, made my stay at KDI School, not only bearable but also joyful and memorable, I say 'Ahsanteni sana!'

I cannot forget to mention my POS committee members, Professors Lee Kye Woo and Lim Youngjae, without whom this paper could not have been possible. They have been with me all the steps of the way and am thankful for their guidance. To my family-Jane and Brian, who have suffered the absence of a husband and father, am indebted to you for your encouragement and support during the sixteen long years.

Lastly, I convey my heartfelt thankfulness to the Government of Kenya for releasing me to attend the program, to the Government of Republic of Korea for availing the opportunity and for KOICA for financing my education and stay in Korea.

THANKS ALL!

TABLE OF CONTENTS

CHAPTER ONE

Introduction

1.1 Background And Statement of the Problem.

1.1.1 Remittances

The importance of remittances to developing countries as a source of foreign exchange and a potential alternative source of development finance has come under sharp focus recently. This was brought about by the 2008-2009 global financial crisis, which impacted negatively on FDI and ODA flows, in which these countries had traditionally relied upon as a source of development funding. As such, many countries, Kenya included, started to look for novel ways to raise finances for development, to complement FDI and ODA. Ethiopia pioneered this approach in Africa by floating two Diaspora bonds, the recent one being Renaissance Dam Bond to fund the 5,250 megawatts Grand Renaissance dam. Other countries had used the same approach to raise funds before: Israel's Yom Kippur's Diaspora bond in 1973 to finance the war and India's 1991 and 1998 Diaspora bonds to ease the foreign exchange constraints the country experienced during those periods. All these bonds were successful when the respective countries were facing hurdles in accessing other forms of financing.

The World Migration and Remittances Fact Book (2011) estimates that in 2010, the world's flow of remittances amounted to US $325 billion, outstripping the flow of official aid of about $135 billion in the same year. Though Africa accounts for a small proportion of the remittances received, they are still significant as they amount to USD 40 billion annually. These remittances are used for investments - to fund health care, education, improving farm land and as capital for

small business enterprises or consumption - improving households' diet, paying rent etc. The Africa Development Bank estimates that the continent has the potential to raise US $17 billion annually to fund its development agenda by collaterizing the future flows of remittances, which can go a long way, not only to solve some of the continent's intractable problems but also contribute to economic growth and development. Since remittances are a function of migration, it is advisable to look at the attendant issue of brain drain.

1.1.2 Brain Drain.

The movement of factors of production - capital and labor has gathered pace in the recent history, mainly due to globalization. This has had different effects on countries depending on whether they can be characterized as developed or least developed countries. The movement of skilled labour is such that it moves from least developed countries where it is in short supply to developed countries, where it is in abundance. The factors contributing to this migration, as put succinctly by Mayda (2010), can be categorized into 'pull factors' such as wage differentials, standard of living and immigration policies in the destination country and 'push factors' such as civil wars and unfavorable political climate in the migrants source country. The movement of skilled labour into developed countries is beneficial in that it adds to the stock of human capital and thereby contributing to increased productivity in those countries while on the other hand, it depletes the already scarce stock of human capital in developing countries. Though these countries benefit from funds remitted back home by the emigrants, they may not mitigate for the effects of slowed development due to the loss of the skilled labour.

1.1.3 Statement of the Problem.

Emigration from LDCs and developing countries, has had mixed effects on the emigrants' source country. The monies remitted by the emigrants constitute a significant foreign currency revenue stream for these countries as noted by Ratha (2003), they directly and positively affect consumption, savings, investments and BOP (Cattaneo, 2005 and World Bank, 2008). But if the emigrants are disaggregated into skilled and unskilled labour, a different scenario emerges. A disproportionate number of the emigrants have a tertiary education , and some have held a jobs in their home country. This is what Courtland (1994) refers to as 'brain drain'. When these workers migrate to other countries, the stock of human capital in the source country is diminished, the resources invested in their education are lost and a country suffers from reduced productivity. The effects of these two factors on the economy can cancel or reinforce each other, and thus there's need to not only investigate each of them, but also to look at the net effect of both.

1.1.4 Kenya at a glance.

Kenya is a small, open, developing economy. This fact, coupled with the forces of globalization have compelled factors of production, labour and capital, to flow in the direction where they can earn the greatest returns. The evidence of this is the number of emigrants, which constitute both skilled and unskilled labour, which flow outside the country in search of greener pastures, the amount of remittances they send back home and FDI flows. Kenya's long term development plan, Kenya Vision 2030 identifies remittances as one of the avenues to achieving a high middle income country status by the year 2030. Towards that end, it aims to "Encourage the remittance of more money from Kenyans living abroad, in order to reach a target of 5% of the GDP".

Diaspora remittances, according to World Bank (2011), reached $ 1.758 Billion in 2010. This is substantial when compared to Kenya's GDP as it amounted to 5.4% of the GDP in that year. These remittance are used to bolster consumption at the house hold level and also for investment, hence contributing positively to GDP growth. According to the same report, Kenya's stock of emigrants stood at 457,100, 38.4% of whom had attained some level of tertiary education, thus constituting skilled emigration. It should be noted, however, that these are official statistics and they do not account for emigrants and remittances that flow through unofficial channels. These skilled emigrants constitutes doctors, engineers, I.T specialist and PHD holders amongst others - skills which are badly needed in the country. This human capital flight is bound to impact negatively on the country's economic growth, manifested in the slowdown of GDP growth rate.

1.2 Significance of the study.

Kenya has been promoting the export of excess labour to Middle Eastern countries. Whereas this is a relatively recent phenomena, Kenyans have historically migrated to developed countries, mainly in search of higher education and better employment opportunities. The emigration of Kenyans who have already obtained a tertiary education or who obtain higher education in the destination countries but do not bring their skills home can be termed as brain drain. Kenya is a recipient of remittances from these two groups of emigrants and has been trying to streamline channels through which the remittances come into the country. This study aims at informing policy decisions so as to:

- Exploit the phenomena of Kenya's advantage of its young population and excess labour, while at the same time retaining its highly trained human capital, for economic growth and development.

- Propose better ways in which to harness and utilize the Diaspora remittances to achieve Kenya's development goals as outline in the country's long-term development policy, Kenya Vision 2030.

The study is significant in that previous studies have looked at both scenarios in isolation of each other. It is my considered opinion that they should be studied as two part of a whole, which emanate from emigration.

1.4 Research Questions

This paper proposes to investigate this conflicting duality, of positively impacting remittances and negatively impacting brain drain on Kenya's economic growth. It thus posits and seeks to answer these research questions:

i. To what extent do Diaspora remittances affect the economic growth of Kenya, and is the effect positive or negative?

ii. To what extent does brain drain/human capital flight affect economic growth and is this effect positive or negative?

iii. What is the combined effect of the two factors on Kenya's economic growth?.

1.5 Hypotheses and Expected findings.

In order to carry out the investigation outlined in the above problem statement, the following hypotheses are postulated.

- Hypothesis 1:
    - ❖ Diaspora remittances do not have a significant and positive effect on per capita GDP growth in Kenya.
        - ➢ The expectation is that the null hypothesis will be rejected and the results will show that Diaspora remittances affect economic growth positively.
- Hypothesis 2:
    - ❖ Brain drain does not have a significant and negative effect on economic growth.
        - ➢ It is expected that this hypothesis will be reject and the results will show that brain drain does have a significant and negative effect on economic growth.

1.6 Arrangement of the Paper.

The paper is arranged in this manner: Chapter two explores some of the literature on migration, remittances and brain drain. A brief investigation of migration is included because it forms the link between remittances and brain drain. Chapter three outlines the methodology adopted by the paper and defines the variables to be used in the research. Chapter four contains the sources of

data, analysis and findings. Chapter five will present the conclusions and limitations encountered in course of the study.

CHAPTER TWO

Literature Review and Theoretical Foundation

2.1 Migration.

According to IOM (International Organization for Migration) and MPI's (Migration Policy Institute) publication 'Developing a road map for engaging Diasporas in development (2015), "Remittances are the most tangible links between migration and development". Therefore, to understand the dual phenomenon of remittances and brain drain, the paper briefly investigates their connection to migration.

Migration, according to Franklin, 2003 is the movement of individuals, households or entire groups of people from one place of settlement to another, while crossing jurisdictional boundaries. When these individuals, households or groups of people move from one place to another, within the national boundaries of a country or state, this movement is referred to as domestic migration. Indeed, Franklin (2003) defines domestic migration as " the movement of people within national boundaries" as differentiated from international migration, which she defines as " the movement of people across those (national) boundaries". International migration is characterized as emigration or immigration.

Perruchoud, 2004, expounds on migration, defining emigration as the " ...act of departing or exiting from one state with a view to settle in another" whereas immigration "...is the process by which non-nationals move into a country for the purpose of settlement". Both processes have a significant effect on the economy of the migrants' country of origin and country of settlement. These effects are majorly through remittance flows from countries of settlement to countries of

origin and through gain or loss of human capital - mainly referred to as brain gain or drain. Migrations and Remittances Factbook (2011) estimated that in 2010, international remittances flows exceeded $440 billion, driven by emigrants who totaled 215 million people (3% of the world's population).

International migration has increased dramatically over the last few decades. The population division of the United Nations estimates the total world migrant stock stood at 231.5 million by year 2013, representing 3.2% of the world's population. The UN estimates the number of migrants is increasing at the rate of 3.6% per annum. Kenya's stock of migrants was 955,452 in the same year and represented 2.2% of the country's total population.

2.2 Theoretical Explanation for migration.

Theoretical explanations for international migration can largely be viewed from these approaches:

I. The push-pull theory:

Push-pull theory as explained by Lee, S (1966) in A Theory Of Migration, explains migration through "...factors associated with the area of origin", "...factors associated with the area of destination" which impel or prohibit migration, obstacles that must be surmounted and migrants' "personal factors" that makes them more or less apt to making the decision to migrate. All these factors combine to provide incentives enough to potential migrants so they are stirred to overcome the impediments to migration like distance, different culture and language and challenges of assimilation. On the bottom line, it can be surmised that economic conditions in the migrant source and receiving

areas play a big role in inducing migration (Daugherty H.G. and Kammeyer K.W. 1995, Bodvarsson O, Vandenberg H. 2009).

II. The neoclassical economics theory of migration:

This theory is espoused mostly by Harris and Todaro (1970) who assert that migration is caused by wage differentials between regions. The essence of the theory is that potential migrants make their decision to migrate after making a cost benefit analysis regarding their expected income in the destination area. If the expected income differential is positive for the same skill level, then migration will occur, and the higher the differential in expected income, the bigger the size of international migratory flows.

III. Human Capital Theory.

Migration is a selective process and an individual's propensity to migrate is affected by such factors such as education, skills level, age and risks and costs of movement. This is according to Bauer and Zimmermann (1999) who observe that, such factors affect the expected gains from migration. This selective process ensures that it is not the poorest people who migrate abroad, but those who have accumulated human skills which are in demand in the migrant receiving countries and are able to meet the costs attendant to migration. In his seminal work, Lucas (1988) notes that the pressure for human capital migration will always exist if the productivity of people with a certain skills level is greater in regions with high human capital endowment than people with the same level of skills in regions with low human capital endowment. Put more succinctly, in the present world, the pressure for people with high level of skills to move from Least Developed Countries to developed countries (mostly OECD countries) or high middle income

countries, where with the same skills, they can expect better returns, has and continues to fuel the cycle of brain drain.

IV. Network Theory.

Migrants form social and information networks in their countries of destination. This theory, as elaborated by Haug, S (2008), explains the importance of these networks in sustaining the migratory streams as these networks lower the costs and risks of migration. The same can be applied to explain return migration whereby the social linkages with the migrants' former areas of settlement make it easier or compel them to return. The return migrants are, much often than not bearers of tangible assets - mostly capital, and intangible assets - skills and technology.

2.3 Economic development.

Before the paper embarks on discussing the effects of emigration and its attendant issues of brain drain and remittances on economic development, it would be prudent to elucidate on the term 'economic development'. Sen (1999) in his seminal work 'Development as Freedom' castigates many an economists' view that development can be equated with the growth of gross national product (GDP), increase in per capita incomes and progress in technological level of societies and nations. He argues that defining economic development as such is narrow as it does not capture the highest aspiration of all members of the human race - freedom. As such, he opines that "...(development) is a process of expanding the real freedoms that people enjoy". To empirically measure economic development as he defines it, though indices such as Human

Development Index (HDI) and Freedom Perception Index have been developed, remains a tall order.

Schumpeter and Bachhaus (2003) define economic development as "...changes in industrial organisation, in methods of production and quantities produced". When defined like this, then economic development becomes an empirically measurable phenomenon. It is easy to measure the initial state of an economy's industrial organisation, production methods and the gross quantities of goods and services produced in a certain period of time and compare it at another period of time at a later date. The difference, either positive or negative can then be called 'economic growth'. Of course an inquisitive mind is bound to ask, "what then causes this economic development?". Is economic growth generated within the economy (endogenous) or is it 'imported' - happens because of some factors from elsewhere (exogenous)?. Lewis (1954), Solow (1956), Harris and Todaro (1970), Lucas (1988), Barro (1991) and Easterly (2001) among others, seem to conclude, in their different ways, that economic development is a factor of the following:

- Capital accumulation.
- Population growth which leads to excess labour in the agricultural sector, which then shifts to the industrial sector.
- Total factor productivity, or to some, technological change.

All these factors are provided an enabling environment and incentives by institutions in the country or the society of interest. These institutions, the environment and the incentives are summed up by the phrase 'social infrastructure'.

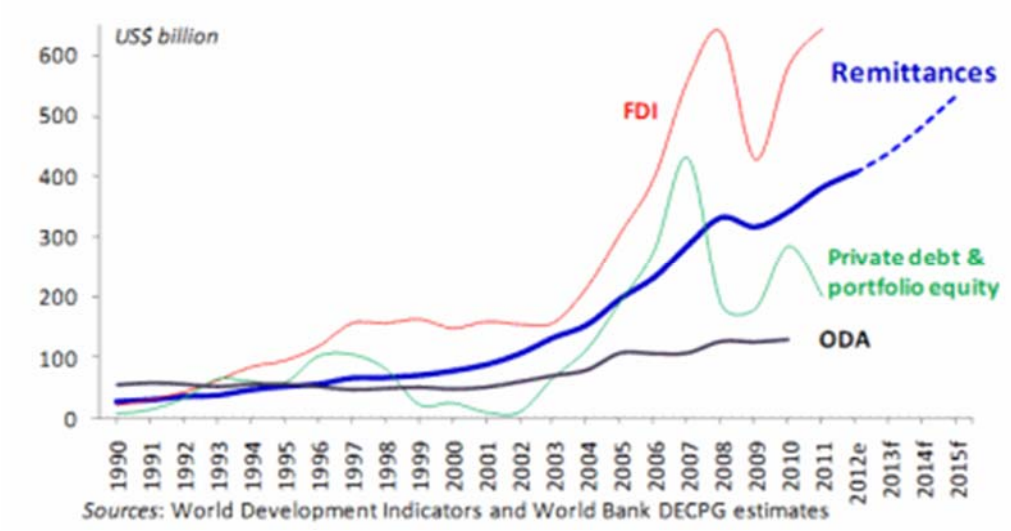
2.4 Remittances.

Remittances, as defined by World Bank's Migration and Remittances Factbook (2011), are "the sum of the workers' remittances, compensation of employees and migrants' transfers". IMF continues to elaborate that they are "...current private transfers from migrant workers who are considered residents of the host country to recipients in the workers' country of origin" (Balance of Payment Manual, 6th Edition, 2010). Remittances have been increasing at a rate only second to FDI and they have become a source of alternative source of finance, not only to households but also for funding development in many developing countries. Their volume underscore their importance to these countries' economies, considering that many of them are at the peripheries of the world trade system. In fact UNCTAD (The Least Developed Countries Report 2012 2015), acknowledges "Remittances are significant private financial resources for households in countries of origin of migration". They are also resilient as evidenced in the figure 1 below. During the global financial meltdown of 2008, when all other forms of financial flows dipped, remittances remained buoyant and were not as adversely affected. Migration and Remittance Factbook (2011) records that remittances declined by 5.5% as compared to FDI flows which declined by 40% and private debt and equity portfolio whose amounts dwindled by 46% in 2009. Furthermore, the upturn of remittances was almost immediate, and by 2010 they again surpassed their previous flows.

Ratha (2005) confirms the same, noting that remittances have proved to be the least unstable form of foreign exchange flows to developing countries, are not affected by global business cycles and tend to defy global and regional economic crises unlike FDI and ODA. But this does not mean they are immune. They are vulnerable to political and economic conditions in both the recipient and sending countries. They tend to plummet with the deterioration of political and

economic environment in those countries and rebound with improving conditions in the emigrants' source countries. This is well illustrated by the case of Turkey and Philippines where they increased with improving economic circumstances and then became volatile with the onset of crises in 1990s to early 2000s.

Figure 1: Remittances and Other Resource Flows To Developing Countries



Most of the literature is of the view that remittances from migrants abroad have a positive effect on the economy through a myriad of avenues. Capistrano and Sta Maria (2007), Martin Philip L (2006), Ratha (2003), Pernia (2006) and Cattaneo (2005) concur that remittances impact positively on the growth of the receiving country's economic growth through one or a multiplicity of the following:

- They decrease the depth of poverty and its severity.
- They are a relatively stable source of external revenue as compare to ODA and FDI.
- They increase foreign exchange earnings of the labour exporting countries.

- They improve a country's balance of payments and help finance its imports.
- They lead to deepening of the recipient country's financial systems.
- They spur aggregate demand and hence increase job opportunities and growth in the receiving countries.

On the other hand, some contend it is not always that remittances are a godsend to the receiving country and community. In fact, some argue that depending on the receiving country's structure and the level of development of its institutions, they can have a pernicious effect that can dampen economic growth. David and Weistein (2002), Chimhowu, Piesse and Pinder (2003) and Jongwanich (2007) enumerate such effects as:

- For countries with low GDP and weak institutions, they can subvert formal capital markets, facilitate the formation of parallel currency markets and destabilize exchange rate regimes.
- They can lead to increased inequalities.
- They can provide disincentives to work hence affecting aggregate production negatively (labour displacement).

Some literature suggest that there is no statistical link between remittances and per capita output growth. Amongst these is Chami, Fullenkamp and Jahjah (IMF, 2005), who, using panel data from 49 countries, found that remittances are negatively correlated with economic growth. The paper advances the theory that remittances cannot be equated with other capital flows such as FDI in that they are mostly used to smoothen the consumption of the receiving agents in time of adverse economic outcomes. This is confirmed by Karagoz (2009) on the case of Turkey. After

an empirical analysis, he concludes that remittances have negative effects on Turkish economy, regardless of Turkey being one of the biggest receiver of remittances in the world.

The literature reviewed above fails to investigate the cost of the remittances to the migrant sending countries. Growth theory postulates that for any country to grow, it must endeavour to accumulate a sizeable amount of human capital alongside physical capital. The accumulation of this capital requires investment. Emigration, though it results in remittances, impacts negatively on the accumulation of human capital. Another problem that arises is that all the papers reviewed above utilize panel data sets and generalize the results as applicable to most countries. This can be fallacious because these countries have different social-economic arrangements which can dramatically alter the effect of the remittances on their individual economies.

2.5 Brain Drain.

Brain drain as defined by Beine, Docquier and Rapoport, (2001) is the migration of "people endowed with a high level of human capital". Others include the age of the migrant in defining brain drain and contend that it is the migration of "...individuals aged 25 years or more, holding an academic or professional degree beyond high school" - Docquier and Marfouk (2006). Dumont and Lemaitre (2004) differ with this definition as regards the age at which emigrants can be considered to be brain drain. They hold the position that any emigrant regardless the age at which they emigrated, can be considered to be a part of brain drain so long they have an education and skills beyond secondary school level. This paper holds the same view, based on the fact that, due to selection bias, these migrants even if they were to remain in their home countries, they would obtain a higher than average level of education. Brain drain, as elaborated by the above papers, is determined by two characteristics: positive selection and selection bias.

Selection bias can be taken to be the processes, policies and mechanics of migration that tend to favour people with above average skills in the source countries. Positive sorting, on the other hand, can be linked to human capital theory of migration which posits that people will tend to move to countries where the returns to their level of skills are highest.

The accumulation of human capital occurs through two processes - education and 'learning by doing'. The cost of education to a country on the macro level and households on the micro level is significant, and takes a big proportion of the incomes of both entities. Lucas (1988), notes that education is a major determinant of economic growth, and as such, when an outflow of human capital - brain drain - occurs, a country loses on two fronts: the resources invested in the accumulation of the emigrating human capital (this can be termed as lost educational investment) and on the potential of such to contribute to economic output of a country, and hence growth. The cost of 'learning by doing' or accumulation of experience is borne by the employers - firms, governments or other enterprises and organizations. As such, when people who have gained the 'know how' emigrate, the employers are faced by a gap in their production capacity which cannot not easily be filled by hiring. They must invest time and resources to bring the new employees at par with the former. This can be reflected on the diminished firm or national level productivity. Brain drain, Sriskandarajah, D (2005), avers that while it contributes to the migrants' destination country's economy, it decreases the potential output of the migrants sending country. This is in agreement with the new growth theory that any loss of human capital would lead to a slowdown in the rate of economic growth as the sending country's ability to innovate and adopt new technologies diminishes.

On another front, the loss occasioned by brain drain can be explained through the concept of private and social marginal products of people possessing high skills. When people with such

skills, for example, doctors, professors, engineers, inventors and entrepreneurs emigrate, the society is deprived of the positive externalities that emanates from them. Bhagwati and Hamada (1974) explain such loss occurs when the "...the social marginal product" of such professions "exceeds the private marginal product, thanks to strong externalities". National income is also affected negatively by the cost of educating replacement skilled labour. This in turn will lead to decreased per capita income, national, household and individual welfare.

The pattern of emigration in Africa in general, and Kenya in particular is highly dependent on the emigration policies of destination countries. The visa requirements in OECD countries, which constitute the destination of a majority of emigrants from Kenya, are such that they put a threshold on the minimum educational requirements. This puts in a place a selection process whereby agents with a tertiary education have a higher probability of successful migration than agents without. UNCTAD (The Least Developed Countries Report, 2012), notes that developed countries favour the entry of skilled immigrants while putting stringent barriers to preclude and refuse admittance to low skilled immigrants, unless there is an acute shortage of labour in certain labour intensive non-skill sectors of their economies. The report goes on to affirm that the average emigrant from Africa, Kenya included is young, has a tertiary education with a median age of twenty-nine years.

To be more specific to the Kenyan case, Docquier and Marfouk (2006) ranked Kenya 29th globally and third in Africa among countries with the highest rates of brain drain. They estimated that 38.4% of all Kenyans with a tertiary education end up emigrating. Beine, Docquier and Rapoport (2006) disputed this results as spurious because Docquier and Marfouk (2006) had not corrected for age of entry. Having done this, the rate of brain drain remained high

at between 33.4% and 37%. This is confirmed by Cohen and Soto (2001) who put the rate of brain drain at 35.9%.

A curious effect of brain drain is the so called 'beneficial brain drain'. This is manifested in instances when migration of skilled labour leads to the improvement of the welfare of not only the emigrants, but also of the society left behind. (Mountford 1997) elucidates this by refuting the assertion that brain drain always has adverse effects on the economy. In facts, he contends that in certain circumstances, brain drain could be a catalyst for human capital formation, and hence economic growth for certain countries, mainly through two avenues:

a. The opportunity to emigrate to countries which offer higher remuneration for human capital creates incentives for people in developing countries to pursue higher education. Since not all the educated agents will have the opportunity to emigrate, the stock of human capital in the source country will keep rising, and so will be the productivity of the country.
b. He goes on to show that as the country tries to fill the gaps in its human capital created by emigration, governments and households invest more in education and hence this mitigates against the formation of an under-educated class. This raises the average level of education in a country and it has been shown to have a positive effect on economic growth (Mankiw, Romer and Weil, 1992).

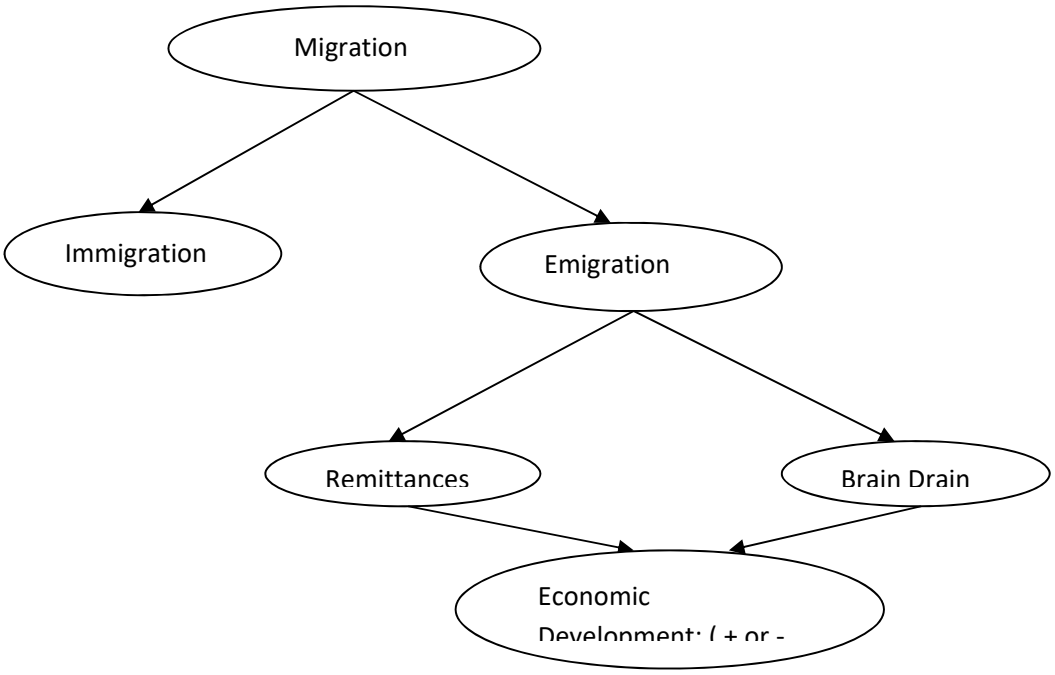
Return migration.

The same article by Sriskandarajah, D (2005) tries to investigate the positive side of migration on the migrant sending country from human capital point of view. it goes to show that return migrants go back to their countries bearing not only physical capital but also the skills and

experiences gained in their destination countries. This skills, experiences and other intangible assets such as education can significantly impact on their country's economic growth.

Diagram 1.

Conceptual Representation Of Remittances and Brain Drain.



2.6 Conclusion.

The literature reviewed in the above section generally agrees, with some few exceptions, that remittances contribute positively to economic development. When looked at on the micro level, two trends can be recognized. The remittances whose recipients are poor and mostly in rural areas tend to reduce the incidence, severity and depth of poverty in those households. They cushion and smoothen consumption, as well as provide startup capital for small businesses for the receiving communities. On the other hand, if due to the selection process, the emigrants come from middle and upper economic classes, then the remittances are mostly invested in education,

real estate and in other sectors of the economy. This contributes to deepening inequalities in the receiving economy. At the macro level, remittances increase gross consumption and investment and hence contribute to economic growth.

I. Brain drain, most researchers agree, has a pernicious effect on the long term growth of the emigrants' source countries. When people with the skills required for the growth of the economy leave, the country is robbed of its productive potential. This loss is multifaceted: resources spent on educating the emigrants, the positive externalities or spillovers of skilled and educated populace and potential future taxes on their income is all lost leading to declining productivity. The countries that seem to suffer the most due to brain drain are the least developed and the developing countries of the Caribbean, the Pacific, Sub-Saharan Africa and Central America - Docquier and Marfouk (2006).

The dilemma then arises. Remittances which contribute to economic growth are as a result of emigration. Among the emigrants, is a portion of a country's stock of human capital, which leads to brain drain. What a country gains on one hand is as a result of a loss on the other. The question then is: "what is the net effect of this duality of remittances and brain drain on the economy?".

CHAPTER THREE
Methodology

3.1 The Variables.

Time series is a sequence of observations on a variable taken at discrete intervals in time. Such data emanates from a stochastic process, beginning far back in time and continuing into the future. The aforesaid data, coming from a distinct period of that time continuity, can be thought of as a sample, and the magnitude of the data points as randomly distributed. The observational data that will be used for this study can be categorized as such - economic growth over time, amount of annual remittances for the period under consideration, brain drain aggregated annually etc. The study will adopt an empirical analysis to determine the nature and magnitude of the relationship between variables under consideration - Diaspora remittances and brain drain and their net effect on economic growth. It will attempt to establish causality, ceteris paribus, of the explanatory variables of interest on economic growth.

The paper will adopt a model containing six variables: economic development as the predicted variable, proxied by per capita GDP, trade, expressed as the ratio of exports plus imports to GDP, gross capital formation, the amount of remittances aggregated per annum, brain drain measured as the proportion of people with secondary school education who emigrate and take up residence in other countries every year and inflation rate. The variables; exports, gross capital formation and inflation for every year in the period under consideration, are included as control variables to mitigate the omitted variable bias and deflate the effects of the error term in the model. The use of trade as a control variable is justified by the fact that it has been proven to affect economic growth - Krugman (1979), Busse and Koniger (2012) and Rodriguez and Rodrik (2000). To

measure trade, the paper is informed by Dollar and Kraay (2004), and Frankel and Romer (1999), in which international trade for any country is exports and imports as a ratio of GDP. The same can be said of inflation. Barro (1995) estimates that an average inflation rate of 10% per year sets the economy back by 0.3 to 0.4% per year. The effect is more detrimental in the long term if inflation proves to be persistent. As a result of this, it is also included as a control variable. Solow (1956) and Tyler (1981) show that investment has a positive effect on economic growth, and hence it is included in the model. To make the relationship between the variables linear and to stabilize variances, we will use the natural logs of the variables under consideration.

Functional model relating these variables can be stated as:

$$GDPCap = f(TradeGDP,\ GCapForm, RemGDP, Bdrain, ODAGNI, Infrate)$$

The paper proposes to investigate the effect remittances and brain drain by using two models, substituting remittances in the first model for brain drain in the second. This will address the problem of the interaction between them, and also avoid the problem of multicollinearity if a single model was used. The use of a single model would necessitate the introduction of an interaction term for the two variables, the result of which would be high collinearity between remittances, brain drain and the interaction term. The models are informed by the model used by Karagoz (2009) but with modification to include the inflation rate and brain drain.

Brain drain is a contentitious subject, and more so when it comes to measuring it. Many authors, as mentioned in the literature review are of the view that it should be expressed as the ratio of emigrants who have a post secondary school education (tertiary education) to the number of people with tertiary education in the country of interest. As such, Kenya's brain drain has been estimated by such scholars such as Docquier and Marfouk (2006), Beine, et al (2006) and Cohen

and Soto (2001) to range between 33.4% to 38.4%. The world Bank estimates this rate to be 38.5%, and that is the rate adopted by this paper.

3.2 Model Specification.

The models are specified as follows:

I. $LnGDPCap = \beta_0 + \beta_1 TradeGDP + \beta_2 LnGCapForm + \beta_3 LnRemGDP + \beta_4 LnODAGNI + \beta_5 Infrate + \varepsilon$

II. $LnGDPCap = \beta_0 + \beta_1 TradeGDP + \beta_2 LnGCapForm + \beta_3 LnBdrain + \beta_4 LnODAGNI + \beta_5 Infrate + \varepsilon$

Where:

LnGDPCap is the natural log of GDP per capita.

LnTradeGDP is the natural log of sum of exports plus imports expressed as a percentage of GDP.

LnGCapForm is the natural log of gross capital formation. Gross capital formation is expressed as a percentage of GDP.

LnRemGDP is the natural log of remittances expressed as a percentage of GDP and LnBdrain is the natural log of brain drain, both expressed as the number of emigrants with a tertiary education as a percentage of the total number of Kenyans with a tertiary education .

LnODAGNI is the natural log of the ratio of ODA received to GNI for a particular year and ε is the error term while Infrate in the inflation rate.

The relative effects of the variables on economic growth can then be estimated by their coefficients.

To analyze the above model, the paper proposes to adopt the multivariate Vector Autoregressive method as the models used are time series and multivariate. Though it can be argued that it is not the best model as compared to the finite distributed lag model as some variables such as human capital experience a lag before they impact on economic development, to adopt such a model, the research would run into difficulties as there is a dearth of information regarding the time lags before the effect of such variables become manifest in the explained variable.

The paper also intends to carry out some tests on the data to ensure it does not violate the established rules of regression using time series data. These tests are:

- Augmented Dickey Fuller (ADF) test to check for stationarity. If the data is not stationary, the paper will use the method of differences to make it stationary.
- Multicollinearity in time series data can cause the estimation results to be biased. To avoid this, a multicollinearity test will also be carried out.
- To establish the nature and the extent of the relationship between the independent variable and the dependent variable, a correlation analysis will be included.

CHAPTER FOUR

Data Sources and Analysis

The paper will use time series macroeconomic data from 1970 to 2014. Data on remittances and economic growth will be sourced from World Bank, Central Bank of Kenya and Kenya National Bureau of Statistics. In addition, the study will use globally accepted data sources such as Penn World Tables and various publications and reports of United Nations, which are good sources for migration and human capital data, to supplement the above named sources.

4.1 Descriptive Statistics.

To give a general view of the phenomena under investigation, the paper provides summary statistics about economic growth, remittances, inflation, capital formation and the trade component of Kenya's economy over time.

Table 1: Summary Statistics(Data from World Bank)

Variable	Obs	Mean	Std. Dev.	Min	Max
GDPCap	45	481.4402	302.1968	142.4966	1358.262
TradeGDP	45	58.10381	6.742746	47.70277	74.5734
GCapForm	45	19.0599	2.096387	15.3879	25.07647
RemGDP	45	1.704709	1.128122	.2849281	4.235328
Bdrain	45	42.28517	4.067275	38.5231	46.58469
ODAGNI	44	6.063801	3.303442	2.440197	16.95948
Infrate	45	12.2344	8.25628	1.554328	45.97888

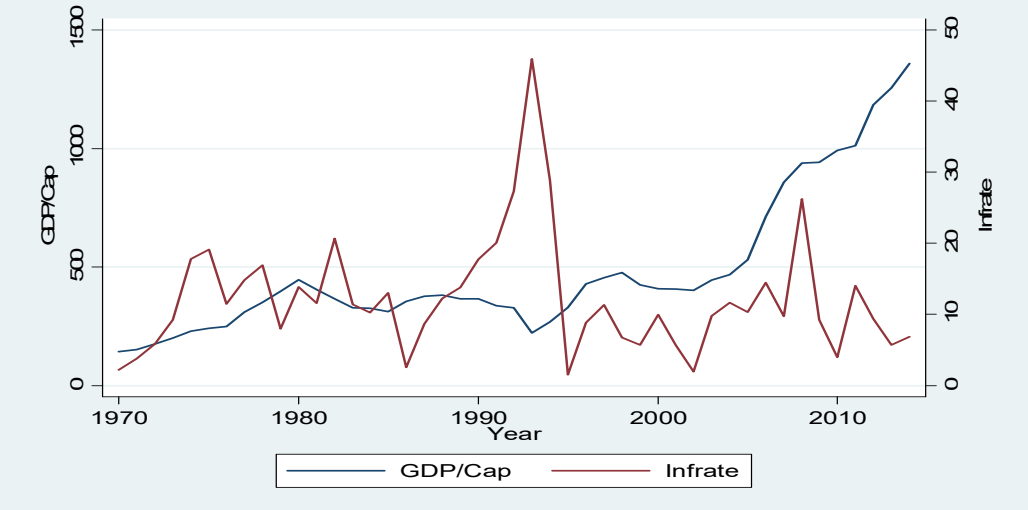
From the table above, it can be seen that all the variables have varied over time. GDP per capita has ranged from $142 per year to $1358, Trade as a percentage of GDP from 47.7% to 74.6%,

the rate of capital formation from 15% of GDP to 25% while remittances have been as low as 0.3% to a high of 4.2%. ODA as a percentage of GNI has varied from 2.4%, averaging 17%. This shows that ODA is a major source capital inflows to Kenya. Brain drain and inflation rate have averaged 42% and 12% respectively.

4.2 Trends Of The Various Variables.

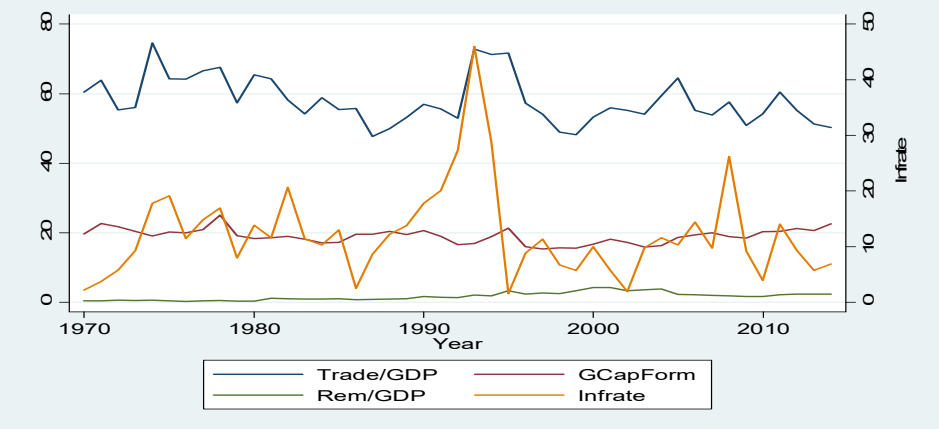
Figure 2 show that Kenya's per capita GDP has been growing. This is indicative of the positive economic development trajectory the country has been on since independence. This growth has been affected by, among other things, the perturbation in inflation rate.

Figure 2: GDP Per Capita and Inflation (Data from World Bank).



The movement of the other variables from the year 1970 to 2014 are presented in the figure 3 below. It is evident that though remittances have been rising in absolute terms, they have remained relatively constant in proportion to GDP. Inflation and trade seem to have a relationship, but research into it is beyond the scope of this paper.

Figure 3: Proportions of Remittances, Trade and Gross Capital Formation as proportion of GDP



4.3 Data Analysis

4.3.1 Tests For Stationarity.

Economic time series data always exhibits a lack of stationarity. Carrying out statistical tests on non-stationary time series data runs the risk of arriving at biased results. To avoid the same, it is always advisable to carry out a test to check the stationarity of data before carrying a regression analysis. The stationarity test adopted for this paper is the Augmented Dickey-Fuller test as specified by Dickey and Fuller (1979). This test checks if the variable under consideration contains a unit root. A null hypothesis that a variable contains a unit root if thus adopted and tested. The alternative hypothesis is that the variable does not contain a unit root, therefore it was generated by a random walk process and is stationary.

The results for the Augmented Dickey-Fuller tests for the relevant variables are presented below. From the tests, lnTradeGDP and Infrate are both stationary and their results are not presented here. The other variables are non stationary as attested by the results below.

Table 2: Stationarity test for lnGDPCap

Augmented Dickey-Fuller test for unit root — Number of obs = 41

	Test Statistic	Interpolated Dickey-Fuller: 1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-1.364	-4.233	-3.536	-3.202

MacKinnon approximate p-value for Z(t) = 0.8710

D.lnGDPCap	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lnGDPCap						
L1.	-.1119389	.0820376	-1.36	0.181	-.2784841	.0546063
LD.	.3538244	.157412	2.25	0.031	.034261	.6733878
L2D.	.2186242	.1678666	1.30	0.201	-.1221631	.5594116
L3D.	-.2315615	.1677638	-1.38	0.176	-.5721402	.1090172
_trend	.0044086	.0029905	1.47	0.149	-.0016623	.0104796
_cons	.6027841	.4308451	1.40	0.171	-.271878	1.477446

The results of ADF test lead to failure to reject the hypothesis that the time series data for GDP per capita has a unit root and thus it is non-stationary. To mitigate for the effects of non-stationarity, a first order difference will be used in regression.

Table 3: Stationarity test for lnGCapForm

Augmented Dickey-Fuller test for unit root — Number of obs = 41

	Test Statistic	Interpolated Dickey-Fuller: 1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-1.001	-4.233	-3.536	-3.202

MacKinnon approximate p-value for Z(t) = 0.9440

D.lnGCapForm	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lnGCapForm						
L1.	-.1952825	.1950662	-1.00	0.324	-.591288	.2007231
LD.	-.1078081	.2099146	-0.51	0.611	-.5339574	.3183411
L2D.	-.2719157	.1843436	-1.48	0.149	-.6461532	.1023217
L3D.	-.2331702	.1727841	-1.35	0.186	-.5839406	.1176002
_trend	.0011557	.0013353	0.87	0.393	-.0015551	.0038666
_cons	.546243	.5873013	0.93	0.359	-.6460421	1.738528

The results of the test do not lead to the rejection of the null hypothesis and we conclude the series for lnGCapForm has a unit root and is non-stationary.

Table 4: Stationarity test for lnRemGDP

Dickey-Fuller test for unit root — Number of obs = 44

	Test Statistic	Interpolated Dickey-Fuller: 1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-1.545	-3.621	-2.947	-2.607

MacKinnon approximate p-value for Z(t) = 0.5112

LnRemGDP is non stationary.

Table 5: stationarity test for lnBdrain

Dickey-Fuller test for unit root — Number of obs = 44

	Test Statistic	Interpolated Dickey-Fuller: 1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-1.048	-3.621	-2.947	-2.607

MacKinnon approximate p-value for Z(t) = 0.7355

Time series data for brain drain is non-stationary as evidenced by failure to reject the null hypothesis that it has a unit root.

To control for the non stationarity of these variables, the paper will use the method of differences. To be more exact, the regression will use the first difference for all the variables.

4.2.2 Test for Collinearity.

Multicollinearity in time series analysis can occasion the problem of over or underestimating the coefficients of the collinear independent variables. This can make it impossible to determine the

effect of the individual explanatory variables on the explained variable, though it might not affect the collective effect of the variables. To make sure the data for the variables used is not collinear, a multicollinearity test has been carried out and the results presented below.,

Table 6: Test for collinearity

Collinearity Diagnostics

Variable	VIF	SQRT VIF	Tolerance	R-Squared
lnGDPCap	2.29	1.51	0.4369	0.5631
lnTradeGDP	1.81	1.34	0.5540	0.4460
lnGCapForm	1.72	1.31	0.5820	0.4180
lnRemGDP	4.75	2.18	0.2103	0.7897
Bdrain	4.63	2.15	0.2160	0.7840
lnFDIGDP	1.15	1.07	0.8680	0.1320
Infrate	1.31	1.15	0.7620	0.2380
Mean VIF	2.52			

Multicollinearity is regarded as high when VIF (β_i)>10 for any independent variable. For all the variables used in the model, VIF is less than 10, with the highest being 4.75. We can therefore conclude multicollinearity is not a problem, though there is a little correlation between remittances (lnRemGDP) and brain drain (Bdrain). To control for this collinearity, the paper adopts two models , one for remittances and the other for the brain drain. This will reduce the estimation errors that can be occasioned by the problem of collinearity.

4.2.3 Correlation Test.

Correlation test is important as it establishes if there is any relationship between the variables under investigation. It should be noted however, that, the said test does not impute or suggest causality among the variables.

Table 7: Test for correlation test.

```
. correlate  lnGDPCap lnTradeGDP lnGCapForm lnRemGDP Bdrain lnODAGNI Infrate
(obs=44)
```

	lnGDPCap	lnTrad~P	lnGCap~m	lnRemGDP	Bdrain	lnODAGNI	Infrate
lnGDPCap	1.0000						
lnTradeGDP	-0.3920	1.0000					
lnGCapForm	-0.0678	0.3056	1.0000				
lnRemGDP	0.5260	-0.3044	-0.5152	1.0000			
Bdrain	-0.5793	0.1897	0.4327	-0.8551	1.0000		
lnODAGNI	-0.1142	0.1473	0.1148	-0.0581	0.1663	1.0000	
Infrate	-0.1091	0.3890	-0.1083	-0.0150	-0.0801	0.5483	1.0000

Correlation analysis presented in the table above shows among the variables of interest, lnRemGDP (remittances) is positively correlated with lnGDPCap (economic development). Bdrain, on the other hand has a negative relationship with growth.

4.2.4 Regression Analysis and Findings.

The regression analysis was carried out using Stata . The data consisted of 45 observation, but because of differencing, only 44 were included in the regression. The results are presented in table 7 below.

Table 7: Regression results 1: Remittances.

Vector autoregression

Sample: 1971 - 2013		No. of obs	= 43
Log likelihood = 38.04041		AIC	= -1.490252
FPE = .0132164		HQIC	= -1.399627
Det(Sigma_ml) = .0099797		SBIC	= -1.244503

Equation	Parms	RMSE	R-sq	chi2	P>chi2
lnGDPCap	6	.107694	0.9997	157071.3	0.0000

lnGDPCap	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
lnGDPCap						
lnGDPCap L1.	.9537125	.0366959	25.99	0.000	.8817899	1.025635
lnTradeGDP	-.0815231	.1164607	-0.70	0.484	-.309782	.1467357
lnGCapForm	.2890534	.1838867	1.57	0.116	-.071358	.6494647
lnRemGDP	.0071145	.027941	0.25	0.799	-.0476488	.0618778
lnODAGNI	-.0959034	.0410963	-2.33	0.020	-.1764507	-.0153562
Infrate	-.0023771	.0025314	-0.94	0.348	-.0073386	.0025844

The results of the regression show that remittances (lnRemGDP) are not significant both at 95% and 90% confidence level. The regression analysis leads to failure to reject the first hypothesis that remittances do not have a significant and positive effect on per capita GDP growth in Kenya. Added to that is the fact that the coefficient of lnRemGDP is not significantly different from zero.

Table 8: Regression results 2: Brain drain

Vector autoregression

Sample: 1971 - 2013		No. of obs	= 43
Log likelihood = 40.17886		AIC	= -1.589715
FPE = .0119651		HQIC	= -1.49909
Det(Sigma_ml) = .0090349		SBIC	= -1.343966

Equation	Parms	RMSE	R-sq	chi2	P>chi2
lnGDPCap	6	.10247	0.9998	173501.9	0.0000

lnGDPCap	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
lnGDPCap						
lnGDPCap L1.	.925048	.0308201	30.01	0.000	.8646418	.9854542
lnTradeGDP	-.0380982	.1063364	-0.36	0.720	-.2465138	.1703174
lnGCapForm	.4283754	.1669589	2.57	0.010	.1011419	.7556089
Bdrain	-.0102565	.0047986	-2.14	0.033	-.0196616	-.0008514
lnODAGNI	-.0754429	.0399992	-1.89	0.059	-.1538399	.0029541
Infrate	-.0034588	.0024101	-1.44	0.151	-.0081824	.0012649

The regression results are significant at 95% level and we reject the second hypothesis that Brain drain does not have a significant and negative effect on economic growth. In fact, the expectations of the research that it has an insidious effect on economic growth is confirmed. The coefficient of Bdrain is also significantly different from zero, confirming the rejection of the hypothesis. The results can be quantified as follows:

- An increase in 1% in brain drain would lead to 1.2% reduction in GDP Per Capita.

CHAPTER FIVE

Conclusion and Recommendations.

5.1 Conclusion.

The results seem to suggest that any increase in remittances would lead to a reduction in economic growth. This conclusion maybe spurious, because as suggested by Chami, et (2005) and Karagoz (2009) , remittances to many developing nations are countercyclical to economic cycles. They decrease during booms and increase during periods of economic down turns. The same can be said of Kenya. The recipients of the remittances use them to smoothen consumption in times of economic hardships and much of them go to non-productive sectors of the economy.

The effect of brain drain on the other hand is real and cannot be ignored. The loss of medical personnel - doctors and nurses developed countries has been proved to be a real problem in all of Sub-Saharan Africa. In Kenya, Kirigia, Joses, et al (2006) conclude that the loss of health professionals has lead to a dysfunctional health system besides the resources used to educate the emigrant doctors. The same can be said of engineers and technicians - a lack of whom makes technology transfer from developed to developing countries a near impossibility. Odhiambo (2013) elaborates the effect of brain drain and its impact on the quality of higher education in Kenya. The flight of professors and PHD holders compromises university education and the result is half baked graduates, in whom the country cannot realize the its development full potential.

5.2 Recommendations.

In order to tap Diaspora remittances for development, The country should learn from Ethiopia and India, countries that have enacted policies to encourage the Diaspora to participate in their respective countries' development. Amongst these, are policies that create Diaspora centered institutions to foster good relations between the Diaspora and the their country of origin. Another consideration, as informed by Ratha, D (2005), would be setting up structures for tapping the remittances for development instead of consumption. On this line, the country can securitize the future flow of the remittances and issue Diaspora bonds which would be tied to specific development projects.

To address brain drain, Kenya should bench mark with countries like South Korea on the best practices to retain human capital. It should look for ways to enhance their productivity and offer competitive compensation to highly qualified professionals to forestall their flight. This is given credence by the steps the Korean government took to attract and retain highly skilled workforce for its two premier research institutions: KAIST and KDI. The government offered unprecedented remuneration and benefits in order to attract Korean scholars abroad to staff these institutions, the contribution of which to Korea's development in the areas of science, technology and public policy research cannot be gainsaid. The work environment should also be improved, as many such as doctors, professors and engineers cite dismal working conditions for their desire to relocate. Last but not least, an inclusive political climate and institutions that incentivize excellence should be fostered as these are major determinants for the loss of human capital.

5.3 Limitations of the Study.

The research encountered difficulties in accessing data remittances and brain drain. It is estimated that most of the remittances to developing countries are not captured in official statistics. This is attributed to:

- Since the amounts remitted are in small quantities, the costs involved are prohibitive. As such, the senders looks for unofficial ways of remitting the money.
- The availability of unofficial channels for money transfers. The most prominent of these is the hawala system prevalent in Kenya and Somali. It is a system based on trust and the money transferred are not recorded in any official statistics. This system has developed to address the issue of transaction cost associate with the small amounts of money sent.

The data on emigration also highly underestimates the number of emigrants who enter OECD countries. This is because a sizeable amount of these emigrants are illegal emigrants and therefore are not captured in official migration data. The issue of brain circulation was also difficult to tackle as the relevant data is lacking.

Bibliography

., African Development Bank. " Diaspora Bonds: Some Lessons for African Countries." 2015.

Aredo, D., & Zelalem, Y. " Skilled labor migration from developing countries: An assessment of brain-drain from Ethiopia." *Seventh Annual Conference on the Ethiopian Economy .* Ethiopian Economic Association, 1998.

Barro, Robert J. "Economic Growth In A Cross Section Of Countries." *The Quarterly Journal Of Economics*, 1991: 106 (2): 407.

Beine, Michel, Frédéric Docquier, and Hillel Rapoport. "Brain Drain And Economic Growth: Theory And Evidence." *Journal Of Development Economics* , 2001: 275-289. .

Beinea, Michel, Frédéric Docquierb, and Hillel Rapoport. *Measuring international skilled migration: New estimates controlling for age of entry.* World Bank, 2006.

Bhagwati, Jagdish, and Koichi Hamada. "The Brain Drain, International Integration Of Markets For Professionals And Unemployment. ." *Journal Of Development Economics* , 1974: 19-42.

Bond, S., Hoeffler, A. & Temple, J. " GMM Estimation of empirical growth models." *Discussion Paper, No. 3048.* CEPR , 2001.

Busse, Matthias, and Jens Koeniger. "Trade And Economic Growth: A Re-Examination Of The Empirical Evidence." *SSRN Electronic Journal.* , 2012.

Chami, Ralph, Connel Fullenkamp, and Samir Jahjah. "Are Immigrant Remittance Flows A Source Of Capital For Development." *SSRN Electronic Journal*, 2005.: ssrn.463002.

Dickey, David A., and Wayne A. Fuller. "Distribution Of The Estimators For Autoregressive Time Series With A Unit Root." *Journal Of The American Statistical Association 74 (366)*, 1979: 427.

Docquier, Frédéric, and Hillel Rapoport. "Globalization, brain drain, and development." *Journal of Economic Literature*, 2012: 681-730.

"Skilled migration: the perspective of developing countries." *IZA Discussion Paper No. 2873* . Forschungsinstitut zur Zukunft der Arbeit (Institute for the Study Of Labour), 2008. .

Dollar, David, and Aart Kraay. " Trade, Growth, And Poverty. ." *Economic Journal 114 (493)*, 2004: F22-F49.

Easterly, William, and Ross E. Levine. "It's Not Factor Accumulation: Stylized Facts And Growth Models." *SSRN Electronic Journal.*, 2001: doi:10.2139/ssrn.269108.

Frankel, Jeffrey A, and David Romer. . " Does Trade Cause Growth?. ." *American Economic Review 89 (3)*, 1999: 379-399.

Franklin, Rachel S. ,. *Domestic Migration Across Regions, Divisions, and States, 1995 to 2000.* US Department of Commerce, Economics and Statistics Administration, US Census Bureau, 2003.

Harris, John R., and Michael P. Todaro. " Migration, unemployment and development: a two-sector analysis." *The American economic review*, 1970: 126-142.

Havinden, Michael, and David Meredith. *Colonialism and development: Britain and its tropical colonies, 1850-1960:.* Psychology Press., 1993.

IMF. "Balance of Payment Manual, 6th Edition." 2010,. 2015.

Karagöz, Kadir. " WORKERS'REMITTANCES AND ECONOMIC GROWTH: EVIDENCE FROMTURKEY." *Journal of Yaşar University 4, no. 13*, 2009.: 1891-1908.

Kirigia, Joses M., Akpa R. Gbary, Lenity K. Muthuri, Jennifer Nyoni, and Anthony Seddoh. "The cost of health professionals' brain drain in Kenya." *BMC health services research 6, no. 1*, 2006.

Klein, Martin A., and Jan Hogendorn. In *The Atlantic slave trade: effects on economies, societies and peoples in Africa, the Americas, and Europe.*, by and Stanley L. Engerman. Edited by Joseph E. Inikori, 1- 20. Duke University Press, 1992.

Krugman, Paul R. : doi:10.1016/0022-1996(79)90017-5. "Increasing Returns, Monopolistic Competition, And International Trade. ." *Journal Of International Economics 9 (4)*, 1979. : 469-479. .

Lee, Everett S. " A Theory Of Migration." *Demography 3 (1)*, 1966: 47-57.

LEWIS, W. ARTHUR. . :. "Economic Development With Unlimited Supplies Of Labour." *Manchester School 22 (2)*, 1954: 139-191. .

Lucas, Robert E. " On The Mechanics Of Economic Development. ." *Journal Of Monetary Economics 22 (1)*, 1988.: 3-42.

Lucas, Robert E. " On The Mechanics Of Economic Development." *Journal Of Monetary Economics*, 1988.: 3-42.

Mankiw, N. G., D. Romer, and D. N. Weil. "A Contribution To The Empirics Of Economic Growth. ." *The Quarterly Journal Of Economics 107 (2)*, 1992.: 407-437.

Mayda, Anna Maria. " International migration: A panel data analysis of the determinants of bilateral flows." *Journal of Population Economics 23, no. 4*, 2010.: 1249-1274.

Migration Policy Institute, International Organisation for Migration. *Developing a Road Map for Engaging Diasporas in Development.* 2015,.2015.

Mountford, Andrew. " Can A Brain Drain Be Good For Growth In The Source Economy?" *Journal Of Development Economics 53 (2)*, 1997: 287-303.

Newson, Linda. In *Pathogens, places and peoples: geographical variations in the impact of disease in early Spanish America and the Philippines. Technology, Disease and Colonial Conquests, Sixteenth to Eighteenth Centuries* , 167-210. 2001.

ODHIAMBO, GEORGE O. .: doi:10.2304/rcie.2013.8.4.510. " Academic Brain Drain: Impact And Implications For Public Higher Education Quality In Kenya. ." *Research In Comparative And International Education 8 (4)*, 2013: 510. .

Perruchoud, Richard. "International migration law: Glossary on migration." International Organization for Migration., 2004.

Ratha, Dilip. *Workers' remittances: an important and stable source of external development finance.* World Bank, 2005. .

Reichmann, Courtland, Asch J, Beth. *Emigration and its effects on the sending country.* Rand., ed. 1994. .

Rodríguez, Francisco, Dani Rodrik, and Francisco Rodriguez. "Trade Policy And Economic Growth: A Skeptic's Guide To The Cross-National Evidence.. ." *NBER Macroeconomics Annual 15:* , 2000. : 261.

Sen, Amartya. In *Development As Freedom.*, 1. Knopf., 1999.

Solow, Robert M. " A Contribution To The Theory Of Economic Growth." *The Quarterly Journal Of Economics 70 (1)*, 1956.: 65.

Sonja. " Migration Networks and Migration Decision-Making. ." *Journal of Ethnic and Migration Studies, 34:4,*, 2008.: 585 — 605.

Sriskandarajah, Dhananjayan. *Reassessing the impacts of brain drain on developing countries.* Institute for Public Policy Research, 2005.

UNCTAD. *THE LEAST DEVELOPED COUNTRIES REPORT.* UNCTAD, 2012,. 2015.

United Nations, Department of Economic and Social Affairs . 2013. The 2013 revision. "Trends in International Migrant Stock." (United Nations Database, POP/DB/MIG/Stock/Rev. 2013)., The 2013 revision .

World Bank. . *Migration and Remittances Factbook 2011 : Second Edition.* World Bank. © , 2011.

ANNEX 1: DATA

Year	GCapForm (% of GDP in Current US $)	Rem/GDP (% of GDP in Current US $)	Bdrain(%of Population with tertiary education)	ODA/GNI (% of GNI in Current US $)	GDP/Cap (Current US$)	Export/GDP (% of GDP in Current US $)
1970	19.68183564	0.452777002	46.58468968	3.628510141	142.4966207	29.82572556
1971	22.70365589	0.408236417	46.58468968	3.811757931	152.5528229	28.6393551
1972	21.75923465	0.657723835	46.58468968	3.466103111	174.3969694	26.58782886
1973	20.44973244	0.501171671	46.58468968	3.956984696	199.6946985	27.39383468
1974	19.11944942	0.621528711	46.58468968	4.058960463	228.7613789	33.67588385
1975	20.21309434	0.404989716	46.58468968	3.941990244	241.6790547	29.82368597
1976	19.98004609	0.284928064	46.58468968	4.639108422	248.254325	32.45047124
1977	20.96940965	0.411182225	46.58468968	3.707482032	309.375627	34.95886876
1978	25.07647349	0.497763503	46.58468968	4.800656115	351.6685331	28.93551834
1979	19.17131577	0.307006346	46.58468968	5.796133657	398.0738022	25.75315424
1980	18.32275948	0.381539476	46.58468968	5.605102795	446.6034591	29.51696422
1981	18.61132611	1.14581827	46.58468968	6.749358606	405.5627941	30.45988132
1982	19.0277845	1.056969742	46.58468968	7.844985826	366.2685302	26.657466
1983	18.11458912	0.971366471	46.58468968	6.842516461	327.7834249	25.94993241
1984	17.15324296	0.916751574	46.58468968	6.821233946	326.8519981	26.74989265
1985	17.27142511	1.075787509	46.58468968	7.20011272	312.0456802	25.29893296
1986	19.63592774	0.720250764	46.58468968	6.328411068	354.9692693	25.84835527
1987	19.62612404	0.828020568	46.58468968	7.245170328	377.0428946	21.30522135
1988	20.44687558	0.916295722	46.58468968	10.35935083	381.5415934	22.37121356
1989	19.45809966	1.075684047	46.58468968	13.18204344	365.4056053	23.03302943
1990	20.64819763	1.624525926	46.58468968	14.39440285	365.6172894	25.69260596
1991	19.03009714	1.522177776	38.52309593	11.78283337	336.3641884	27.04163232
1992	16.58137009	1.398930312	38.52309593	11.24354898	327.9748244	26.26037419
1993	16.93761611	2.053969306	38.52309593	16.95948131	222.7240548	38.90363017
1994	18.87307148	1.920498137	38.52309593	9.971231408	268.6455753	37.04028084
1995	21.38558662	3.297692404	38.52309593	8.386840128	330.4831218	32.59170122
1996	16.00905817	2.394350016	38.52309593	5.034028025	428.4338764	25.20060195
1997	15.38790076	2.682113963	38.52309593	3.46581113	454.7417768	22.68638735
1998	15.67521329	2.467858918	38.52309593	2.973412146	476.7185137	20.16926083
1999	15.59143148	3.347080957	38.52309593	2.440197419	425.5935921	20.8327352
2000	16.70880651	4.233647429	38.52309593	4.077109166	408.9818683	21.58757114
2001	18.15155736	4.235327934	38.52309593	3.67044219	407.5540066	22.93157636
2002	17.23687985	3.29334069	38.52309593	3.015547648	402.1703155	24.89797261
2003	15.83820913	3.609643818	38.52309593	3.548543289	444.2336311	24.08681531
2004	16.25922348	3.852047313	38.52309593	4.138462832	467.3787525	26.61025858

2005	18.69911176	2.268083138	38.52309593	4.053022164	530.0821579	28.50903021
2006	19.42443802	2.20889712	38.52309593	3.675727972	711.7211637	22.98493964
2007	19.96472911	2.018912106	38.52309593	4.170426412	857.9256887	21.91899129
2008	18.86492382	1.859073641	38.52309593	3.808775509	938.5717623	22.67405755
2009	18.50505362	1.705659354	38.52309593	4.803544829	942.7431465	20.03262925
2010	20.32179966	1.714407786	38.52309593	4.086541964	991.8505451	20.65720485
2011	20.37323419	2.226633382	38.52309593	5.916099772	1012.879773	21.62597244
2012	21.2196423	2.402335779	38.52309593	5.280406656	1184.923256	19.81682883
2013	20.59308772	2.374399991	38.52309593	5.924813856	1257.202838	17.89092376
2014	22.62275481	2.36450369	38.52309593		1358.262219	16.39971615