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**CAPITAL MOBILITY AND INVESTMENT IN THE EAST AFRICAN
COMMUNITY FOR THE PERIOD 1999 - 2012**

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**A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF APPLIED
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DEGREE OF MASTER OF ECONOMICS (FINANCE) OF KENYATTA
UNIVERSITY**

JUNE, 2015

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DECLARATION

This research proposal is my original work and has not been presented for award of a degree in any other University.

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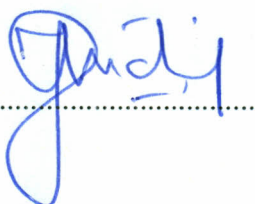
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DEDICATION

To my husband George and our children; Adrian and Antonia

ACKNOWLEDGEMENT

I am deeply grateful to my God without whose forte and provision I would not have gone this far. His presence and favor has seen me through this achievement.

I highly appreciate my husband George for his unwavering support and encouragement as well as my son Adrian and daughter Kamami.

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ABBREVIATIONS AND ACRONYMS

EAC – East African Community

FH – Feldstein Horioka Hypothesis

GDP – Gross Domestic Product

FMOLS – Fully Modified Ordinary Least Square

DOLS – Dynamic Ordinary Least Square

PCT – Panel Co-integration Model

ECM - Error Correction Model

FEM – Fixed Effect Model

REM – Random Effect Model

SSA – Sub-Saharan Africa

PCSE – Panel Corrected Standard Error

OPERATIONAL DEFINITION OF TERMS

International capital mobility – This is the ability of private financial capital (foreign direct investment, portfolio investment, bank transfers) to move across national boundaries in pursuit of higher returns or some other objectives.

Capital flight - This is the large scale exodus of financial assets and capital from a nation/ region due to events such as political or economic instability, currency devaluation or imposition of capital controls.

Financial integration- It is the assimilation of financial markets, where the market participants with the same features interact under equivalent rules and regulations.

Feldstein Horioka Hypothesis - The Feldstein-Horioka Hypothesis phenomenon was advanced by Martin Feldstein and Charles Horioka in 1980. This theory measures the long term association between the domestic savings rates and the domestic investment rates. The savings retention co-efficient was used to evaluate the degree of capital mobility that was in existence amongst the countries that were in analysis that was being done.

Investments – It consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Fixed assets include land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Inventories are

stocks of goods held by firms to meet temporary or unexpected fluctuations in production or sales, and "work in progress."

Savings – It is the gross national income less total consumption, plus net transfers

Foreign Direct Investment – It is an investment undertaken by a foreign national for the purpose of production of goods and services, which are to be sold either in the domestic market or exported overseas

Foreign Aid – It consists of disbursements of loans made on concessional terms (net of repayments of principal) and grants by official agencies of the members of the Development Assistance Committee (DAC), by multilateral institutions, and by non-DAC countries to promote economic development and welfare in countries and territories in the DAC list of ODA recipients.

Gross Domestic Product – It is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products.

Export - It represents the value of all goods and other market services provided to the rest of the world. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial, information, business, personal, and government services. They exclude compensation of employees and investment income (formerly called factor services) and transfer payments.

Import – It represents the value of all goods and other market services received from the rest of the world. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial, information, business, personal, and government services. They exclude compensation of employees and investment income (formerly called factor services) and transfer payments.

ABSTRACT

The East African Community (EAC) is a regional economic integration grouping which comprises of Kenya, Uganda, Tanzania, Rwanda and Burundi as member states. This trading bloc was established through a treaty and also on the account of ratification by the parliaments of the member states on 30th November 1999 and came into full force on 7th July 2001. The purpose of the EAC was to bring about economic, political, social and cultural integration in order to allow for augmented trade, investment and economic growth. In addition the EAC Industrialization Strategy for years 2012 to 2032, for instance required that the intra-regional exports relative total manufactured imports for the trading bloc to grow from 5% to approximately 25% by 2032. At the same time the growth of manufactured exports in relation to total merchandise exports from an average of 20% to 60% amongst other objectives. However the East African Countries suffer from low savings rates, the bond market which is immature, a small investor base, and the secondary markets that experiences a lot of illiquidity. The ease of doing business rankings indicated that the East African countries were not an attractive investment destination in spite of the many reforms which have been undertaken. Moreover this was also reinforced by the Global Competiveness report 2013 hence the need for the EAC to develop policies that facilitate its own citizens to invest in this trading bloc. Capital mobility on the other hand is an avenue, which can be used to ascertain the above goals are achieved. Capital mobility will permit the flow of funds across countries which in turn will facilitate investments to be undertaken therefore augmenting these countries economic growth. For this reason numerous studies have been carried out using Feldstein Horioka Hypothesis as theoretical framework and with different methodologies to measure the level of capital mobility in Africa. The objective of the study was to evaluate the level of capital mobility in EAC, and to determine the drivers of investment in EAC using the data collected from the World Bank for period 1999 to 2012. The study employed the Panel data fixed effects (PCSE) model and found out that there was moderate capital mobility in the EAC trading bloc. In addition the key financiers of domestic investments are the domestic savings, foreign aid, FDI and government expenditure. Moreover openness of the economy and the level of capital mobility facilitated the absorption of new investible opportunities in the EAC.

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

The East African Community (EAC) is a regional economic integration grouping which is composed of Kenya, Uganda, Tanzania, Rwanda and Burundi as member states. It was established by a treaty between Kenya, Uganda and Tanzania on 30th November 1999 and came into full force on 7th July 2001 through ratification by the parliaments of the member states. Rwanda and Burundi later applied for the membership and were admitted to become full members in the year 2007 (East African Community 2013).

The purpose of the EAC is to bring about economic, political, social and cultural integration in order to allow for trade, investment and amplified value added production. The EAC has evolved through various stages of regional economic integration, namely Preferential trade area (PTA) 2000, Free trade area (FTA) 2001, Custom union 2005 and Common market 2010. Currently the process is underway to convert the common market into a monetary union and a political federation by 2020 (Reith and Boltz 2011).

Trading blocs are formed with the intention of augmenting economic growth, having macroeconomic stability in the region, increasing efficient resource allocation and risk diversification. Therefore investment is enhanced significantly by the following features that exist in EAC; size of the population which stood at 148.6 million in 2012, the

accessibility of the consumer market, the available resources and the opportunities for trade to be undertaken (Yabara 2012 and World Bank 2013).

The low levels of the savings in EAC as depicted in figure 1.3 cannot sustain the rapid increase in investment that is being witnessed. In addition the credit facilities that exist in EAC charge high interest rates and also the investors face a lot of impediments before acquiring substantial investment funds. This is reinforced in Table 1.1 on the ease of doing business in the East African countries as compared to the rest of the world (East African Community 2013).

Table 1.1 Ease of Doing Business Rankings in EAC

Number of days	Burundi	Kenya	Rwanda	Tanzania	Uganda
Number of days to starting a business	27	134	9	119	151
Number of days to getting credit	170	13	13	130	42
Protecting investors global ranking (out of 185 countries in the world)	34	98	22	98	115
Trading across borders global ranking (out of 185 countries in the world)	175	156	162	139	164
Enforcing contracts global ranking (out of 185 countries in the world)	177	155	40	42	117
Ease of doing business global ranking (out of 185 countries in the world)	140	129	32	145	132

Source: World Bank 2013

From Table 1.1 shows that the only favorable country in EAC which would easily attract investors is Rwanda. This is because setting up a business in Rwanda takes merely nine days and also accessing credit facilities is without difficulty. In addition the framework which has been set up in Rwanda, for enforcing contracts acts as safeguard for protecting investors. The other countries which follow closely are Kenya and Tanzania then Uganda and Burundi respectively. Consequently for the entire economy of this trading bloc to grow, it is critical that there exists capital formation and free mobility of capital within the bloc.

1.2 Capital Mobility in East Africa

International capital mobility can be defined as the ability of private capital (foreign direct investment, portfolio investment, bank transfers) to move across national boundaries in pursuit of higher returns or some other objectives which differs from capital flight, Capital flight imposes severe burden on the poor nations, since the lack of capital impedes economic growth. Capital mobility on the other hand facilitates capital formation such that the inflow of new capital creates the avenue for new investible infrastructure to be created. Capital mobility and capital flight depends on tariffs and taxes on capital flows restrictions (e.g. foreign exchange controls, rules, regulations), and exchange rate volatility (Frankel 1992).

Capital mobility was in existence since the colonial era in East Africa. The colonial powers of the time insisted on uniting Kenya, Uganda and Tanzania. This was through establishing organizations, which would ensure uniform trading, financial and also

taxation policies, procedures and structures. The East African currency Board which was formed in 1905 was to ensure the EAC had a common currency. In addition the East Africa Custom Union in 1917 was formed to oversee the tariffs which will be charged across the borders of the East African countries (Kafeero 2009).

Following the reformation of the EAC in 1999, capital mobility has supported the increase of investment amongst the member states of EAC as seen by figure 1.1.

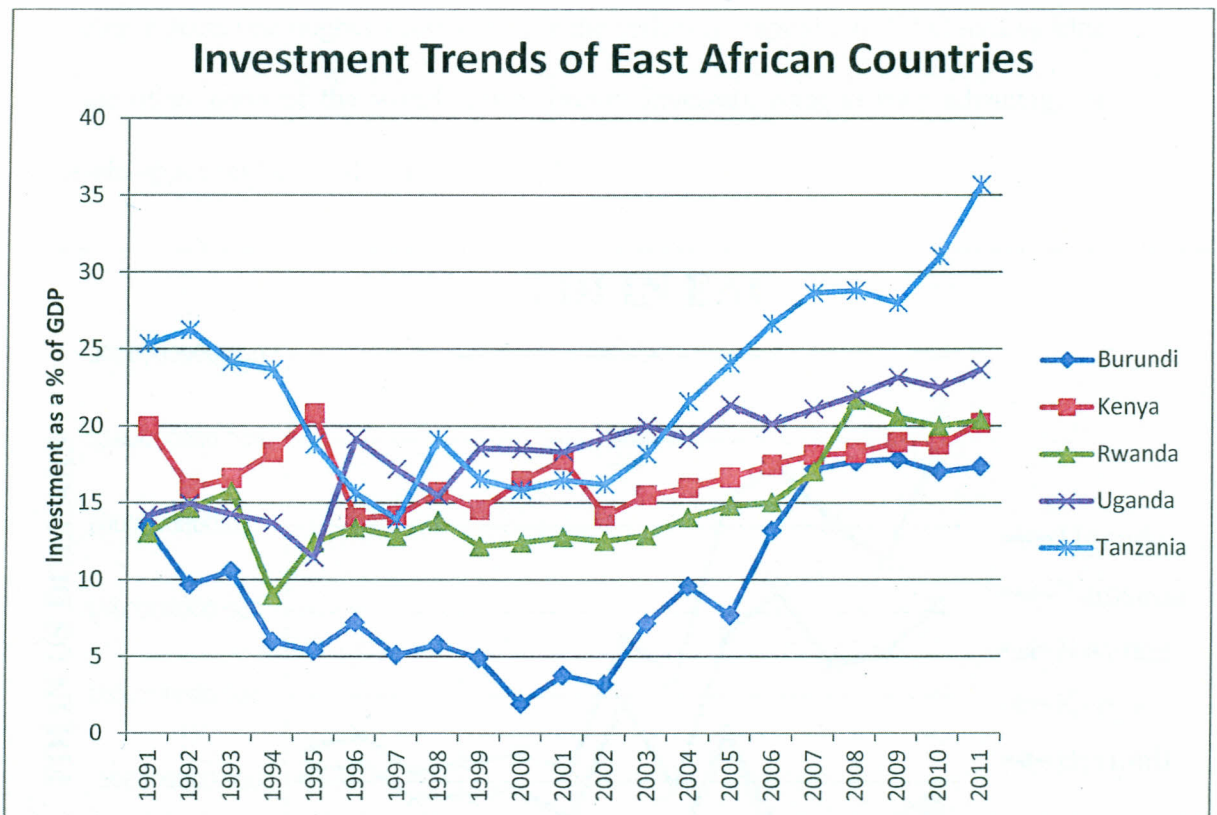


Figure 1.1: Investment Trends of East African Countries

Source: World Bank 2013

Figure 1.1 depicted that the investments have significantly increased since 1999 but not in a constant manner. The growth was attributed to, increased investible opportunities,

amplified market size as depicted in Table 1.3 and the augmenting total population in the EAC (Grail Research 2012).

All the East African countries have benefitted from the formation of EAC as shown by investment trends over the years. This clearly showed that it was to the advantage for the East African countries to form the EAC trading bloc in order to facilitate trade and investment across the countries (Grail Research 2012).

The other aspects one ought to consider was the inflow of capital into EAC trading bloc from the other parts of the world, since foreign investors want to take advantage of investible opportunities as shown in Figure 1.2.

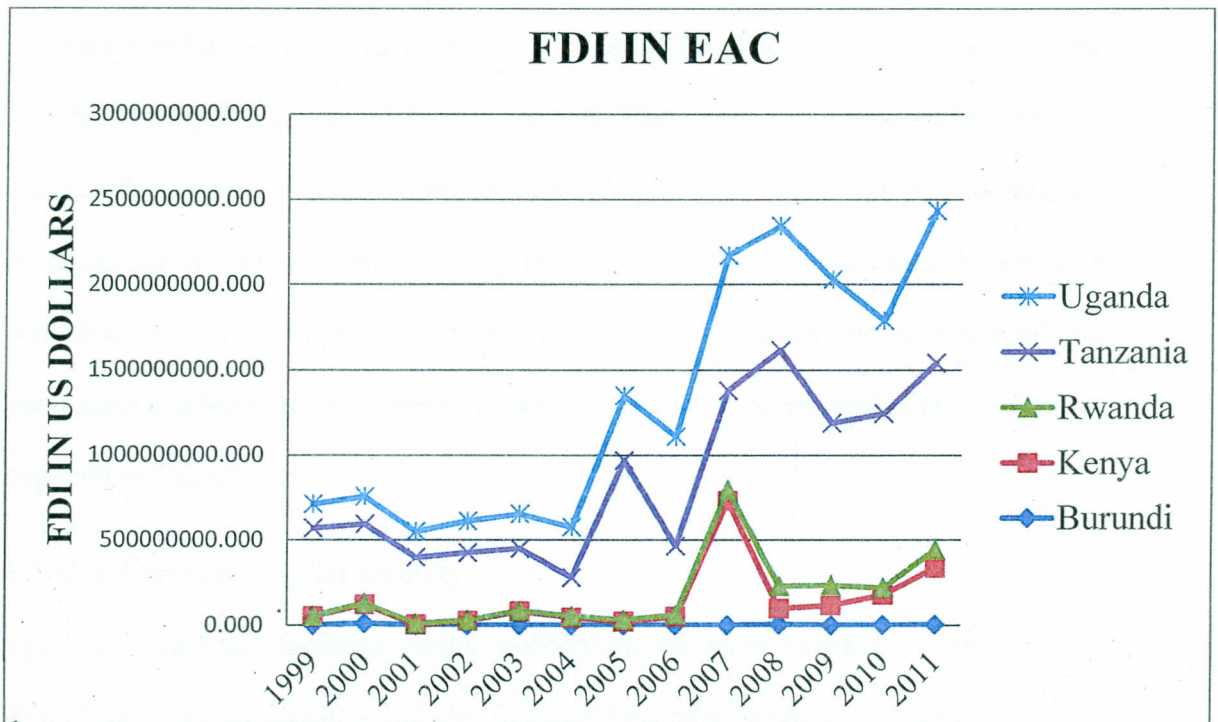


Figure 1.2: Foreign Direct Investment in EAC

Source: World Bank 2013

Moreover Figure 1.2 shown that the foreign direct investment has generally increased in a decreasing rate over all the countries except for Burundi. Uganda and Tanzania have managed to attract more foreign direct investment (FDI) than Kenya and Rwanda over the years. The reason for the low in-flow of FDI in Kenya was because of having laws which limit foreign ownership and at same time that undermine protection of investors as shown in Table 1.1. The FDI that flowed into Uganda targeted the manufacturing and construction sector whereas for Tanzania, it focused on the service industry such as tourism, manufacturing as well as the communication sector. In addition the discovery of natural gas in Tanzania and crude oil in Uganda has attracted FDI in the recent times (Grail Research 2012).

From the trend above it was easily seen that since the formation of EAC trading bloc the member states have benefitted from more FDI. This implied that many investors have realized the potential that lies in this economic region especially from the; demand for products, the low cost of manufacturing, the high population size and also the available incentives for trade however the trading bloc lacked a competitive environment and comparative advantage over other regions to attract a substantial FDI amount as depicted in Table 1.3.

1.3 Key drivers of Capital mobility

The key drivers that facilitate capital mobility are the stock exchange, exchange rate, capital and financial accounts and also financial integrated markets (Yabara 2012).

1.3.1 Stock Exchange Market

The stock exchange market facilitates the free flow of financial capital in the various countries. The importance of this stock exchange markets is to facilitate economic growth by mobilizing savings and investments. In addition through their mechanism the stock exchange markets are able to efficiently allocate the resources to the appropriate sectors of the economy. Additionally, fully functioning stock exchange shields the economy from external shocks by ensuring that the markets are deep and have adequate liquidity. The stock exchange markets assist in eradicating the mismatch of duration and currency supply and also demand while raising funds in the economy. It has been observed that stock exchange markets lessen the income inequality existing in an economy through financial development by augmenting the poor individuals' income (Yabara 2012 and Gatete 2012).

Nonetheless the member countries' stock exchange market infrastructure and regulations fall short of the international standards especially in the debt market. The shortcomings of the debt market are low savings rates; the bond market is immature, the investor base is small, and the secondary markets experience a lot of illiquidity impedes the benefits which can be accrued from the existing stock exchange markets (Yabara 2012, and Gatete 2012).

Table 1.2: Market Capitalization of the four stock exchanges

	Kenya	Uganda	Tanzania	Rwanda
	(Million	(Million	(Million	(Million

	US\$)	US\$)	US\$)	US\$)
Market capitalization for 2010	14,498	1810	3253	n/a
Market capitalization as % of GDP	46%	11.9%	16.1%	n/a

Source: EAC authorities; IMF, *World Economic Outlook*

In the East African countries the available stock exchange markets are; Nairobi Stock Exchange (NSE), Dar es Salaam Stock Exchange (DSE) , Uganda Securities Exchange (USE) and Rwanda Stock Exchange (RSE). The most advanced of these is the NSE, which was established in 1954 (Gatete 2012). This can be depicted from the capitalization as shown in Table 1.2.

1.3.2 Exchange Rate Regime

For any investor who chose to invest in a particular country they needed to convert the foreign currency into the local currency. Therefore if the country's exchange rate is market determined then the spot rate for that day will be determined by the demand and supply of the local currency. Hence the stock exchange does influence the country's exchange rate depending on the foreign investors entering and local investors leaving the local financial market (Adam 2012 and Krichene 1998).

Currently four of the EAC countries have a market- determined exchange rate while Burundi is the only country in EAC whose exchange rate remains pegged to basket of currencies of its major trading countries (Adam 2012).

1.3.3 Capital Account

The entry point for the foreign investors and the outlet of the local investors is the capital account that is found in the Balance of Payment (BOP) statement. When a capital account has restriction it hinders the free in flow and outflow of financial capital in the country. When a country has an open capital account then there are no restrictions to the residents and non- residents in transferring their financial capital in and out of the country. Moreover when a country has a closed capital account then either the residents or the non-residents are privileged to freely transfer the financial capital in and out of the country due to the laid down restrictions (Adam 2012 and Gandolfo 2002).

An open capital account provides the economy with more financial capital since any investor from whichever part of the world can choose to invest in the country. Moreover financial integration is enhanced within different trading blocs and regions, which is quite essential. In addition, the various financial institutions in the country grow and financial deepening is made sustainable. On the other hand open capital accounts don't protect the country from capital flight and severe instability of exchange rate is a times experienced (Adam 2012).

1.3.4 Financially Integrated Markets

The financially integrated markets expedite the rate of investment in a trading bloc. This is because they foster a favorable environment which attracts the local and also the foreign investors to invest in the financial markets that exist since the investors have identical accessibility of financial instruments/services and encounter harmonized treatment in the financial market (Mkenda 2001 and Morales 2012).

Financial integration is critical for any country owing to the financial systems that are operating in the world. Steps towards financial integration of the EAC capital markets are currently in progress. It commenced with the establishment of the East African Securities Regulators Association (EASRA), in 1997(Gatete 2012 and Davoodi 2012).

This has enhanced market efficiency, information symmetry and technical cooperation. In addition this has resulted to EAC residents in Kenya, Uganda and Rwanda to be taxed in an equal measure. In addition, 40% of the shares of IPOs are reserved for residents of these countries. Furthermore these steps towards financial integration have led the EAC to engage in the process of forming one regional depository (Gatete 2012 and Davoodi 2012).

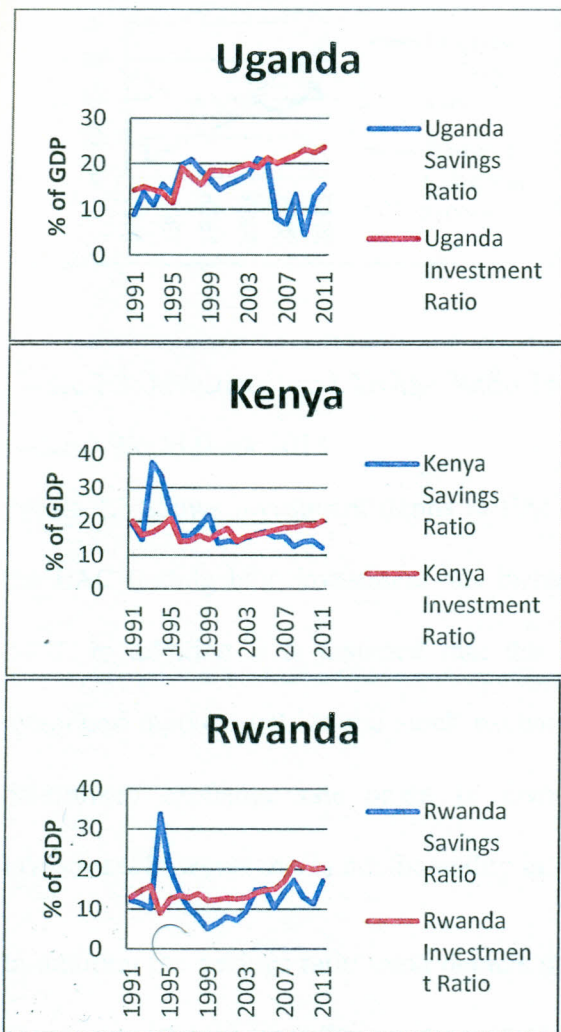
It is however pertinent to point out that the financial integration in the EAC trading bloc is still a long way from being a reality, since there are many obstacles which have to be overcome so as to achieve it. The absence of a common tax regime, low IT interconnectivity, the lack of harmony in the regulatory requirements, restrictions of labor mobility and the divergent capital movement policies are just but a few of the impediments of financial integration in EAC (Wagh e al 2011).

The importance of financial integration cannot be underscored since it allows economic growth through fostering efficient allocation of the resources and the standardization of the regulations. Moreover it connects the domestic savings to the investment opportunities which nurtures competition and creates a favourable environment for innovation. This definitely promotes financial deepening which acts as a catalyst for economic growth not only for a country but also for a region (Davoodi 2012).

1.4 Investment ratio and Savings ratio trend

The investment ratio can be defined as the percentage of add-on of fixed assets to the economy less the level of inventories divided by the Gross Domestic Product (GDP) of such a country. Savings ratio can be described to be the ratio of gross national income less total consumption, plus net transfers to GDP.

INVESTMENT AND SAVINGS RATIOS TRENDS



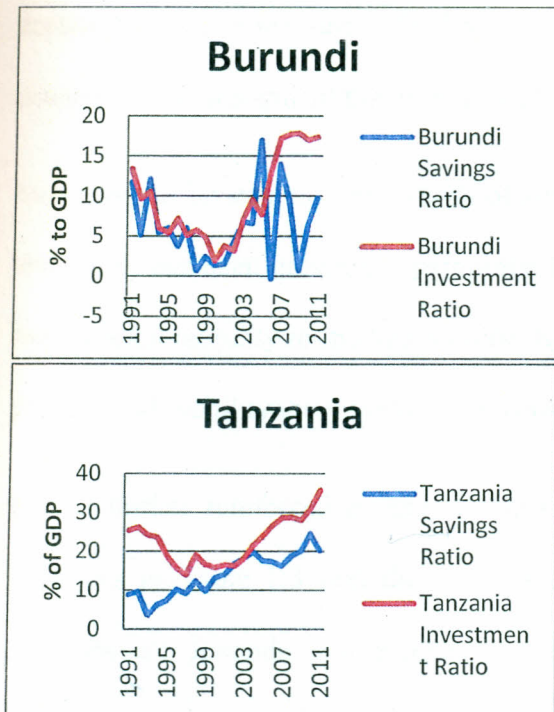


Figure 1.3: Investment and Savings Ratio Trends in EAC

Source: World Bank 2013

Figure 1.3 shows investment trends in EAC. It shows that due to the formation of the EAC trading bloc investment has increased compared to the years prior to the year 2000. In addition it is assumed that the country which has a developed financial integrated market such as the stock exchange, an open capital account and a market determined exchange rate ought to favor capital mobility and in turn augment investment however this is not the reality in EAC for a country like Kenya.

In addition the savings ratio trend depicts that savings for the EAC countries have not grown consistently since the commencement of the trading bloc. Given the fluctuations in the savings for all the countries and the gradual increase in the investment it clearly

depicts the need of measuring the level of capital mobility in the trading bloc, so as to determine how to augment the investment EAC trading bloc.

Moreover the investment ratio trends of Burundi, Tanzania and Uganda show that the investment has been growing supernormal besides having the conditions which do not foster capital mobility in the trading bloc. Kenya and Rwanda whose market conditions favor capital mobility the investment is growing in gradually decreasing trend.

This is further reinforced by the Global Competitiveness Report 2012-13 given the indicators in Table 1.3 that the most favorable countries that that ought to attract investors are Rwanda and Kenya. However the Investment trend depicts shows contrary.

Table 1.3: The Competitiveness of the East African Countries

	Burundi	Kenya	Rwanda	Tanzania	Uganda
Institutions	142	106	20	86	102
Infrastructure	141	103	96	132	133
Macroeconomic environment	137	133	78	107	119
Goods market efficiency	139	93	39	110	103
Labor market efficiency	112	39	11	47	23
Financial market development	144	24	49	85	62
Technological readiness	144	101	113	122	117
Market size	140	75	128	77	85
Overall Global Competitiveness index(Rank out of 144 countries)	144	106	63	120	122

Source: Global Competitiveness report 2012-13

Table 1.3 depicted that Rwanda's performance was exceptional when it came to infrastructure, macroeconomic environment, goods market efficiency and labor market efficiency. Following closely was Kenya which ranked highly in financial market development, technological readiness and market size. The Overall Global

Competitiveness Index ranking placed Tanzania third, then Uganda followed and thereafter Burundi.

1.5 Statement of the Problem

Capital mobility is of uttermost importance to any economy but most of all to the trading blocs since it accelerates investment and augments economic growth. This is so because capital mobility will permit the flow of funds across countries which in turn will facilitate investible opportunities to be undertaken therefore augmenting these countries economic growth. (Yabara 2012).

Some of the studies which have been conducted for the African countries established that there was low capital mobility (Isaakson 2001; Apergis and Tsoumas 2009). Nevertheless there are other studies which deduced that there exist a moderate capital mobility (Mamingi 1997; Murthy 2005, Adedeji and Thornton 2007; Padawassou 2012) and other studies which support the existence of strong capital mobility (De Wet and Van Eyden 2005; Payne and Kumawaza 2005). Even so none has provided any information conclusively on level of capital mobility in EAC.

In addition the EAC Industrialization Strategy for years 2012 to 2032, for instance required that the intra-regional exports relative to total manufactured imports for the EAC trading bloc to grow from 5% to approximately 25% by 2032. At the same time the growth of manufactured exports was expected to grow in relation to total merchandise exports from an average of 20% to 60% amongst other objectives (East African Community 2011).

However the East African Countries suffer from low savings rates, an immature bond market, a small investor base, and the secondary markets experience a lot of illiquidity. The Ease of doing business rankings indicated that the East African countries were not an attractive investment destination in spite of the many reforms which have been undertaken. Moreover this was also reinforced by the Global Competitiveness report 2013 and Figure 1.3 which depicted that the increased growth in investment in EAC cannot be sustained by the available domestic savings of each country hence the need for the EAC to develop policies that facilitate its own citizens to invest in this trading bloc (Adam 2012, Krichene 1998, Global Competitiveness report 2012-13 and World Bank 2013).

Therefore the purpose of this study was to do a case study of EAC and used the available data for the years between 1999 and 2012 to determine the level of capital mobility in EAC and the drivers of investment in EAC using the Feldstein Horioka Hypothesis and Panel Data Models.

1.6 Research questions

The study sort to answer the following research questions;

- (i) What is the level of capital mobility in EAC?
- (ii) What are the drivers of investment in EAC?

1.7 Research objectives

The general objective of the study was to analyze underlying drivers of investment in EAC

The *specific objectives* were;

(i) To measure the level of capital mobility in EAC

(ii) To determine the drivers of investment in EAC

1.8 Significance of the study

Most of the past studies have concentrated on Sub Saharan Africa countries, Least developed countries, Organization for Economic Co-operation and Development countries and developed countries. Furthermore diverse statistical procedures that have been put forward have provided inconclusive results on the level of capital mobility in Africa. This study was to inform the decision makers on macroeconomic policy relating to international finance in EAC; through measuring the level of capital mobility that was present in EAC using the FH Hypothesis and Panel data models.

In addition determine the drivers of investment in EAC. This would add more knowledge to the available literature on capital mobility. At the same time provide reference material to researchers who have interest in this area of study hence expanding the knowledge on capital mobility in the EAC.

1.9 Scope of the Study

The study covered the period 1999-2012 because of the availability of the data from the commencement date. During this period, the EAC has witnessed tremendous changes given that it has evolved from a preferential trade area to free trade area to custom union to a common market and currently it is moving towards a monetary union.

1.9.1 Organization of the study

This study was organized as follows; the first chapter is an introduction that endowed pertinent information about the key drivers of capital mobility in EAC. What was more

it assessed the level of financial integration in EAC. Chapter two presented the literature review both theoretical and empirical. Chapter three focused on methodology which includes the research design, theoretical framework, model specification, definition and measurement of variables, data source and analysis. Chapter four presented research findings while chapter five presented summary, conclusion and policy implications.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter presents the theoretical literature, empirical literature and the overview of the literature review.

2.2 Theoretical Literature

The underlying theories of capital mobility were as follows; real interest parity theory, uncovered interest parity, covered interest parity and the Feldstein Horioka Hypothesis. Given that the interest rate parity conditions were requirements for any financial market, to satisfy the no-arbitrage profit condition then it was not possible for investors to earn high returns by lending and borrowing in the financial markets. The interest parity conditions in principle defined the theoretical linkages between interest rate and exchange rate between countries (Frankel 1992).

2.2.1 Real interest rate parity (RIP)

The basis of this theory was anchored on the relative purchasing power parity and the uncovered interest rate parity condition. The relative purchasing power parity (RPPP) was concerned with the adjustments in the spot rate over time (Frankel 1992).

The real interest rates:

$$r = i + \pi = i + \pi^e = r^* = i^* + \pi^{*e} \quad (2.1)$$

where π - a measure of inflation

r - the real interest

i - the nominal interest

When this equation was rearranged then it depicted the condition for ex-ante purchasing power parity to hold as shown below;

$$r = r - r^* = i - i^* = \pi - \pi^{*e} \quad (2.2)$$

In addition this theory took into consideration the mobility of the physical capital which accounted for the play in commodity prices. The purchasing power parity (PPP) reinforced this theory by allowing the law of one price (LOOP) to hold which ensured that there was no opportunities for making profit based on the prices of homogenous good in two countries (Frankel 1992).

When the uncovered interest parity (UIP) was incorporated then the real interest parity theory concluded that the expected depreciation or appreciation of foreign exchange was equivalent to inflation differentials. On the same footing, the expected return on capital which was in terms of physical units was made similar across countries to the degree that the marginal products of capital were equal across borders and similar to the interest rate (Frankel 1992).

2.2.2 Uncovered interest rate parity (UIP)

The uncovered interest rate parity prerequisite prescribed the association between the interest rate and the exchange rate for two countries in equilibrium. This implied that rate of return to asset ought to be similar across countries otherwise the country with a higher expected rate of return would garner all the investments (Frankel 1992).

The open interest parity equation was shown below;

$$i = i^* + \Delta s^e \quad (2.3)$$

where Δs^e - the expected depreciation of the home currency over the period

The UIP condition was known as uncovered since it took into consideration the exchange rate risk exposure. The exchange rate risk exposure stems from the risk associated with uncertainty of the future spot rate, inferring that the often the spot exchange rate in the future period may differ from the expected future spot rate which had been predicted earlier on.

In equilibrium therefore the domestic and the international interest rate ought to be equal so as no investor benefits more from the other across the countries. Akin the risk of exchange rate exposure was eliminated to the investor at equilibrium (Frankel 1992).

2.2.3 Covered interest rate parity (CIP)

The covered interest rate parity theory outlined the relationship between the spot exchange rate, forward exchange rate and the interest rate. The forward contracts provided for the link between the expected exchange rate and the spot exchange rate in subsequent period and the elimination of any discrepancy thereof (Frankel 1992).

The equation of the closed interest parity is given below;

$$i = i^* + fd \quad (2.4)$$

where fd - the forward discount on the domestic currency

The CIP condition allowed for a forward premium to be included which catered for the exchange rate risk exposure that was generated from the difference between the expected spot rate in the following period and the actual future spot rate at the end of the forward contract agreed on.

In the long run the equilibrium prerequisite was achieved when the rate of return of the domestic currency investment was similar to the foreign currency investment covered against the exchange rate risk exposure (Frankel 1992).

2.2.4 Feldstein-Horioka Hypothesis

The Feldstein-Horioka Hypothesis phenomenon was advanced by Martin Feldstein and Charles Horioka in 1980. Their work measured the long term association between the domestic savings rates and the domestic investment rates. The savings retention coefficient was used to evaluate the degree of capital mobility that was in existence amongst the countries that were in analysis that was being done (Frankel 1992).

The equation of this hypothesis is provided below;

$$\left(\frac{I}{Y}\right) = \alpha_i - \beta r_i + \varepsilon_i \quad (2.5)$$

where I - the level of national capital formation

Y - the GDP (national output)

r - the domestic interest rate

α_i - the intercept

ε_i - signified all the other factors that determine investment

This hypothesis emphasized that in a country where there is perfect capital mobility then correlation between savings and investment ought to be zero, implying that the excess of national savings in one country would simply offset the shortfall of savings in other country without essentially amplifying the domestic real interest rate or crowding out the domestic investment since it assumed that domestic interest rate and the international interest are equivalent (Frankel 1992).

The Feldstein-Horioka Hypothesis incorporated all the other above theories in its framework. In the presence of international capital flows the real interest rate across countries become equal thus the collapsing the Real interest rate parity theory into the hypothesis. Moreover when the capital flows are allowed across borders then the

expected returns on the various investments undertaken among the countries would definitely be the same irrespective of the exchange rate exposure (Frankel 1992).

That notwithstanding in the presence of a common currency the capital inflows equalized the interest rate amongst the countries hence disintegrated the uncovered and covered interest rate parity theory into the Feldstein-Horioka Hypothesis. It therefore rendered the Feldstein-Horioka Hypothesis to be the most superior of the above theories when it came to measuring the extent of capital mobility (Frankel 1992).

2.3 Refinement to the Feldstein Horioka Hypothesis Approach

The Martin Feldstein and Charles Horioka authored a seminal paper which described the phenomenon of the Feldstein Horioka puzzle/ hypothesis whose focus was on the measurement of the international capital mobility. This puzzle has held a great deal of eminence leading to it being identified as “the mother of all puzzles” (Obstfeld and Rogoff 2000, p. 175)

The Feldstein Horioka Hypothesis can be defined as follows;

“With perfect capital mobility, an increase in the saving rate in country *i* would cause an increase in investment in all countries; the distribution of the incremental capital among countries would vary positively with each country’s initial capital stock and inversely with the elasticity of the country’s marginal product of capital schedule” (Feldstein Horioka 1980, p.318)

This hypothesis emphasized that in a country where there was perfect capital mobility then correlation between savings and investment ought to be zero, implying that the domestic investor would invest in the countries which endowed the highest return per

unit of investment until the returns for the different nations were alike (Feldstein and Horioka 1980).

Feldstein Horioka (FH) (1980) study comprised of a cross-section of 16 OECD countries for the period of 1960 – 1974. The β coefficient result was almost close to one (ranging between 0.85 to 0.95) for all countries implying that the most of the domestic savings in this countries were mainly used in financing domestic investments which was contrary to the perfect capital mobility theory and open macroeconomic models (Coakley et al 1998).

The other FH studies which were carried out and resulted to the same conclusion were (Feldstein 1983; Penati and Dooley 1984; Obstfeld 1986; Golup 1990; Leachman 1990, Tesar 1991; Sinn 1992; Coakley et al 1994 and Abott and De Vita 2003 where each study utilized distinct numbers of the OECD countries for their analysis.

Furthermore there were other studies which did not support the above findings however asserted that other factors which affected the above conclusion besides the correlation between the domestic investments and domestic savings. The study of (Murphy 1984; Sinn 1992; Jansen 1996; Coakley et al 1998; Obstfeld and Rogoff 2000; Banerjee and Zanghieri 2003; Ho 2003; Hoffman 2004; Sinha and Sinha 2004; Bahmani- Oskooee and Chakrabarti 2005; Kim et al 2005; Murthy 2005; Orzmen 2005) advanced that the size of country does affect the β coefficient since these countries tend to behave like closed economies.

Moreover the additional factors which were thought of affecting the FH studies' results already conducted included that the amount of foreign aid being received by a country (Issakson 2001; Cooray and Sinha 2005), the size of the non- tradable sector and the

extent of openness of the economy (Wong 1990; Bahmani- Oskooee and Chakrabarti 2005) , level of a country financial structure development (Coakley et al 1999; Kasuga 2004 and Payne and Kumazawa 2006) and the legal protection system provided for investors (Bangake and Eggoh 2010). These studies were mostly conducted in the less developed countries (LDC).

The some of the studies which were conducted for the African countries established that there was low capital mobility (Isaakson 2001; Apergis and Tsoumas 2009). Nevertheless there were other studies which deduced that there exist a moderate capital mobility (Mamingi 1997; Murthy 2005, Adedeji and Thorton 2007; Padawassou 2012) as well as studies which supported the existence of strong capital mobility (De Wet and Van Eyden 2005; Payne and Kumawaza 2005)

2.4 Empirical Literature

Adedeji and Thorton (2007) study comprised of a panel of 6 African countries for the period of 1970 – 2000. The study used the following methodologies based on the panel co-integration; FMOLS – Fully Modified Ordinary Least Square Model and the estimator was expressed as;

$$\beta_{FM}^{\wedge} = [\sum_{i=1}^N(\sum_{t=1}^T(x_{it} - \bar{x}_i))]^{-1}[\sum_{i=1}^N(\sum_{t=1}^T(x_{it} - \bar{x}_i)\widehat{y}_{it} - T\widehat{\Delta_{\epsilon\mu}})] \quad (2.6)$$

This estimator was formed by correcting the endogeneity using \widehat{y}_{it} component and $\Delta_{\epsilon\mu}$ element for serial correlation in the OLS estimator. The β coefficient result was 0.73 implied that there was a low degree of capital mobility that exists in these African countries.

Then DOLS – Dynamic Ordinary Least Square Model and the estimator was expressed as;

$$y_{it} = \alpha_i + x'_{it}\beta + \sum_{j=-q_2}^{q_2} c_{ij}\Delta x_{it+j} + v_{it} \quad (2.7)$$

The DOLS estimator used lags of the differenced I(1) regressors and incorporated leads to deal with endogeneity and autocorrelation problems. The β coefficient result was 0.45 implied that there was a high degree of capital mobility that exists in these African countries. The overall conclusion of the study was that the six African countries had a moderate degree of capital mobility.

Bangake and Eggoh (2010) study comprised of a panel of 37 African countries for the period of 1970 – 2006. The study used the following methodologies based on the Pooled Mean Group co-integration technique whose advantage over the FMOLS and DOLS was that it permitted the short-run dynamic specification to differ from country to country while making the long-run coefficients constrained to be the same. It also depicted the adjustment dynamic between the short-run and the long-run devoid of assuming that short-run dynamics and error variances ought to be considered to be the same. The estimator was expressed as;

$$(I/Y)_{it} = \alpha_{it} + \delta_{0i}(S/Y)_{it} + \delta_{1i}(S/Y)_{i,t-1} + \lambda_i(I/Y)_{i,t-1} + \varepsilon_{it} \quad (2.8)$$

Then follows the equilibrium error correction equation as shown below;

$$(I/Y)_{it} = \delta_{1i}(S/Y)_{i,t-1} + \varphi_i(I/Y)_{i,t-1} + \widehat{\theta}_{0i} + \widehat{\theta}_{1i}(S/Y)_{i,t-1} + \varepsilon_{it} \quad (2.9)$$

$$\text{Where } \widehat{\theta}_{0i} = \frac{\alpha_i}{1-\lambda_i} \quad \widehat{\theta}_{1i} = \frac{\delta_{0i} + \delta_{1i}}{1-\lambda_i} \varphi_i = -(1-\lambda_i) \quad (2.10)$$

The β coefficient result was ranging between 0.36 – 0.58 implied that there was a moderate degree of capital mobility that exists in these African countries and also the legal protection system provided for the investors did affect the degree of capital mobility in a region as upheld in the study of Kasuga 2004.

Padawassou (2012) study comprised of a panel of 22 African countries for the period of 1974 – 2009. The study used the following methodology based on the Johansen Maximum Likelihood approach; Vector Error Correction technique where the estimator was expressed as;

$$\Delta X_t = \mu + \Gamma_1 \Delta X_{t-1} + \Gamma_2 \Delta X_{t-2} + \dots + \Gamma_{p-1} \Delta X_{t-p+1} + \Pi X_{t-p} + \varphi D_t + \varepsilon_t \quad (2.11)$$

Where;

$X_t \begin{bmatrix} I \\ S \end{bmatrix}$ - 2x1 vector of first order integrated $[I(1)]$ variables,

Γ_i - a 2x2 short run coefficient matrices

$\Pi_{(2 \times 2)}$ - matrices is the long run parameters

μ - the constant term

ε_t - the vector of the Gaussian error

The co-integrated system above yielded the following results; the β coefficient result was 0.542 implied that there was a moderate degree of capital mobility that exists in these African countries. In addition there was a long run relationship between the domestic investment and domestic savings for the countries in the panel.

De Wet and Van Eyden (2005) study comprised of a panel of 36 Sub- Saharan African (SSA) countries for the period of 1980 – 2000. The study used the following

methodologies based on Pooled Ordinary Least Square; Fixed Effect Model (FEM) and Random Effect Model (REM). The estimator was expressed as;

$$\frac{I}{Y_{it}} = \alpha_{it} + \beta_1 \frac{S}{Y_{it}} + \beta_2 \frac{CA}{Y_{it}} + \beta_3 \frac{Aid}{Y_{it}} + \beta_4 Open_{it} + \beta_5 \tau_{it} + \beta_6 \delta_{it} + \varepsilon_{it} \quad (2.12)$$

where $\frac{I}{Y_{it}}$ - the ratio of gross domestic investment to gross domestic product in country i at time t, with $\frac{S}{Y_{it}}$ - the corresponding gross domestic saving, $\frac{CA}{Y_{it}}$ - the current account and $\frac{Aid}{Y_{it}}$ - financial aid to gross domestic product ratios. The β coefficient result had a range 0.2- 0.4 implied that there was high degree of capital mobility that exists in these SSA countries.

Issakson (2001) study comprised of a panel of 90 developing countries and 35 African countries for the period of 1975 – 1995. The study used the following methodologies; Fixed Effect Model (FEM) and Random Effect Model (REM). The estimator can be expressed as;

$$\left(\frac{I}{Y}\right)_{it} = \alpha + \beta \left(\frac{S}{Y}\right)_{it} + \gamma \left(\frac{FA}{Y}\right)_{it} + \varepsilon_{it} \quad (2.13)$$

Where;

$\left(\frac{I}{Y}\right)_{it}$ - Gross fixed capital formation per GDP

$\left(\frac{S}{Y}\right)_{it}$ - the Gross domestic savings per GDP

$\left(\frac{FA}{Y}\right)_{it}$ - Foreign aid per GDP

The β coefficient result of the 35 African countries had a range 0.691- 0.766 implied that there was low degree of capital mobility that exists in these countries. Similarly the

results for the developing countries ranged between 0.419 – 0.538 which indicated there was relatively immobile capital. As well the study concluded the amount received by a country as foreign aid does affect the degree of capital mobility.

Payne and Kumawaza (2005) study comprised of a panel of 29 Sub- Saharan African (SSA) countries for the period of 1980 – 2001. The study used the following Pooled Ordinary Least Square methodologies; Fixed Effect Model (FEM) and Random Effect Model (REM). The estimator was expressed as;

$$(I/Y)_{it} = \alpha + \beta(S/Y)_{it} + \gamma(FA/Y)_{it} + \delta(T * (S/T))_{it} + \theta((EX + IM)/Y)_{it} + \varepsilon_{it} \quad (2.14)$$

Where;

$(I/Y)_{it}$ is Gross fixed capital formation per GDP

$(S/Y)_{it}$ is the Gross domestic savings per GDP

$(FA/Y)_{it}$ is Foreign aid per GDP

$((EX + IM)/Y)_{it}$ is the sum of exports and imports per GDP

$(T * (S/T))_{it}$ is interactive time trend with savings

The β coefficient result had a range 0.209- 0.243 implied that there was high degree of capital mobility that exists in these SSA countries. Additionally the study confirmed the positive impact of foreign aid and openness of the economies on the rates of investment.

2.5 Overview of the Literature review

The phenomenon of evaluating the levels of capital mobility and the underlying factors which foster growth in investment has motivated ample studies to be carried out. These studies have been able to propagate both the theoretical and empirical knowledge for the developed, less developed and undeveloped countries.

However there was limited literature on extent of capital mobility present in EAC and the underlying factors which nurture it. Hence this study was to inform and contribute more on the knowledge that was available on capital mobility in EAC.

Some of the studies done in Africa have used FH hypothesis in conjunction with various methodologies such as pooled ordinary least squares, fixed effect model, random effect model, fully modified ordinary least square model and standard error model. This study deviated from the previous studies by focusing on measuring the level of capital mobility in EAC using the FH Hypothesis and the Panel Data models.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter presents the description of the theoretical model, empirical model, definitions and measurement of the variables, data types and sources of data of the study.

3.2 Research design

The study used non-experimental panel research design. The variables were selected from every country and an analysis was done over time in order to test on the hypothesis, thereafter policy recommendations were made. The benefit of using this research design was that it provided a broader vista of the variable over time and what was more it allowed diverse behavioural traits of the variable to be considered.

3.3 Theoretical Frame work

The study focused on Feldstein Horioka Hypothesis authored by Martin Feldstein and Charles Horioka in 1980 due to its superiority over the other theories used to measure capital mobility.

The Feldstein-Horioka Hypothesis

This study presented a simple model of the FH Hypothesis which determined the level of capital mobility in EAC, and evaluated the drivers of investment in EAC trading bloc.

This theory assumed that the real interest rates of domestic savings and domestic investment would be used in the analysis rather than the nominal rate so as to provide a more accurate result for the measure of capital mobility.

Therefore the investment rate was estimated as follows;

$$\left(\frac{I}{Y}\right)_i = \alpha_i - \beta r_i + \mu_i \quad (3.1)$$

where I - the level of national capital formation

Y - The GDP (national output)

r - The domestic interest rate

α_i - The intercept

i - The representing a country

μ_i Signified all the other factors that determine investment

Given equation 3.1 the μ_i signified all the other factors that determined investment, in this study we took into consideration, Foreign aid, Foreign Direct Investment, level of capital mobility Openness of the economy and Government expenditure variables as other factors. This was so because most the studies which have been conducted in the Sub-Saharan Africa depicted these variables as key financiers of investment and the later as enablers of investment in a regional economic integration grouping (Regional Department East Africa (OREA) 2010).

The theory expected that the country's real interest rate ought to be connected to the world interest rate so that the real interest parity conditions held as shown in equation (3.2).

$$r_i - r^* = 0 \quad (3.2)$$

Where r_i - the domestic interest rate

r^* - the international interest rate

In addition this theory required that all determining factors of a country's investment rate have no association with the country's real savings except for the real interest rate.

Hence capital mobility was assessed by estimating the correlation between the investment rate and the national savings rate given the above conditions. Consequently the national savings rate was taken as a function of the real interest rate thus the equation was transformed into;

$$\left(\frac{I}{Y}\right)_i = a_i - b \left(\frac{NS}{Y}\right)_i + v_i \quad (3.3)$$

Where NS - the private savings less budget deficit

v_i - the error term

Therefore the hypothesis accentuated that in a country where there was perfect capital mobility the correlation between savings and investment ought to be zero. It concluded that the excess of national savings in one country would simply offset the shortfall of savings in the other country without essentially amplifying the domestic real interest rate or crowding out the domestic investment (Frankel 1992).

3.4 Model Specification

3.4.1 Panel Data Model

This study adopted Panel Data Model to measure the level of capital mobility existing in the EAC trading bloc. This regression model depicted in Swamy (1971), Dielman (1989) and Hsiao (1986) however does not take into consideration the unobserved individual heterogeneity. This model made the following five assumptions; linearity in the

parameters, the full column rank of the independent variables selected, exogeneity of the independent variables in the model, homoscedasticity and non-autocorrelation and the regression model is well specified.

Therefore if the above assumptions were not met then the estimators generated would neither be consistent nor efficient (Greene 2003).

Since this study has hinged substantially on the Payne and Kumawaza (2005) study the equation (3.3) was modified as follows;

$$(I/Y)_{it} = \alpha + \beta(S/Y)_{it} + \gamma(FA/Y)_{it} + \delta(FDI/Y)_{it} + \theta((EX + IM)/Y)_{it} + \epsilon(GE/Y)_{it} + \epsilon_{it} \quad (3.4)$$

Where;

$(I/Y)_{it}$ - Gross fixed capital formation per GDP

$(S/Y)_{it}$ - Gross domestic savings per GDP

$(FA/Y)_{it}$ - Foreign aid per GDP

$\left(\frac{(EX + IM)}{Y} \right)_{it}$ - Sum of exports and imports per GDP – (Openness of the economy)

$(FDI/Y)_{it}$ - Foreign Direct Investment per GDP

$(GE/Y)_{it}$ - Government expenditure per GDP

i represented a specific country

t represented a specific year

This study overlooked the interactive time trend with savings variable since this regressor was heavily influenced by the choice of the base fiscal period selected; which may have impacted negatively on the model. Nonetheless the study included the foreign

direct investment variable because a substantial amount of investment was funded by this resource in the EAC trading bloc as shown in figure 1.2. In addition these other studies (Sichei & Kinyondo 2012, Younas 2011, Younas, 2007 and Regional Department East Africa (OREA) 2010) did identify FDI, Foreign aid and Government expenditure has critical sources for financing domestic investment.

The study identified the most preferable model between the fixed effects and the random effects by using the Hausman test. It was of uttermost importance to determine the appropriate model since if the random effect model was selected over the fixed effect model then the estimators computed will be biased, inconsistent and inefficient (Greene 2003 and Baltagi 2001).

The value of the β coefficient in equation 3.4 enabled the study to conclude if the capital mobility is low, moderate or high in the trading bloc. Additionally the Panel Data Model with fixed effect and the random effects methodology facilitated the study to determine drivers of investment in EAC.

3.5 Definition of Variables and Measurement

Table 3.1 would provide the various variables in the model and their unit of measurements;

Table 3.1 Model Variables

Variable	Definition	Measurement
Investment	Gross Capital formation which consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories.	Investment amount in billions of US dollars
Savings	Gross national income less total consumption, plus net transfers.	Savings amount in billions of US dollars
Foreign Direct Investment	Annual FDI flows from other countries in the world to the East African Countries.	FDI inflows in billions of US dollars.
Foreign aid	Annual Foreign aid flows to the East African Countries.	Foreign aid inflows in billions of US dollars.
Import	Annual value of all goods and other market services bought from the rest of the world	Imports in billions of US dollars
Exports	Annual value of all goods and other market services provided to the rest of the world	Exports in billions of US dollars
Government expenditure	Annual value of all goods and other market services provided to the consumed by the government	Government expenditure in billions of US dollars

Source: World Bank 2013

3.6 Properties of Panel Data

Given that the panel data available for the EAC trading bloc was more cross-sectional dominant then the following properties were examined;

3.6.1 Normality

This test was carried out to verify if the error terms were normally distributed. The study used the histogram normality test as well as the Jarque bera chi square test to evaluate whether the residuals were normally distributed (Wooldridge 2002).

3.6.2 Heteroskedasticity

This is the occurrence where variance of the error term of the regressor is not constant and changes for every independent variable observation taken therefore violating the one the assumption of the classical linear regression model. For that reason every estimators computed from such a model are unbiased nonetheless are not efficient. In addition the standard errors are not correct hence inferences cannot be made or the confidence interval used. The correction of this anomaly was to transform the data so as to obtain panel corrected standard errors of the OLS estimators. This would definitely make the variance of the error term becomes invariable (Greene 2003).

3.6.3 Serial correlation

This is the situation where the error terms generated from the pooled regression function are correlated for the given periods being examined. Following the above violation the estimators computed from the above models become inefficient and also statistical extrapolation would not be possible since the standard errors are inaccurate. The study transformed the data through the panel corrected standard errors procedures so as eliminate the correlation between error terms in the different periods (Cameron and Trivedi 2005, Beck and Katz 1995 & Wooldridge 2002).

3.7 Data type and source

Towards accomplishing the objectives of this study panel data was used. Data on Investment, Savings, FDI, Export, Import, Government expenditure and Foreign aid for the year 1999-2012 was obtained from the World Bank Database. This database was selected due to the fact it has all the data needed for analysis as compared to others.

3.8 Data Analysis

The study anticipated responding to two objectives. The first objective was to examine the level of capital mobility that exists in EAC from 1999-2012. This was achieved by modelling capital mobility using the FH Hypothesis by Martin Feldstein and Charles Horioka (1980) and Panel Data Model. The β coefficient computed in equation 3.4 allowed the study to determine the level of capital mobility existing in the trading bloc without accounting for the individual heterogeneity of each country. The savings retention co-efficient or the β coefficient computed should range between 0 and 1. If the β coefficient is (0 -0.2) the level of capital mobility is considered to be high, then (0.3 – 0.6) moderate and (0.7 -1) low respectively. If the sign of the β coefficient is positive and the coefficient is statistically significant then this indicates that the capital mobility is low.

The second objective was to determine the drivers of investment in EAC using Panel data models through the fixed and random effects methodology. This was achieved by analysing the effects which would be observed in each country of the trading bloc. These effects would identify disparities in the economic policy, political and institutional systems that are not obviously contained in the specified model but are considered when the estimation was done.

CHAPTER FOUR: EMPIRICAL FINDINGS

4.1 Introduction

This chapter presents the results of data analysis. First the descriptive statistics are shown, then diagnostic tests and finally the results of the Panel Data Model.

4.2 Descriptive statistics

Table: 4.1 Descriptive statistics

	Investment	Savings	FDI	Foreign aid	Openness of the economy	Government expenditure
Mean	14.5214	7.0781	0.1381	26.3351	37.3873	22.1105
Median	20.0000	7.2242	0.0270	30.0532	41.5646	19.5092
Standard deviation	7.9800	7.5010	0.3425	9.1841	11.7887	5.9251
Skewness	-0.1763	-0.0384	3.1373	-0.5532	-0.2152	0.2792
Kurtosis	1.6108	1.6325	11.2439	2.1205	1.4151	1.5034
Minimum	2.7811	-4.1414	0.0000013	9.2714	20.9641	14.7330
Maximum	28.0000	18.0000	1.3421	39.7746	54.1518	31.5730
Observation	980	980	980	980	980	980

Table 4.1 depicted that for all the variables both independent and dependent in the study, their standard deviations are lower than the mean. In addition the standard deviation indicated that the distance from the mean was not huge. This implied these variables have low heterogeneity. In addition the skewness and kurtosis measures

indicated that FDI and government expenditure are not normally distributed while the other variables are. Also the variables depicted a platykurtic since the kurtosis value was less than 3. Moreover the maximum and minimum values showed that all the variables have gradually grown over the years given their huge spread.

4.3 Normality test

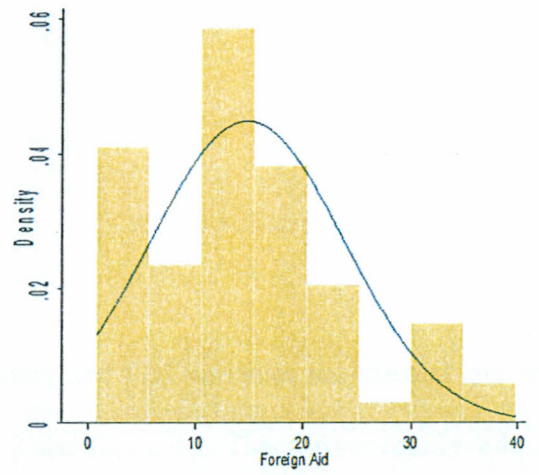
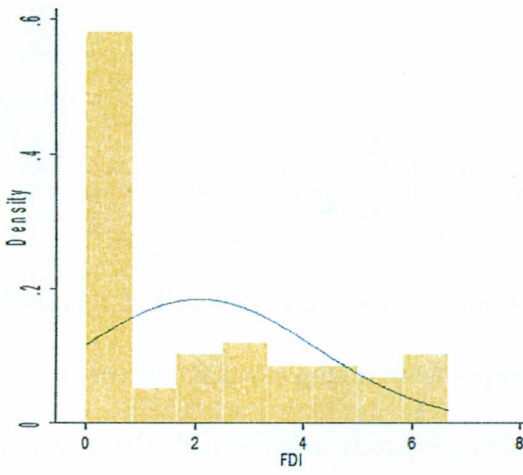
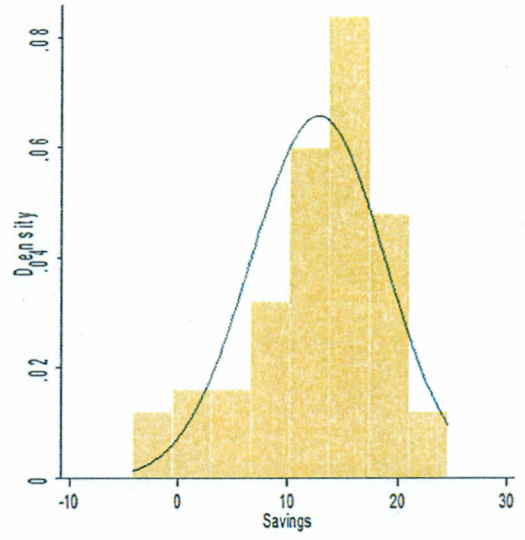
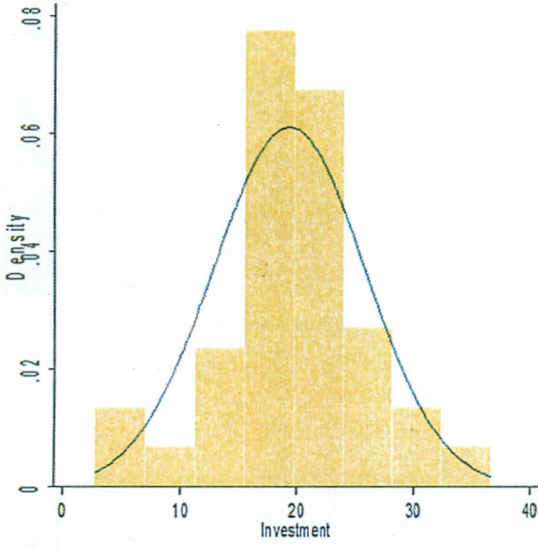
Table 4.2: Normality

	Investment	Savings	FDI	Foreign aid	Openness of the economy	Government expenditure
Jarque-Bera	5.9913	5.4712	313.0303	5.8269	7.8663	7.4423
Probability	0.0500	0.0648	0.0000	0.0543	0.0574	0.0242

H_0 : Normal distribution, skewness is zero, kurtosis is three

H_a : No normal distribution

Histogram normality graph



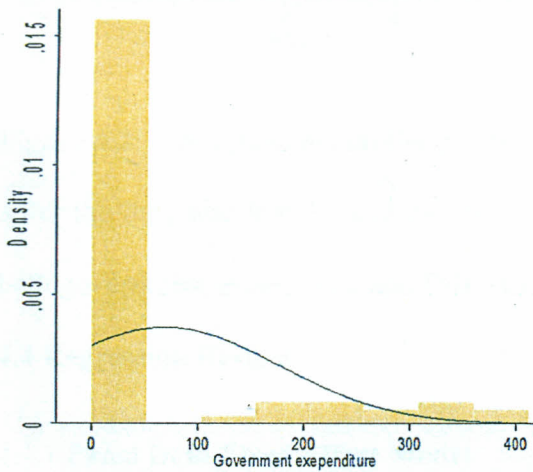
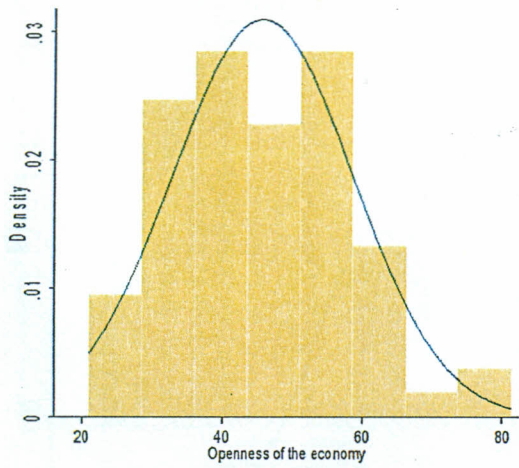


Figure 4.1: Histogram normality graph

It was evident that the government expenditure and FDI variables are skewed and are not normally distributed as shown in table 4.2 and figure 4.1. This further reinforced the results in table 4.1 which concluded that the variables were not normally distributed. Non-normality was corrected through the transformation of the data by using the natural logs and the following were the results;

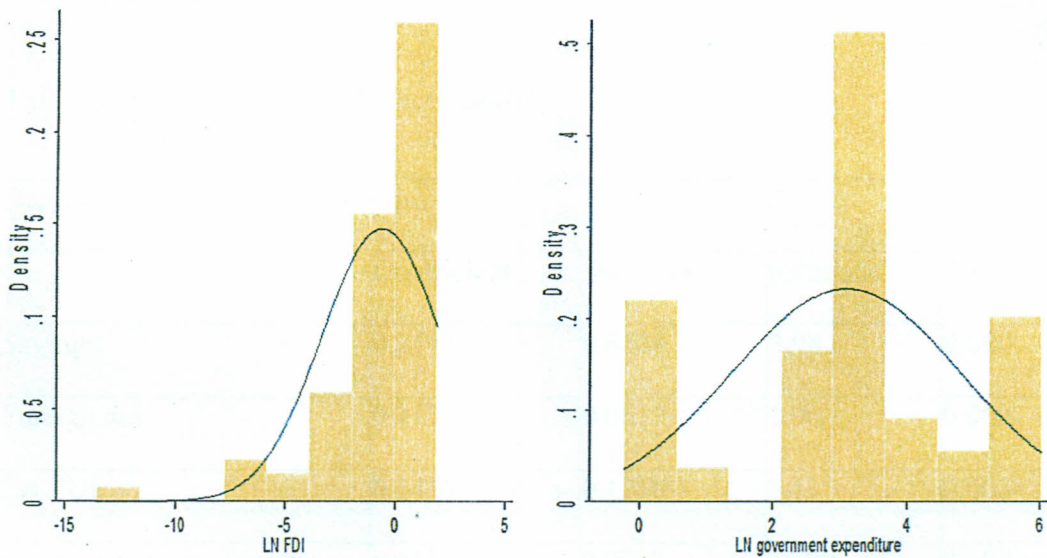


Figure 4.2: Histogram normality graph

After the data was transformed as seen in figure 4.2 then normality was achieved for both government expenditure and FDI variables.

4.4 Regression Results

4.4.1 Panel Data Fixed Effect Model

This model used the Least Square Dummy Variable (LSDV) methodology in its estimation. This model is an improvement of Pooled Ordinary Least Square model which does not take into account the omitted variable bias. This method allowed each country to have individual specific time invariant effects which are correlated to the independent variables and are not stochastic. This was done through introducing dummy variables for each country with exception of one so as do away with the problem of dummy variable trap that would arise from perfect multi-collinearity (Greene 2003 and Wooldridge 2002).

Table: 4. Panel data Fixed Effects model

Dependent Variable = Investment				
	Coefficient	Std Error	t-statistic	Probability
Savings	0.2141	0.0538	3.98	0.000
Foreign aid	0.1172	0.0617	1.90	0.062
LN FDI	0.5450	0.1750	3.11	0.003
Openness of the economy	0.4313	0.0282	15.29	0.000
LN Government expenditure	-0.2671	1.0184	-0.26	0.794
Constant	-3.6661	3.0060	-1.22	0.227
R² = 0.8435 F test = 7.63 Probability of F test = 0.000 N =70				

The reference country which was used in this model was Burundi and the constant term corresponds to its constant term. In addition this model allowed each country to have its own intercept through introducing dummies in the computation of the LDSV estimator which catered for the cross section heterogeneity. The fixed effects were differences between the values of the constant and the dummies variables. In addition the evidence of the fixed effects was present since the F test for this model negated the assumption of homogenous cross sections.

Besides all the variables were statistically significant except the foreign aid variable and government expenditure and at the same time all dummies variables were not statistically.

4.4.2 Panel Data Random Effect Model

This model was quite similar to the fixed effect model however it upheld that the individual specific effects of the countries were not correlated to the independent variables and also were stochastic (Cameron and Trivedi 2005).

Table: 4.5 Panel Data Random Effect model

Dependent Variable = Investment				
	Coefficient	Std Error	z-statistic	Probability
Savings	0.1853	0.0579	3.20	0.001
Foreign aid	0.2599	0.0464	5.60	0.000
LN FDI	0.9430	0.1478	6.38	0.000
Openness of the economy	0.3610	0.0274	13.18	0.000
LN Government expenditure	-0.6596	0.2151	-3.07	0.002
Constant	-0.7289	2.0421	-0.36	0.721
$R^2 = 0.8104$ Wald $\chi^2(5) = 364.60$ Probability of $\chi^2 = 0.000$ N = 70				

The random effects model results were slightly different from the fixed effects model since all the variables became statistically significant. This implied that all variables are key financiers of domestic investments. In addition the β coefficient slightly changed but the conclusion that there was a moderate level of capital mobility in the trading bloc, was still upheld.

4.5 Diagnostic Test based on the Panel Data model

The table 4.6 below showed the diagnostic tests of the preferable model between fixed and random using the Hausman test.

Table 4.6: Hausman test

H₀ : REM is the appropriate model	
Ha : FEM is the appropriate model	
Chi 2(5)	49.41
Probability>chi2	0.0000

The study settled on Fixed Effects Model because after running a Hausman Test where null hypothesis was FEM and REM estimators did not differ substantially. Therefore the study rejected the null hypothesis since chi 2 was 49.41 and the Probability of chi (2) was less than 0.05.

4.6 Heteroskedasticity and serial correlation

These are problems that are most common in the panel data analysis and if are ignored can generate inefficient estimators and biased estimation. It is so for the reason most of common panel data estimators are incapable to handle both cross-sectional dependence and serial correlation simultaneously. Therefore this study undertook to use the panel corrected standard error technique so as to do away with the serial correlation and heteroskedasticity (Beck and Katz 1995).

Table: 4.7 Correction for heteroskedasticity and serial correlation using PCSE

Dependent Variable = Investment				
	Coefficient	Std Error	z-statistic	Probability
Savings	0.1853	0.0676	2.74	0.006
Foreign aid	0.2599	0.0613	4.24	0.000
LN FDI	0.9430	0.1897	4.97	0.000
Openness of the economy	0.3610	0.0282	12.78	0.000
LN Government expenditure	-0.6597	0.1905	-3.46	0.001
Constant	-0.7289	2.5326	-0.29	0.773
Wald chi2(5) = 378.85 Probability > chi2 = 0.0000 N =70 R² = 0.8507				

The β coefficient (0.1853) concluded that there was a high level of capital mobility in the trading bloc, nonetheless since β coefficient was positive and statistically significant this negated the earlier conclusion and the final supposition made was that the EAC trading bloc has moderate capital mobility. This conclusion was in line with some studies carried out on the Sub-Saharan African countries such (Mamingi 1997; Murthy 2005, Adedeji and Thorton 2007; Padawassou 2012). Some of the coefficients and their standard errors have decreased slightly such as the savings retention coefficient, openness of the economy and the government expenditure coefficients. Also the other variable; foreign aid and FDI did slightly increase along with their standard errors and this implied the coefficients were more efficient and unbiased. In addition all the coefficients of the variables were statistically significant and this implied that they did influence the domestic investments in the EAC trading bloc.

CHAPTER FIVE: SUMMARY, CONCLUSION AND POLICY IMPLICATIONS

5.1 Introduction

This chapter presents the summary of the study, conclusions and policy implications. Thereafter areas for further research are recommended.

5.2 Summary

The study sought to measure the level of capital mobility in EAC and to determine the drivers of investment in EAC by using Panel Data Fixed effects model and the panel corrected standard errors (PSCE). The heteroscedasticity and autocorrelation conditions which are common in panel data analysis were rectified using the panel-corrected standard error estimation. The results depicted that the East African Community trading bloc has moderate level of capital mobility.

In addition the results further indicated that the key financiers of domestic investment in the East African Community were domestic savings, foreign aid, government expenditure and FDI sources. At the same time the openness of the economy and the level of capital mobility were seen as the catalyst of increasing domestic investment in EAC.

5.3 Conclusion

The results have shown similar results as the other studies carried out for Sub-Saharan Africa (Mamingi 1997; Murthy 2005, Adedeji and Thorton 2007; Padawassou 2012) that there was moderate capital mobility. This study has indicated that openness of the economy as shown in (Wong 1990; Bahmani- Oskooee and Chakrabarti 2005 & Payne

and Kumawaza 2005) studies facilitated not only the level of capital mobility but also the increase in domestic investment. Moreover government expenditure was a key source in providing funds for domestic investments in the EAC trading bloc as reinforced by (Regional Department East Africa (OREA) 2010) study. In addition FDI and Foreign aid did have a significant influence on domestic investment which reinforces other studies which have been carried out in Sub- Saharan Africa (Younas 2011, Payne and Kumawaza 2005 and Issakson 2001).

5.4 Policy Implications

Based on the research findings the study recommended that EAC Co-ordination Committee ought to come up with a suitable strategy which would result to increased level of domestic savings given the East African Countries suffer from low savings rates, the bond market is immature, the investor base is small, and the secondary markets experience a lot of illiquidity. This would work hand in hand with the already prevailing EAC Industrialization Strategy for the years 2012 to 2032.

Secondly, the EAC Council of Ministers have a duty to provide policies which led to an enabling environment that would allow more openness in the economy and augmented level of capital mobility so as to attract private investors in the trading bloc. It is currently dismal as seen in the report on the Ease of doing business rankings which indicated that the East African countries were not an attractive investment destination in spite of the many reforms which have been undertaken and this was also supported by the Global Competiveness report 2013

Thirdly in view of the above, it was critical for the East African countries to work on eliminating the various obstacles of setting up investments or doing business for the EAC citizens amongst the countries. Especially the acrimony and suspicion within the EAC Summit has to be done away with so as allow for economic progression in the trading bloc.

Finally the EAC trading bloc is endowed with a lot of resources especially human resource and natural resource. It is critical for the EAC Sector committees, EAC Coordination Committee and the EAC Council Ministers to come up and implement uniform clear cut goals, policies and strategies which target to benefit every single citizenry in the EAC. This would only be achieved by pooling resources while investing in projects, free movements of goods & services and labor, financial structure development & financial intermediation, transition of small scale enterprises in to medium sized industries and faster decision making in view of new investible opportunities.

5.5 Areas for further research

The future research should focus on the channels through which financial development influences the level of capital mobility and augmented investment in EAC. This was because this study has established the measure of capital mobility but it has overlooked the importance of financial development and financial intermediation which was very critical to investment.

Further other studies ought to be undertaken to assess the impact of the already implemented reforms in the EAC on the level of capital mobility so as to identify which

other adjustments can be made in order to make EAC an attractive investment destination.

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APPENDICES

APPENDIX A : EAC DATA

Year	Country	Openness of the economy	Investment	Savings	Foreign Aid	Government expenditure	FDI
1999	Burundi	23.53975	5.884936	2.418029	9.271391	18.15985946	0.029534
2000	Burundi	22.55372	2.781123	5.11108	10.69747	14.85669833	1.342183
2001	Burundi	20.96405	4.46831	10.51678	15.86916	15.53307382	0.001099
2002	Burundi	21.67383	3.948661	13.01237	20.83731	14.73298684	1.30E-06
2003	Burundi	27.37631	7.868818	14.57222	29.02679	17.46133527	0.000589
2004	Burundi	31.57612	10.34711	13.53809	39.77461	19.22726629	0.004863
2005	Burundi	41.64681	20	17.78547	32.57629	18.99164184	0.052334
2006	Burundi	54.15179	20	-3.12456	33.84359	19.7910972	0.002481
2007	Burundi	41.48231	20	9.33732	35.32244	28.01410947	0.036889
2008	Burundi	47.41792	20	2.601345	32.40437	30.15531948	0.237846
2009	Burundi	49.92587	20	-2.59736	32.26669	28.84793923	0.020026
2010	Burundi	48.0957	20	-4.14141	31.07953	31.57298281	0.038512
2011	Burundi	47.0192	20	2.06484	24.57876	27.99417636	0.142423
2012	Burundi	46	28	18	21.14315	24.20908932	0.024467
1999	Kenya	48.19226	15.52141	21.8144	2.407488	317.1992219	0.402864
2000	Kenya	53.30902	17.41408	13.50577	4.035463	281.2144292	0.872896
2001	Kenya	55.94677	18.79032	14.02651	3.628752	292.0009396	0.040833
2002	Kenya	55.17264	15.13821	13.98705	2.987661	335.6306457	0.210062
2003	Kenya	54.13222	16.48213	15.24875	3.509003	387.5439164	0.548413
2004	Kenya	59.47695	16.96248	16.0521	4.102058	411.0795565	0.286194
2005	Kenya	64.47886	17.64968	16.84117	4.051682	358.9082277	0.113202
2006	Kenya	55.23646	16.11059	13.40519	3.665753	228.1463226	0.19622
2007	Kenya	53.89476	16.29456	13.134	4.151611	216.1992995	2.281243
2008	Kenya	57.57858	16.32974	10.69425	3.805416	227.1109742	0.266291
2009	Kenya	50.86363	16.46394	11.40258	4.797751	199.647422	0.314027
2010	Kenya	54.22683	15.91888	11.39431	4.071411	171.5878606	0.44516
2011	Kenya	60.44645	16.78674	8.982139	5.921298	176.4082886	0.79907
2012	Kenya	55	22	11	5.272864	138.8425766	0.513776
1999	Rwanda	30.74746	13.14875	5.068694	20.52535	31.3113787	0.094942
2000	Rwanda	31.19817	13.37598	6.355106	18.52861	24.60140776	0.479501
2001	Rwanda	32.75498	13.73552	8.055477	18.20521	33.22012062	0.276717
2002	Rwanda	30.74994	13.48131	7.285299	21.63526	26.35510964	0.155594

2003	Rwanda	32	13.8539	9.369542	18.16055	20.11640321	0.252203
2004	Rwanda	35.88362	15.02818	14.8076	23.45934	19.36861764	0.366649
2005	Rwanda	36.66667	15.77778	15.11341	22.36714	29.27987627	0.409457
2006	Rwanda	36.36364	16.006	10.36835	19.38927	28.52513487	0.361154
2007	Rwanda	36.07748	17.86221	14.10741	19.13866	25.13773898	1.778408
2008	Rwanda	43.19482	22.28456	16.88124	19.46202	19.15412175	2.744908
2009	Rwanda	38.34935	21.34451	12.84086	17.58508	17.88276542	2.235298
2010	Rwanda	39.30184	20.69716	11.21157	18.11338	17.27654982	0.742856
2011	Rwanda	43.47374	21.26634	16.96993	19.70179	16.015805	1.657789
2012	Rwanda	44	26	16	12.17496	15.72169736	2.213608
1999	Tanzania	35.38399	17.53939	9.70598	10.22763	0.961664062	5.327993
2000	Tanzania	33.49085	16.81557	13.18647	10.44514	0.884425203	4.549485
2001	Tanzania	38.29025	17.4472	13.9474	12.27161	0.806837615	3.74438
2002	Tanzania	37.42109	17.19001	16.66533	11.75168	0.798827142	3.667032
2003	Tanzania	41.37361	19.16681	18.24608	14.79862	1.276193183	3.124237
2004	Tanzania	45.71708	22.56985	19.8445	13.8191	1.626608004	1.767783
2005	Tanzania	50.55385	25.06116	17.49709	10.60019	1.69968956	6.615232
2006	Tanzania	58.26002	27.6334	17.36967	13.14116	1.747639973	2.812312
2007	Tanzania	65.3413	29.64303	16.23115	16.76968	1.830582356	3.456124
2008	Tanzania	63.92957	29.78514	18.76497	11.25489	1.37279089	6.677549
2009	Tanzania	58.37999	28.97006	19.93094	13.72673	1.396479352	4.458174
2010	Tanzania	66.40132	32.0267	24.53696	12.90936	1.531253779	4.463492
2011	Tanzania	81.27242	36.66661	20.17771	10.20283	1.705941749	4.58823
2012	Tanzania	75	35	19	10.02487	1.311942868	6.370737
1999	Uganda	36.02471	19.54912	16.70356	10.08625	23.52873549	2.337226
2000	Uganda	32.74903	19.48382	14.35649	13.77759	26.77841783	2.594762
2001	Uganda	35.32998	19.30206	15.52477	14.07738	32.43952358	2.593888
2002	Uganda	36.27779	20.21742	16.47882	11.74043	38.49562896	2.988527
2003	Uganda	36.58573	20.98414	17.55269	15.74401	46.23783688	3.19082
2004	Uganda	35.46009	20.14569	21.15366	15.31441	39.6299875	3.720441
2005	Uganda	38.99429	22.35515	20.27898	13.22589	41.94088387	4.213616
2006	Uganda	43.63329	21.20393	8.155743	15.95589	42.90062148	6.479821
2007	Uganda	46.77742	21.40617	6.620278	14.13265	41.24615518	6.445276
2008	Uganda	56.25827	23.30276	13.52034	11.52796	37.34989248	5.118755
2009	Uganda	58.38931	25.72086	4.852586	12.03886	25.20298659	5.676895
2010	Uganda	53.87933	25.19593	13.86029	10.75086	22.13137958	3.392632
2011	Uganda	61.46642	26.73361	16.73029	10.21324	27.3150291	5.772125
2012	Uganda	62	25	1.425492	0.826275	17.00121465	6.014749

APPENDIX B : REGRESSION RESULTS

FIXED EFFECTS REGRESSION MODEL

Dependent Variable = Investment				
	Coefficient	Std Error	t-statistic	Probability
Savings	0.2141	0.0538	3.98	0.000
Foreign aid	0.1172	0.0617	1.90	0.062
LN FDI	0.5450	0.1750	3.11	0.003
Openness of the economy	0.4313	0.0282	15.29	0.000
LN Government expenditure	-0.2671	1.0184	-0.26	0.794
_Icountry1_2	dropped			
_Icountry1_3	dropped			
_Icountry1_4	dropped			
_Icountry1_5	dropped			
Constant	-3.6661	3.0060	-1.22	0.227
R² = 0.8435 F test = 7.63 Probability of F test = 0.000 N =70				

RANDOM EFFECTS REGRESSION MODEL

Dependent Variable = Investment				
	Coefficient	Std Error	z-statistic	Probability
Savings	0.1853	0.0579	3.20	0.001
Foreign aid	0.2599	0.0464	5.60	0.000
LN FDI	0.9430	0.1478	6.38	0.000

Openness of the economy	0.3610	0.0274	13.18	0.000
LN Government expenditure	-0.6596	0.2151	-3.07	0.002
Constant	-0.7289	2.0421	-0.36	0.721
R² = 0.8104 Wald chi2(5) = 364.60 Probability of chi2 = 0.000 N =70				

HAUSMAN TEST RESULTS

	Fixed (b)	Random (a)	Difference (b-a)	Standard error
Savings	0.2141	0.1853	0.0289	
Foreign aid	0.1172	0.2599	-0.1426	0.0406
LN FDI	0.5450	0.9430	0.0703	0.0068
Openness of the economy	0.4313	0.3610	-0.3981	0.0938
LN Government expenditure	-0.2671	-0.6596	0.3925	0.9954
Chi2 = 49.41 Probability chi2 = 0.0000				

PANEL CORRECTED STANDARD ERROR REGRESSION MODEL

Dependent Variable = Investment				
	Coefficient	Std Error	z-statistic	Probability
Savings	0.1853	0.0676	2.74	0.006
Foreign aid	0.2599	0.0613	4.24	0.000
LN FDI	0.9430	0.1897	4.97	0.000
Openness of the economy	0.3610	0.0282	12.78	0.000
LN Government expenditure	-0.6597	0.1905	-3.46	0.001
Constant	-0.7289	2.5326	-0.29	0.773
Wald chi2(5) = 378.85 Probability > chi2 = 0.0000 N =70 R² = 0.8507				