Macroeconomic determinants of emigration from Kenya

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MACROECONOMIC DETERMINANTS OF EMIGRATION FROM KENYA

A GRAVITY MODEL ANALYSIS

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ABSTRACT

The study examined the economic determinants of migration from Kenya to USA, Canada, Australia, Germany and United Kingdom by applying a unilateral migration gravity model during the period 2000-2015.The study applied the Least Square Dummy Variable specification technique to estimate the gravity model. The pull factors from Kenya were high inflation, exchange rate appreciation, high population and a rise in Kenyan GDP per capita.In considering the relative attractiveness of the destination countries in increasing order the finding showed Australia, Canada, UK and Germany were the prominent migration destinations. When emigration was considered overtime there was generally a positive trend except for 2007.Finallythe findings showed that if all the macroeconomic factors were held constant there will be a significant decline in migration from Kenya thus we conclude that besides other factors influencing migration, economic factors play a key role too.

Keywords

Emigration, Least Square Dummy Variable, Gravity Model, Kenya, Macroeconomic factors

1. INTRODUCTION

International migration is a rather recent phenomenon in developing countries. Most world migration patterns have been mostly been propelled by ethnicity and conflict, however majority of the world countries have been undergoing peaceful transitions and the current human mobility are influenced by economic motivation.

International migrations is often explained by a basic push and pull model, economic conditions, demographic pressure and unemployment in the sending countries, work in coordination with higher wages, demand for labor and family reunification in the receiving countries (Smith, 2007).

The largest number of Kenyan emigrants has been noted to be at the United Kingdom and United States of America (IOM).However of recent there has been an upward trending migration to the Middle East especially Dubai and Saudi Arabia. Canuto and Rathha (2011), found that the top destination for emigrants from Kenya is the United Kingdom followed by Tanzania and the United States. The estimated population size of the Kenyan emigrants in the US stand at 87,267 equivalent to 5.8% of the African emigration population, thus making it the fifth largest African diaspora community after Nigeria,Ethiopia,Egypt and Ghana(McCabe,2011).

According to World Bank migration data, a large portion of the population of the Kenyan emigrants since 1960 has greatly been located in Africa. This can be partly attributed to less migration cost and ratification of the Africa Migration Policy Framework allowing easy migration of labor. Asia is second largest recipient of the emigration stock followed by Europe, America, Caribbean, Australia and Pacific in that respect as shown in table 1.1

Table 1:1 Kenyan population distribution according to geographical areas

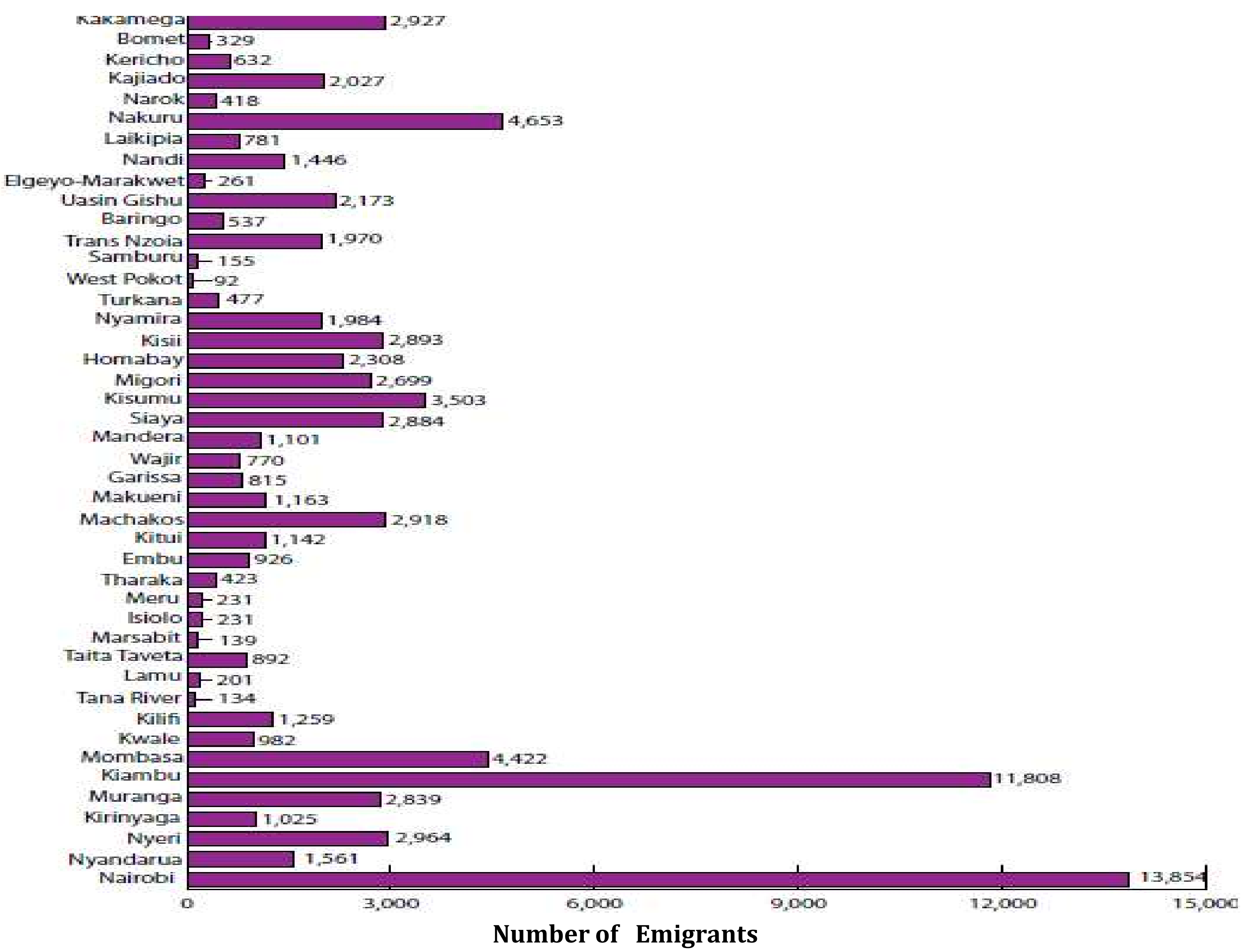
Region	1960	1970	1980	1990	2000	2007 (GMOD
Africa	54,245	84,506	94,683	104,773	538,128	87,6695
Asia(Including China, India and Middle East)	3678	38,608	30,830	21,801	966	92,731
Europe(Including Eastern Europe)	788	30,834	22,367	23,678	920	70,674
America(Including Latin America)	302	4,006	6,299	8,762	161	19,329
Caribbean	35	163	768	1,431	21	2,496
Australia and Newzeland	216	427	226	0	6	849
Pacific	11	25	12	0	0	262
Total	59,275	158,569	155,185	149,445	540,202	1,063,036

Source: **World Bank Migration data (1960-2000) and GMOD (2007)**

IOM(2014),indicates that Kenya's net emigration rate stood at -0.22 per 1000 persons but the skilled emigration was estimated to be 35% of which the largest composition were health professionals. According to UNDESA (2013) the five largest recipient of Kenyan emigrants are; USA, UK, Australia, Canada and Germany. World Bank's Migration and Remittances fact book (2011) estimated diaspora population of Kenyans in 2010 to be 457,000 individuals; it further identifies the Uganda –Kenya border as a top migration corridor

Figure 1.1 shows that Kenyan emigrants are from all counties within Kenya, with most emigrants coming from Nairobi, Kiambu, Mombasa and Nakuru. Each of the other counties do contribute in the range of 3600-100 emigrants to the overall emigration stock.

Figure 1.1:.Kenyan Emigrants distribution based on county of origin



Source . Kenya Bureau of statistics

The study regards Kenya as a case study based on a number of unique characteristics as outlined by Ruth (2007) who noted that the Kenyan population abroad is among the top ten among African countries, hence it's a significant population for consideration .Second, Most emigrants from Kenya experience brain waste in developed countries thus creating a drive to focus on Kenya. It's also noted that the government has tremendous interest with its diaspora and there exist evidenced network of interest of Kenyans abroad on development efforts in Kenya .In addition, Kenya is regarded as a regional hub for trade and finance in East Africa, Kenya consist of a large number of literates and is relatively stable with minimum confounding factors making it easier to examine.

1.2 Statement of the Problem

For a long time, Kenyans have been migrating to developed countries in search of better opportunities, however evidence of most Kenyans in those countries depict existence of great brain waste, nevertheless its worthy noting that there has been a rise of Kenyan emigrants to such destinations a case in point to the US. For quite a long time, inadequate employment opportunities with relatively low pay have been the main push factors for majority of emigrating citizens, nevertheless the pull factors have been increasing in recent times ranging from existence of networks, demand for labor and collective household aspirations. Kenya's political conditions are relatively democratic and weather conditions of Kenya are fairly predictable and relatively stable throughout the year than in other countries, which has seen multinational companies establish branches in Kenya with the intention of providing job opportunities at close proximity. Despite this move the number of reported emigration is on the rise, this makes a researcher inquisitive to find out why there is a continued surge of emigrants even when the prospect of availability of better opportunities doesn't exist in the receiving destinations and the factors compelling Kenyans to forego the new job establishments to the option of emigrating. The study intends to delve the existence of other economic factors likely to propagate human mobility apart from the rather obvious factors like employment.

With the dynamics in development of complex communication and transport infrastructure, international migration a rather rare and a preserve of the few in the past has been growing at an alarming level. The study intends to discern why there is increase of emigrants from Kenya considering how costly it's to migrate, reason why employed persons are leaving their jobs for other countries yet they have an assured income.

1.3 Objectives of the Study

The general objective of the study is to establish the key macroeconomic determinants behind the increased emigration of Kenyans.

The specific objectives of the study are:

i. To analyze the economic factors influencing emigration from Kenya.
ii. To formulate policy recommendations to policy makers for possible implementation.

1.4 Justification of the Study

The study aimed to fill the gap of inexistence of empirical studies on emigration for Kenya but to also suggest relevant policy recommendations that can not only enhance the application of the skilled manpower within the Kenyan boundary but also cement the sovergnity of its citizens in the host countries especially where cases of brain waste and discrimination have been reported. It gives macroeconomic suggestions aimed at stemming the emerging tide of racism and discrimination against Kenyan citizens in foreign countries often practiced by the nationals of the respective countries who are either unemployed or are impoverished. This nationals regard the Kenyan emigrants to be potential and direct opponents vying for existence of better opportunities in their native territory.

The study also seek to propose measures that ensure that the presence of Kenyans abroad is maximized by their inclusion in propelling economic growth through remittances inflow.

Most studies in migration do emphasize the existence of circular migration however for international migration this is quite often limited. In order to enhance the logic of circular (return-migration) the study came up with policies aimed at making this phenomenon quite easy by making fundamental changes to the existing stringent restrictions.

The study will be very crucial to enlighten researchers on the perceived relationship of economic dynamics in determining the spatial distribution of citizens of a country. Lastly the study comes up with suggestions that harness the migration policies advanced by government and the economic laws having a direct effect on emigration despite that not being the initial intention.

2. LITERATURE REVIEW

2.1 Theoretical Literature

There is a large body of literature trying to give the theoretical angle to the determinants of emigration. These different literature uses differing concepts, assumptions, frames and level of analysis (Arango, 2000).According to Arango (2000) and Castles (2010), such theoretical models having been developed through specific empirical findings and enhanced in isolation and are often segregated by area of functionalism.

Portes (1999) alludes that the formulation of migration theories is aimed at resolving four basic questions: What are the origins of migration? What is the directionality and continuity of migrant flows? How is migrant labor utilized? And how easy is it for migrants to adapt to the social cultural factors**.**

2.1.1 International Migration Theories

2.3.1.1 Ravenstein theory of Migration

This theory is based in generalizations focused on individual rational choice to be influencing mobility of persons from one place to another. By using census data from England and Wales, Raveinstein focused on the repelling and attracting factors to migration, migrant's individual characteristics, areas of occupation, distance and the feedback effect of any migration patterns, he was able to formulate generalizations which came to be called Ravenstein's laws and most emerging theories have in one way advanced from a number of the laws. The laws are:

- Most migration occurs within a short distance
- Majority of the migratory movements are from agricultural to industrial regions
- Expansion of bigger town centers is as a result of migration rather than natural growth.
- Migration develops in tandem with industrial, commercial and transport expansion
- Every migration flow produces a counter flow
- Most women undertake short distance migration while the majority of men indulge in international migration

- Economic causes are the key factors at the Centre of most migration flows.

2.3.1.2Neoclassical Migration Theories

According to this theory, migration is accelerated by differential in labor returns across markets.

It's an initial model advanced to show the complementarity of development and migration by the neoclassicists such as Hicks , Lewis and Harris and Todaro .It reveals that actual wage differences across countries, arising from deferring levels of labor market restrictions result in migration. Basically, the main consideration of this theory on what causes migration revolves around wages. Massey et al. (1993) and Borjas (1999) contend that in a situation of full employment this theory foresees a linear relationship between migration and differences in wages. In an extended version of this model Zimmermann (1994) posits that itsn't the actual earnings but the expected earnings that greatly determine migration and often the key variable is earnings weighted by the probability of employment.

Various theories have been developed as extensions from the neoclassical theory and they try to explain various aspects namely:

2.3.1.2.1 Sjaadstad Human Capital Theory (1962)

This is a micro level model developed to assess individual choice to migrate. This model adds a social demographic angle to the neoclassical model as a key determinant in inducing a migration decision (Bauer and Zimmerman, 1999).Central to this theory, is the focus on a rational individual who aims to maximize benefits in the new destination, in other words, Sjaadstad likens an individual decision to migrate as a form of investment.

Bonin et al (2008), reveal that since individuals defer in preferences despite being from the same sending country they will portray varying migration propensities consequently select different destinations. According to Kurekova (2011), the position held by the human capital theory is that, the more skills an emigrant has increases ones chances of becoming successful.

2.3.1.2.2 Lee's Push-Pull Theory (1996)

This model affirms that for every migration pattern there is often a repelling factor from the sending country and an attracting one from the receiving destination. Lee further notes the existence of intervening obstacles, these are factors that exist between the push and pull causes and they include; transit costs and migratory regulatory restrictions and these may have three probable outcomes: reducing the migration, increasing it or even preventing it especially a cross border travel ban for citizens of a given country.

There are two major criticism of this theory; Due to its rather simplistic portrayal of the determinants of migration, it fails to reveal the dominant push and pull migration factors (De Hass, 2008).Second Mabogunje (1970), criticizes it on the basis that despite having no prior reason of not adopting this theory to a micro-level, its applicability in investigating causes of rural-urban migration is limited.

2.3.1.3 New Economics theory of migration

Mutual interdependence and not individual independence in decision choice to migrate is emphasized by this approach(Stark,1991).An individual's decision to migrate isn't determined by such a person's instinct but rather through a combination of factors and other peoples' perspective .Massey et al(1993), posits that unlike the human capital position where the decision to migrate is determined by a person's anticipation to maximize individual utility, in this new approach households respond to foregone risks of income and other failures in the market.

According to Stark(1991),failure to consider the rationality of individuals doesn't justify irrationality of a household but it gives room for consideration of other variables of deprivation, level of risk averseness and risk minimization of household income. It's argued that a relatively poor household will be willing to send a member abroad due to the anticipated gains that will alleviate the status of such household in the aftermath. Taylor (1999), applauds this model since it considers remittances as a significant income loss reduction way through its diversification of the risk, at the same time, it connects causes and consequences of migration.

Just like the neoclassical theory this model is static in analyzing household changes and its heavily future oriented.

2.3.1.4 World Systems Theory

This approach focuses on the linkage of migration determinants to world market structural changes and perceived interconnectedness of migration to globalization, interdependence of economies and invention of new ways of production (Sassen, 1988).Basically it focuses on the supply side of labor.

In most developing countries that have resorted to export oriented production and agriculture value addition, often attract a large share of Foreign Direct Investment .This influences the pattern of migration in such a way that people move to the areas from which the investments originate. This approach regards capital as a fundamental factor in its analysis. According to Kurekova (2011), origin of capital often becomes the receiving destination of labor.

Bijak (2006), critiques this approach to being too descriptive as Favell (2008) recognizes its failure to derive testable postulates.

2.3.1.5 Dual Labor Market Theory

This approach was developed by Piore in 1979.The main tenet of this model is that despite existence of capital intensive and labor intensive sectors, the determinant of migration is affected by the demand for labor but not its supply. This approach has two major limitations: It fails to consider sending destination and it places greater concern on recruitment practices that are formal in nature and it appears to be unrealistic by generalizing that there are countries in the world with similar economic structures therefore the formal recruitment procedures should be equal. However this approach doesn't justify the existence of emigration differentials in such countries

2.3.1.6Network concepts migration Theory

At some point in time there seems to be inexistence of wage differentials and formal recruitment process that may influence emigration of persons, in such a situation one will look at what perpetuated the mobility rather than what initiated the emigration. Building on Vertovec (2003), diaspora existence of networks often perpetuate the choice of destination of emigrants during decision making. This diaspora networks aren't evenly distributed across origin countries thereby making the migration propensity to vary at different periods. A closely related theory to this approach is the system theory, developed by Magobunje (1970).It has its origin in geography and inclines on the socio-cultural, economic and institutional impact that migration has.

Transnational migration is another closely related form to networks theory. This kind of migration reveals an emigrant who has influence in the receiving and sending destination in various facets of development be it political, economic and social (Bretell and Hollified, 2008).

2.4 Empirical literature

Kenya specific empirical studies on determinants of international migration is limited, however there are studies from a sample of countries on the determinants of emigration.

De Haas(2008); Zohry and Harrell-bond(2003),point out that oil-rich countries became potential destination of emigrants from south Asia, South East Asia and for some regular sub-Saharan workers who were regarded to offer their labor cheaply during 1983,Iran-Iraq war that had resulted to fluctuating oil prices and declining demand of construction workers who were mostly Egyptians and Arabs.

According to Cohen (2001), in Morocco middle class high school and university graduates are a frustrated lot who are eager to emigrate due to high unemployment, lethal education systems failing to provide the required job skills, existence of state bureaucracy and scarcity of stable jobs for those without networks. This ‘condemned ‘group often stage demonstrations at the parliament in Rabat.

Empirical study findings from a survey conducted on Mexican households show that schooling hardly affect incentives to international migration from rural Mexico, however it has positive effects on internal migration incentives (Mora and Taylor, 2006)

Jerome (1926), by observing the number of emigrants from Europe for over a period of 100 years before US immigration quotas were imposed in the 1920s, he resolved that the main pull factor was the economic conditions. In addition according to Kelly (1965), in his observation of the causatives of the Britons migrating to Australia, his finding was similar to Jerome, he singled out employment to be the main economic factor accelerating the mobility between 1865 and 1935.

Mwajuba (2005), in his study of finding out reasons why Nigerians were migrating he found out that economic factors accounted for 80% and 18% accounted for education of the total pull factors.

In Wentzel and Bosman(2001) investigation of the cross border pull factors for the Zimbabweans and Mozambicans to South Africa, revealed that macroeconomic variables were significant .They found out that South Africa granted the emigrants fair prospects of employment, relative better wages and the South African currency was more stable than for the two nations.

Wouterse and Van Berg (2004) study of the factors influencing Burkinabes to migrate found out that better wages and surety of employment opportunities often compelled the country's poor to cross borders. On the other hand, oversee countries are a preserve of the wealthy who have the desire to accumulate more wealth.

Jennissen (2003),in delving the economic determinants of net migration in western Europe for the time period spanning from 1960-1998 and by taking GDP per capita,unemployment and average education level as the explanatory variable found out that GDP per capita had positive correlation while unemployment had negative effect on individual country net migration.

Investigating the macroeconomic determinants of increased Mexican emigrants to the US, Mendoza (2006), by using a cross sectional database at the regional level to weight a least square regression did find that GDP per capita had a negative effect while unemployment rates and permanent migrant stocks showed positive effect on migration growth rates.

Ahmed et al.(2008),in investigating the macroeconomic determinants of international migration, he took a time series data of 1973-2005 and used inflation rate, real remittances, real wage rate and unemployment rate as the explanatory variables. He found out that all except real wage rate had positive relationship with migrant workers.

Beyene (2011), found that for international migration wealth and networks factors were found to be positive pull factors. The study aimed at estimating factors influencing internal and international migration to rural and other urban areas in Ethiopia.

There are also a number of literary works that assess the non-economic determinants to emigration and they often indicate that they dominate the economic factors.

Bach (2003), in his investigation on the determinants of increased emigration of South African nurses to Britain found out that nurses associations and diaspora networks in the receiving countries were the key pull factors. Tsegai and Plotnikova(2004) delve that increased emigration of Ghanaians is enhanced through better education, in other words, the more educated an individual is the greater the prospect of migrating.

Beine and Parsons (2002), by incorporating climatic factors to evaluate determinants of international migration they used panel data for 226 sending and receiving countries for a time span from 1960-2000.They noted that short run factors as evidenced by natural disasters and varying climatic conditions as manifested by unstable temperatures and rainfall, accelerated movement of people from rain-fed agricultural areas to developing countries.

By using the gravity model to investigate panel data of migration from Bangladesh to 23 receiving countries for a duration between 1995-2009, Ullah (2012), found out that cultural factors, social-demographic and economic factors had a positive effect on the decision to migrate to the other destinations.

Tabassum (2014),in estimating the determinants of emigration, by administering questionnaires for 465 random households of Pakistan found out that environmental factors had an influence on migration majorly for the areas relying on agriculture for livelihood.

A study conducted by Cuaresma et al (2013), to evaluate the determinants of global bilateral human mobility through the use of a gravity model for external migration revealed that the model was able to be explained by GDP differentials, distance and bilateral population.

3. RESEARCH METHODOLOGY

3.1 Theoretical Framework

The study was based on the migration gravity model; the foundation of the gravity model is focused on Newton's law of gravitation in the sense that the gravitational force existing between objects is affected by the distance and by their masses. For this study gravity force was replaced by the size of emigrant stock while the masses will be replaced by the individual countries' population, on the other hand the bilateral distance taken as a proxy of migration cost was considered. This model is widely used in international trade, however various scholars have modified it to explain determinants of unilateral and bilateral migration namely; Karemera, Oguledo and Davis (2000), Lewer and Berg (2008) and Mayda (2010).

The basic gravity model of the study was expressed as;

$$M_{ijt} = \beta_0 (X_i)^{\beta_1} (X_j)^{\beta_2} (Dist_{ij})^{\beta_3} (Z_{ijt})^{\beta_4} U_{ij} \quad \text{..1}$$

Where X_s represent population size for sending i and receiving j countries, $Dist$ is migrating distance all having an influence on M which is the emigrant flow from country i to j at time t. Z Represents macroeconomic factors that may affect M while U are other factors not captured that could impact emigrant flow like migration restriction.

Further it can be shown that the emigrant stock M_{ijt} can be taken to be a function of the population sizes of the countries involved and migrating cost proxied by distance, that is;

$$M_{ij} = f(Population_i, Population_j, Dist_{ij}, ...) \quad \text{.....................................2}$$

Labor market theories of migration contend that when the origin population size increases it increases the propensity to emigrate the same is the case for the destination country (Lowry, 1966), at the same time the distance between two countries is inversely related to the migration flow from the origin country. The traditional gravity model equation 2 can be modified algebraically into the following form;

$$M_{ij} = \beta_0 \frac{X_i^{\beta_1} X_j^{\beta_2}}{Dist_{ij}^{\beta_3}} \quad \text{...3}$$

For this study i is Kenya and j are the emigrant recipient countries, β_0 is the gravitational constant and $Dist$ is migration distance in kilometers, $\beta_{1,2,3}$ show the variables' specific coefficient.

Equation 3 can further be modified to include the macroeconomic factors under consideration that may affect migration stock from country i to j as can be provided in the extended version of Lowry(1966) gravity model as shown in equation 4.

$$M_{ij} = \beta_0 \frac{X_i^{\beta_1} X_j^{\beta_2} Z_{ij}^{\beta_3}}{C_{ij}^{\beta_4}} \quad \text{...4}$$

Z_{ij} Represents the macroeconomic pull and push factors like inflation, exchange rate, unemployment rate and interest rate for the destination countries and other bilateral factors.

3.2 Analytical Framework

To be able to conduct an empirical analysis using the modified gravity equation 4, we shall take the log-linearized form of the extended version for the migration to the select countries from Kenya expressed as in equation 5.

$$\ln M_{ij} = \beta_0 + \beta_1 \ln X_i + \beta_2 \ln X_j + \beta_3 \ln Z_i + \beta_4 \ln Z_j + \beta_4 \ln Dist_{ij} + \varepsilon \text{ ....5}$$

The parameter $Z_{i,j}$ is a proxy for the macroeconomic factors for the origin and destination countries namely; Gross domestic product per capita(GDPPC),Inflation rate(IR),unemployment rate for the working age population(EM),Exchange Rate(ExR),Remittances(RM),as a proxy for estimating the annual emigrants flow to the select countries in consideration.

$\beta_{i=1,......,4}$ Are estimation coefficients and β_o is the intercept and ε is an error term.

Equation 5 is characterized as a gravity model since it contains the standard gravity variables namely population and distance. The model includes population in its analysis to take into account the migration that occurs mainly because of the increase in the natural growth of the population in a region. We used the population as explanatory variable since it requires less parameter restrictions.

Definition and Expected signs of the variables

Emigrants -It's the dependent variable in the econometric regression. It refers to the total number of Kenyans leaving to another country.

GDP per capita - Is the economic output for each individual of a country. It's estimated by dividing GDP by the total population. It usually shows how each individual feels about the growth and development of the country. It's expected to have a negative sign for the origin country and positive for the destination.

Inflation - Shows the level at which the general level of prices of goods is rising. It's measured as a proxy of the CPI per annum.It's expected to have a positive sign for the origin and negative for the destination.

Unemployment rate- level of working age population without any formal or informal income generating activity. It's expected to have a positive sign for the sending country and negative for the destination

Remittances - This is money sent by emigrants to countries of origin. It's expected to have a positive or negative sign for both sending and receiving countries.

Bilateral Exchange rate-Is a measure of the value of a currency relative to other country currency. It can either have a positive or negative sign.

3.3 Data sources

The study used secondary sources data for the period from 2000 to 2015. Data on remittances, inflation rate, Real interest rate, GDP per capita and Population were obtained from the World Development indicators, the emigration figures were obtained from International Migration Database(in case of the UK, data was obtained from her immigration statistics and for 2014 and 2015 data was extrapolated), unemployment rate data was obtained from *Global economy.com* and Bilateral Exchange rate data was obtained from UNCTAD data base and data on distance was obtained from CEPII (*http://www.cepii.fr/anglaisgraph/bdd/ distances.htm*).

3.4 Estimation Techniques

The study adopts gravity model estimation techniques in estimating macroeconomic factors to overall migration destinations. This model has the advantage similar to the panel data since it allows greater flexibility in modelling for individual heterogeneity. The major methods of gravity model estimation is by use of Error components model, OLS, Tobit Model and scaled OLS(the last two are often used in case of missing observations).

Since the study was based on a gravity model the study employs the error components models specifically the fixed effect model. This FE estimation technique according to Feenstra(2002) ,regards it to be more consistent for a pooled time series of cross sections (panel data) since the biases arising from inclusion of unilateral and bilateral variables in the equation are overcome at the same time according to Martya(1997) it increases the degrees of freedom. Other scholars who adopted the FE method to analyze migration are; Clark et al (2007), Kandogan (2007, 2008) and Lewer and Berg (2008).Unlike other techniques the FE is capable to cater for destination countries' and time specific effects.

FE specification are known to not imposing ad-hoc structural assumptions on the model of consideration at the same time it allows the application of OLS econometrics. In addition FE specification are parsimonious in data need they only need good bilateral values and the data for the dependent variable for estimation. Generally they present the simplest method of solving the gravity model.

4 EMPERICAL RESULTS

4.1 Basic Migration Gravity Model

We used a log-log form to estimate the gravity basic model as:

$\ln M_{ij} = \beta_0 + \beta_1 \ln Pop_{i_t} + \beta_2 \ln Pop_{j_t} + \beta_3 \ln Dist_{ij} + U_{ijt}$ Where U_{ijt} is a stochastic error term. Table 5.1 displays the regression results for the standard gravity model estimated by the Pooled OLS.

Table 4.3 Basic Gravity OLS Model Estimation Results

Gravity variables	Coefficients	Probability values
Distance	0.2225	0.121
POPi	1.1299	0.001
POPj	0.8982	0.000
No. Of observations	80	
R^2	0.8430	
Prob>Chi^2	0.0000	

It can be seen from table 5.1 that the model fits the data very well since the R^2 is 0.8430 meaning the dependent variable is explained by 84.3% of the explanatory variables at the same time the Probability value of the model is highly significant at all levels of significance. It can be observed that a 1% rise in population size of origin and destination leads to 1.1299% and 0.8982% rise in emigrants from source country respectively which is in line with the basic gravity intuition. Also, a 1% rise in distance increases emigration by 0.2225% thus defying the gravity intuition nevertheless it's statically insignificant.

The inconsistent positive correlation between distance and emigration can be attributed to the perceived existence of information to the emigrants, in other words emigrants have better information on the existence of available opportunities in close destination so they anticipate to explore much better opportunities in further destination since it can be generalized that most of the emigrants from Kenya are mostly youthful who have greater aspiration. De Haas (2010) hypothesizes that life aspiration and awareness of existing opportunities in some other destination increases with improved accessibility to information and rising levels of education regardless of the cost of migrating.

4.4.2 The Augmented Migration Gravity Model

The extended gravity model included bilateral Remittances (REM_{ij}), Inflation Rate for origin (IR_i) and destination (IR_j), Bilateral Exchange rate (ExR_{ij}), GDP per capita for origin i and destination j respectively,

$$\mathbf{Ln\ M_{ijt} = \beta_0 + \beta_{10} M_{ijt-1} + \beta_1 \ln REM_{ij} + \beta_2 \ln IR_j + \beta_3 \ln ExR_{ij} + \beta_4 \ln GDPPC_i + \beta_5 \ln GDPj + \beta_6 \ln IRi + \beta_7 \ln DISTij + \beta_8 \ln POP_i + \beta_9 \ln POP_j + \lambda_j + \gamma_t + \mu_{it}}$$

Where $\boldsymbol{\lambda_j}$, $\boldsymbol{\gamma_t}$ and $\boldsymbol{\mu_{it}}$ are destination countries' effect, time specific effects and disturbance term respectively. The basic models the gravity equation encompass are:

i. When $\boldsymbol{\lambda_{j} = \gamma_{t} = \beta_{10} = 0}$ for all i, j and t then the basic augmented gravity equation will be estimated. by OLS
ii. When $\boldsymbol{\beta_{10} = \lambda_j = 0}$ for all j then we have a standard panel gravity model
iii. When $\boldsymbol{\beta_{10} = 0}$ yields models similar to those of Matyas (1997) ,the main difference being the model of the current study is dyadic-indexed gravity model since the focus is on a single source while the latter is triple-indexed .This is a typical Least Square Dummy Variable Model.

4.5.2.1 Regression Results for the Augmented Gravity Model

When using the LSDV the dummy variables for the destinations are lessed by one so as to avoid the dummy variable trap which unless controlled for leads to perfect collinearity. Table 5.3 shows a summary of the regression results using simple OLS.

While table 5.4 shows the LSDV results for macroeconomic determinants of emigration from Kenya. The time dummy is included due to the fact that the explanatory variables are time variant except distance therefore if one uses time invariant controls it won't be properly catered for and it may be assumed cross sectional unlike panel data is analyzed.

Table 5.2 Simple OLS Results for Macroeconomic determinants of Emigration from Kenya to OECD Bloc

Variable	Coefficient	t-statistic	Prob>|t|
$\ln REM_{ij}$	-0.0662	-0.68	0.497
$\ln Inflation_j$	-0.0089	-0.21	0.835
$\ln ExR_{ij}$	-0.8926***	-3.70	0.000
$\ln GDPPC_j$	-0.0178	-0.65	0.520
$\ln POP_j$	0.9037***	7.85	0.000
$\ln POP_i$	0.0359	0.06	0.952
$\ln GDPPCi$	0.0296	1.43	0.156
$\ln Inflation_i$	0.0080	1.01	0.316
$Distance_{ij}$	0.9372***	3.91	0.000
$Constant$	-20.8047**	-2.28	0.025
$\bar{R}^2$	0.8610		
Prob>F	0.0000		
No. of Observations	80		
RSS	8.0004		

Note: *, **, * are 10%, 5% and 1% levels of significance respectively.**

Table 5.3: LSDV Results for Macroeconomic Determinants of Emigration from Kenya

Variable	Parameter Estimate	t-statistic	Prob>|t|
$\ln REM_{ij}$	0.0564	0.55	0.582
$\ln Inflation_j$	-0.02292	-0.35	0.727
$\ln ExR_{ij}$	-0.7595*	1.83	0.073
$\ln GDPPC_j$	0.0207 **	2.62	0.0142
$\ln POP_j$	3.7718 **	2.50	0.015
$\ln POP_i$	Omitted	omitted	omitted
$\ln GDPPCi$	0.6849 **	2.28	0.027
$\ln Inflation_i$	0.0336*	1.89	0.064
$Distance_{ij}$	Omitted	omitted	omitted
$Constant$	-63.7638 **	-2.23	0.030
λj UK[1]	5.2552**	2.24	0.029
λj Canada	6.5283 **	2.01	0.049
λj Australia	7.429 *	1.91	0.061
λj Germany	3.5264 *	1.82	0.074
y’t 2001[2]	0.0447	0.21	0.832
y’t 2002	0.5626 *	1.91	0.062

y't 2003	0.5267 **	2.01	0.049
y't2004	0.3116*	1.99	0.051
y't2005	0.2123	1.37	0.175
y't2006	0.2650	1.67	0.101
y't2007	-0.1423	-0.24	0.812
y't2008	0.4742 **	2.02	0.048
y't2011	0.4436	1.9	0.063
y't2012	0.1945	1.06	0.292
y't2013	0.2169	1.17	0.246
y't2014	0.3495	1.65	0.104
y't2015	0.2444	1.02	0.314

No. of observations =80 $J^*=4(=j-1)$

Prob>F =0.000 T=16

RSS = 4.211

$\bar{R}^2$ = 0.9068

Note:*, show significance at 10% and 5% levels of significance respectively**

[1]omitted Migration to USA

[2]omitted year 2000

*Time effects not shown were omitted due to collinearity

*Distance is omitted since its time invariant and collinear

*POPi Omitted due to collinearity

Choice between LSDV and OLS

A test for joint significance of destination and time effects is often carried out to be able to establish the model from which valid inferences can be made. The null hypothesis of this test is carried out and the quantity

$$F = \frac{(RSS_R - RSS_{UR}) \big/ (j + t - 2}{RSS_{UR} \big/ (J^* t - J - t - k + 2)}$$

Has an F-distribution with the deflator in the numerator and denominator giving the degrees of freedom, K is the number of explanatory variables including the constant and excluding the dummies while RSS_R and RSS_{UR} are the residual sum of squares of the restricted and the unrestricted models respectively.

The calculated test statistic based on the OLS residual for the data is 42.64 % which is greater than 5% clearly rejecting the null hypothesis that H_0: λj= ﻻt=0 .This outcome is often expected based on the fact of the effects being significant .With such an outcome, making inferences with the restricted model (OLS) will lead to invalid results with the estimations having omitted variable biasness hence incorrect inferences.

F(1,55)=0.64
Prob>F=0.4264

Discussion of the Results

The explanations are based on the LSDV model of the FE as chosen by the joint significance test, unless otherwise in the omitted variable case the sign of the coefficient for OLS will be explained. Its worthy noting though that, to resolve the problem of omitted variable two remedies are suggested namely: including an extra variable correlated with the omitted variable and incorporating a time dimension by shifting from cross country analysis to panel, all this approaches weren't able to resolve the problem for the omitted variable in the study.

a) Explanatory variables Effects

The gravity variable that affects emigration in the LSDV model is the destination population size which is positive and significant at 5% and it's consistent with the gravity migration model intuition. A percentage increase in the size of the destination population results to 3.7718% increase in emigration from Kenya other factors held constant. This finding is similar to that of Lewer and Berg (2008), who argued that if the destination country population which is a measure of the size of the labor market is large, consequently does attract the immigrant's labor market because of the conviction of better distribution of opportunities .This can be emphasized by the fact that the select countries are members of the Organization for Economic Corporation and Development (OECD) which attracts skilled labor from Kenya.

Inflation for both the destination and source have the expected signs however the destination Inflation rate is statistically insignificant. The study further found out that, a percentage increase in the origin inflation rate leads to 0.0336% rise in emigration from Kenya. High inflation contributes much in in consumption spending hence low saving at the same time low investments. It has been claimed that the remittances from abroad are the savings made due to low commodity prices. Contrary to the aggregate supply models which argue that rising inflation creates more employment opportunities thus more labor is demanded, by considering a perfect information model from the perspective of the employee, where one is aware of the price level changes and is able to evaluate the real and nominal value of the wage then one is most likely to migrate to where the cost of living is low. By comparison its noticeable the magnitude of inflation as a push factor for the emigrants from the destination is larger than from the origin which can be due to the possibility of a potential emigrant being aware of other ways to cope with life in the destination than in the origin country like having multiple jobs.

The expected pull relationship between destinations GDPPC was established whereby, a percentage rise in GDPPCj results to 0.0207% increase in emigration from Kenya. This finding is similar to the study by Jennisen (2003).Improved GDPPC depicts existence of better lifestyle hence a crucial pull factor. However a contrary finding is noticed for the case where improved GDPPCi results to increased emigration precisely, a percentage improvement in GDPPC for an individual of country i leads to 0.6849% rise in emigration from Kenya. This finding is similar to that made by the study by Karemera et al(2000) who found out that origin country income had negative relation with migration to USA but not migration to Canada. This contrary finding can be associated by the weaknesses of using GDP as a measure of economic growth in developing countries namely; continued revisions in GDP, omission of some economic activities from GDP computation and existence of underground economic activities hence at times failing to be realistic. The perceived high GDPPC with relatively large inequality do prompt emigration. Intention to fulfil aspirations is incumbent of capability, with improved awareness and access of information and advanced education regardless of the prevailing sound economic conditions in the origin, there is often aspiration increasing effect hence increased aggregate migration propensity.

The study found out that the bilateral exchange rate has a negative significant effect to emigration from kenya.1% depreciation(rise) in bilateral exchange rate results to a decline in emigration by 0.7595%.A fall(rise) in the exchange rate indicate appreciation(depreciation) of the origin country currency relative to that of others. When there is depreciation of source country's currency the emigrant's monetary outlay rises because of increased contract fee for jobs, transportation costs increases and agency fees too. Due to such high investments a rising exchange rate of currency will negatively impact the propensity to emigrate and the reverse is true. On the other hand depreciation can contribute greatly to generation of high income streams from remittances that will be much valuable consequently lower the intention to emigrate. This finding is similar to the study finding by Ullah (2013) in delving the economic determinants of emigration from Bangladesh to twenty three OECD countries.

The positive relationship between emigration and remittances with an appreciation of exchange rate shows the relative value of the remittances in comparison to the high transport and agency costs which become cheap. The remittances are used to pay for such cost.

The constant is in line with the expectation of the study such that it shows if all the economic factors are held constant emigration will decline by 63.7638%, therefore economic factors play a great role in determining emigration.

If erroneous inference could be made based on the restricted model (OLS) the study could have under exaggerated the influence of GDPPCj by showing that it has negative influence to emigration which is not the case. At the same time when all the other factors are held constant the decline in emigration will be under estimated. The OLS however shows that distance and POPi have positive relationship to emigration. The finding on distance defies the gravity intuition but for POPi it's consistent.

b) Destination Country Effects

The study reveals that all the destinations of consideration have significant pull and push effects. In terms of ranking from the country with the most pull effects to the least the following will be the order; Australia with 7.429% increase in emigrants from Kenya, followed by Canada at 6.5283%, then UK at 5.2552% and Germany at 3.5264%(the percentages measure an excess over the emigrant rise to USA since it's the base destination).The coefficients show positive relationship with emigration from Kenya.

c) Time Effects

Emigration flow seems to generally have followed a positive trend except for the year 2007 where there was negative emigration flow this is as a result of imposition of stringent emigration policies during this period by the respective countries. However it can be noticed the trend was fairly constant from 2004-2006, but in general the trend is not fairly consistent due to subsequent fall and rise in quick succession.

5. CONCLUSION AND POLICY IMPLICATIONS

The study did analysis based on the LSDV. The key pull factors to the OECD block were: low inflation, depreciation of destination country exchange rate relative to origin and rise in GDPPCj. On the contrary, the push factors to the OECD bloc were; high inflation, high remittances inflow with exchange rate appreciation and low GDPPCi (from the view point of the destination country)

Despite other findings defying the established theories on migration such as in a case where higher per capita GDP of origin lead to rise in emigration, it can be insinuated that aspiration, awareness and accessibility of information play a great role in propagating such deviation as well a combination of other factors not controlled for do play a part. Subsequently its noticeable regardless of sound economic conditions there will always exist potential emigrants.

5.1 Policy Implications

This study suggests multifaceted policy recommendations aimed at attaining four major targets based on the empirical findings namely; inducing the Kenyans abroad to return home (return migration), reduce emigration rates, facilitating the provision of incentives for the Kenyan in the diaspora to utilize the financial and human capital gathered in the diaspora in Kenya and finally ensuring the sovergnity, respect and stopping discrimination of the Kenyans in the diaspora from the natives.

In order to reduce cases of harassment and discrimination for the potential emigrants there is need for the Kenyan government to sign a memorandum of understanding with the host country's government aimed at protecting the labor rights of the Kenyan emigrant workers. In addition the Kenyan government should provide legal support intended to protect the Kenyan emigrants against harassment by recruitment agencies both at the host and origin countries. The government should also come up with proper strategic designs on how to export its skilled technical labor besides providing supportive and active intervention on recruiting agencies by tackling illegal migration avenues.

The government should enhance bilateral relations with host countries and agree with host countries to relax the stringent return migration policies for her citizens. Such rigid policies require that an immigrant should stay in the destination for at least five years to be able to return with ease to the origin, by this condition most emigrants end up seeking permanent residence in the host countries.

The Kenyan government should employ macroeconomic structural reforms through the use of fiscal and monetary instruments with the objective of influencing aggregate demand while keeping in check its demographic growth through civic education and family planning undertakings. As a result this will increase the annual rate of GDP by surpassing the population growth, consequently the standards of living improve and emigration reduces. Relevant agencies should also strive to gather accurate GDP statistics.

The CBK through the utilization of the monetary policy instrument should ensure optimization of the exchange rate so as to attract foreign investment. A stable Kenyan shilling will attract investor confidence with large inflow of FDI with the outcome that the economy expands providing employment to the Kenyan citizens thus reducing emigration. This move can also attract high foreign skilled workers who will enhance economic growth.

The empirical finding did confirm that cost of living is a crucial push and pull factor. The government should purpose to balance aggregate supply and demand levels in the economy with the intention of controlling the annual rate of inflation. This action is likely to reduce the home country price indices and consequently stabilize the living cost hence reduce emigration of Kenyans.

To be able to reduce the unemployment rate the government should flex its regulatory framework on the product market and encourage policies that influence competitive interaction between labor and product markets at the same time strive to improve GDP rate of growth consequently reducing emigration.

Finally, brain drain has played a significant role in improving Kenya's GDPPC through the remittances, in order to encourage remittances to improve economic growth so as to reduce emigration the relevant authorities should reduce the cost of sending the remittances from abroad as well diversify the channels through which the remittances can be sent through.

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