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EFFECT OF REGIONAL INTEGRATION ON PRIVATE INVESTMENT IN EAST AFRICAN COMMUNITY FOR THE PERIOD 1980-2014: A PANEL DATA ANALYSIS

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IRENE JEPCHUMBA KEINO

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A Thesis Submitted to the Graduate School in Partial Fulfilment of the Requirement for the Award of the Master of Arts Degree in Economics of Egerton University

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May, 2016

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DECLARATION AND RECOMMENDATION

Declaration

This Thesis is my original work and has not been presented for the award of any degree, in Egerton University or any other institution.

Signature..... Date 30TH MAY 2016

Irene Jepchumba Keino

AM16/3343/12

Recommendation

This Thesis has been submitted for examination with our approval as University supervisors:

Signature..... Date 30/05/2016

Dr. Aquilars Mutuku Kalio

Department of Economics,

Egerton University

Signature..... Date 31/05/2016

Dr. Symon Kibet Kiprop

Department of Economics,

Egerton University

2016/67186

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DEDICATION

This study is dedicated to my parents Mr & Mrs Micah Chelimo, my husband Vincent, my lovely children Quinter & Quinton and to my siblings.

ACKNOWLEDGEMENT

First I thank God the Almighty for the gift of life, strength, knowledge, good health and grace which enabled me to carry out this study. I also owe my gratitude to Egerton University for giving me a rare opportunity to undertake this study. Special thanks go to my supervisors, Dr. Symon Kiprop and Dr. Aquilars Kalio for the wise academic advice and thorough corrections they gave me which enabled me complete this thesis. I extend my gratitude to the chair of department of economics Dr. Lawrence Kibet for his continuous guidance and encouragement throughout this research. The entire teaching staff of Economics department also deserves appreciation for the useful comments they gave which helped in improving the quality of this thesis.

I am also indebted to my parents and siblings who have given me the love of life and supported me throughout my studies. I also thank my parents' in-law for their constant positive remarks as I continued with my thesis. I owe my sincere gratitude to my dear husband Vincent Kipsang who put up with my absence and provided the encouragement that I needed to carry out this study.

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ABSTRACT

The level of private investment in East African Community, as a percentage of GDP, has been inconsistent and on downward trend particularly for some periods for the last three decades. Several studies have been done regarding the determinants of private investment at country level while others have focused on regional integration and economic growth but the findings are inconsistent. However, from the empirical literature review, these studies fail to capture the effect of regional integration on private investment. It is against this background that this study was carried out to investigate the effect of regional integration on private investment in EAC using panel data over the period 1980-2014. The study adopted the Modified Flexible Accelerator model so as to show the link between private investment and explanatory variables and how they contribute to growth of private investment in the region. The specific objectives of this study were: to determine the influence of openness on private investment in the EAC, to investigate the effect of monetary policy on private investment in the EAC and to determine the effect of fiscal deficit on private investment in EAC. The variables in the study were tested for unit root using Levin, Lin and Chu (2002). The domestic credit to private sector was found to be I(0) while all the other variables were found to be non-stationary at level hence they were differenced once and became stationary which implies that they are I(1). The Pedroni Residual-Based Co-integration test was carried out to test the long run relationship between the variables in the model and it was established that long-run relationship exists between private investment and explanatory variables. The error correction model was also used to capture the short-run dynamics in the model. The study results showed that regional integration had positive and significant effect on private investment in EAC. The domestic credit to private sector also had a positive significant impact on private investment while the results showed that fiscal deficit had a negative effect on private investment in the region. The policy makers therefore need to put in place trade policies that ensure quick implementation of the trade agreements in the region so as to sustain free trade. The region should provide incentives to the financial institutions so as to enable them channel more credit to the private sector. Debt reduction strategies should also be adopted in the region so as to improve the fiscal deficit hence boosting private investment and faster economic growth in the East African Community.

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LIST OF ABBREVIATIONS AND ACRONYMS

AERC	-	African Economic Research Consortium
AfDB	-	Africa Development Bank
EAC	-	East African Community
FDI	-	Foreign Direct Investment
GDP	-	Gross Domestic Product
LDCs	-	Least Developed Countries
MENA	-	Middle East and North Africa
REC	-	Regional Economic Community
RER	-	Real Exchange Rates
SADC	-	Southern Africa Development Community
SAPs	-	Structural Adjustment Programs
SSA	-	Sub-Saharan Africa
TMT	-	Technology Media and Telecommunication
UNCTAD	-	United Nations Conference for Trade and Development
UNECA	-	United Nations Economic Commission for Africa

CHAPTER ONE
INTRODUCTION

1.1 Background to the Study

Private investment is one of the major contributors to economic growth and development in both developed and developing countries. This is because through investment, new technology can be adopted, employment opportunities can be created, incomes can grow and living conditions of the people can improve and eventually leading to alleviation of poverty, Matwanga, (2000).

According to Osakwe *et al* (2013), the limited role of the private sector in regional integration initiatives and efforts has contributed to the weak trade performance of the continent. In the recent years, emphasis has been put on the development of the private sector in developing countries to help boost economic growth and reduce poverty. This is because private investment is a crucial pre-requisite for economic growth because it allows entrepreneurs to set economic activity in motion by bringing resources together to produce goods and services.

According to UNCTAD (2015) the private sector has a crucial role to play in making regional integration work for Africa because, though trade agreements are signed by Governments, it is the private sector that understands the constraints facing enterprises hence it is in a position to take advantage of the opportunities created by such agreements and regional trade initiatives. Therefore for the objectives of regional integration to be realized, the EAC member governments should create more space for the private sector to play an active role in the integration process instead of leaving the sector to act as a passive participant.

The major concern for private investment for most Sub-Saharan Africa countries is that the level is so low compared to developed nations. This is attributable to a variety of reasons and the one critical factor is the relatively small size of the formal private sector, especially in manufacturing, and the difficulty in gaining access to funds for investment. Another factor is that many SSA countries can be characterized as subject to relatively high levels of economic and political instability, which discourages both private domestic and foreign investments (Morrissey 2009).

(UNCTAD, 2006) poor developing countries have relatively low levels of investment and the productivity of investment tends to be low and therefore increasing the level and productivity

of private investment is essential to delivering increased and sustained growth. According to Pfeffermann and Madarassy (1992) private investment in many developing countries began rising and brought significant impact on economic growth than the previous periods of 1970s' and earlier times; this is mainly closely linked with the SAPs which is associated with enhancing the efficiency of private sector investments.

1.1.1 East African Community Regional Integration

The East African Community (EAC) is the regional intergovernmental organization of the Republics of Burundi, Kenya, Rwanda, Tanzania, Uganda and Southern Sudan, with its headquarters in Arusha, Tanzania. The EAC was first formed in the year 1967 by the three heads of states of Kenya, Uganda and Tanzania and it collapsed in 1977 and was later revived in 1999. The Republic of Rwanda and the Republic of Burundi acceded to the EAC Treaty on18th June 2007 while Southern Sudan joined the EAC in 2015.

EAC has embraced regional integration as an important component of its development strategies. According to Jean *et al* (2011), deepening regional integration in the Eastern Africa region implies creating the appropriate conditions for guaranteeing factor mobility, the free movement of people, goods and services. The policy thrust is also shifting more heavily towards the development of the private sector as the ultimate vehicle for the optimal allocation of resources to bring about development and prosperity to the region.

Reith and Boltz (2011) asserted that regional integration has enabled the EAC to undertake economic negotiations with other RECs such as SADC, COMESA and EU. For example during the economic partnership agreement (EPA) negotiations with the European Union which aimed at creating free trade agreements between EU and ACP countries. This ensured more leverage for EAC countries and hence created more enabling environment for trade in the region. This could promote private investment and may contribute to sustainable economic growth.

According to Kasekende (2000), regional integration provide opportunities for addressing common challenges such as improving economic policy, attracting foreign direct investment (FDI), increasing market size and competitiveness and pooling resources for investments of mutual benefits. Since 2007, FDI projects in East Africa have grown at a CAGR (compound annual growth) of 23.4%, the second-highest rate in Africa. The region is unique in terms of

its investor base. While Western Europe is the leading investor in the other regional hubs, African countries have taken the lead in investing in the eastern hub. The largest investor in the region is Kenya.

East Africa's appeal lies in its large market opportunities, recent discoveries of natural resources and ongoing market integration through the EAC. Being a home to approximately 210 million people, the region's attractiveness for consumer-facing industries is growing. Furthermore, EAC Partner States also qualify for duty-free access to the US market under the African Growth and Opportunity Act (AGOA), as well as EU's *Everything But Arms* (EBA) initiative, under which all products from LDCs except arms and ammunitions have preferential access to the EU market, Henly (2014). Therefore this is good news and incentive to prospective investor as there is diverse market for products from EAC.

According to Henly (2014), the opportunities for private investment in EAC exist in the TMT (technology, media and telecommunication) sector, with more than 50 million East Africans having mobile phone subscriptions. The uptake of mobiles jumped to 550% in five years, making East Africa the world's fastest-growing market. Additionally, through the auspices of the EAC, inter-country links in the region have been deepening. For example, the EAC is harmonizing legislation relating to the EAC Customs Union and common market protocols. In addition in November 2013, the five EAC member countries also laid the groundwork for a common currency by 2023. Numerous construction and infrastructure upgrades are also in progress, such as Kenya's US$ 4b Mombasa-Nairobi railway line, the renewal of the Addis Ababa-Djibouti line, and the upgrade of the main northern corridor that links Mombasa to Uganda.

1.1.2 Trends in Private Investment and Economic Growth in respective EAC Countries

Kenya

The level of GDP growth (% annual) in Kenya in the year 2014 was US $ 4.8 while the level of private investment as a percentage of GDP was 9.63%. The EAC has expanded the market for Kenyan goods and services with Uganda being a major importer of its goods, for example it accounts for 13.2 per cent of country's total world imports, while Tanzania and Rwanda are the leading exports destinations for goods from Kenya, EAC Facts and Figures (2014).

The country adopted the Export Processing Zones (EPZ) scheme in 1990 which allow for duty and export exemption on imported machinery (except motor vehicles) and raw materials and therefore investors have been targeting Kenya as a springboard to growing East African consumer markets by increasing the production in both manufacturing and service industries. The Kenya Investment Authority (KIA) was established through the investment promotion Act 2004 and is mandated to promote and facilitate private investment for both local and foreign investors. Despite this investment incentive, there has not been a remarkable increase in investment whereby in the recent years, investment have declined while other business enterprises relocate to other neighboring countries. The recent discovery of oil in Turkana has added to the country's attraction to investors together with the building of a US$14.5b information technology hub, called Konza Technology City outside Nairobi to target the growing number of potential investors. National Trade Policy (2009).

Tanzania

The level growth in GDP in Tanzania in 2014 US dollars 6.7 (annual %) while the level of private investment as a percentage of GDP is 11.58%. The recently discovered gas reserves in Tanzania are propelling investor interest. Apart from gas, the country competes with Mali for the position of Africa's third-largest gold producer. But underdeveloped infrastructure makes the country a high-cost location for doing business. To resolve this situation, the Government is inviting private companies to invest in infrastructure opportunities, such as road construction.

The Public Private Partnership (PPP) established in 2009 is an important instrument for the Government of Tanzania to attract private investment and to improve public services. The main emphasis on the PPP is the infrastructure development since it's crucial for private sector growth yet it is inadequate in the country.

Uganda

Since the launch of the Economic Recovery Program (ERP) together with SAPs, the Ugandan government has been implementing these reforms so as to attract both domestic and foreign investors. The Uganda Investment Authority (UIA) was established in 1991 as an agency for promoting and facilitating investment in Uganda. (Investor survey report 2012)

The Private Sector Foundation Uganda (PSFU) was founded in 1995 and has served as a focal point for private sector advocacy as well as Capacity Building and continues to sustain a positive dialogue with Government on behalf of the Private Sector and is aimed at strengthening the Private Sector as an engine of economic growth. The current private investment level in the country as a percentage of GDP is 11.58%.

Uganda was among the top10 countries in the list by FDI projects in 2013 with GDP growth (% annual) of US % 3.4 during that period. One multinational that has recently increased its operations in the country is SAB Miller, which opened its second brewery in Uganda in 2013. The Oil fields and the agricultural sector in Uganda are also attracting significant investor attention, Henly (2014).

Rwanda

According to Nsanzabanwa (2009), the Government of Rwanda is committed to promoting exports and investment to sustain long-term growth and economic development. The private sector must operate in an efficient and competitive environment for the goals of Vision2020 to be realized. For this to be the case, the government must offer efficient and effective services and provide a suitable regulatory environment.

After the 1994 devastating effects of genocide, the Rwandan government embarked on sound economic policies, peace and stability. The country has made dramatic progress in creating friendly business environment and was ranked 32nd on the World Bank's Doing Business rankings 2014 thus it has attracted more private investors. Rwanda has experienced robust economic growth in the last decade with its GDP growth (% annual) in 2014 being US dollars 6.8 and the trend is expected to continue while the level of private investment as a percentage of GDP is 10.47%, with GDP forecasted to be higher than 7.0% in 2015, World Economic Outlook (2014). The country's vision is to become a private sector led middle income country by 2020 and therefore it targets public investment to induce substantial private sector investment hence foster economic growth (Malunda, 2012).

The National Investment strategy in Rwanda provides that the role of the Government in the development of private activities consists of establishing a legal and commercial framework favoring private investment development and promotion, and the implementation of the basic infrastructures necessary for competitive private activities. Rwanda has embarked on a drive

to upgrade its infrastructure to develop industries such as tourism, transport, logistics, Information and communication technology (ICT) and education.

Burundi

Burundi is the weakest economic member of EAC and one of the poorest nations in the world, Webber (2006). Since 1986, Burundi has adopted a program aimed at opening a new era in prosperity and development. The current GDP growth in the country is US $ 4.4 (% annual) while the level of private investment as a percentage of GDP is 11.31%. The Inter-ministerial Committee of Privatization (ICP) has been put in place and is reforming the public sector so as to create a better environment for private investments.

The Investment Promotion Agency (IPA) was established in 2009 with its main function being to inform and assist investors; in particular in obtaining documents and fulfilling formalities provided by the law, it is also responsible for devising reforms to improve business environment in the country (World Trade policy review 2012).

The government has stepped up its privatization programme by withdrawing from several key sectors of the economy, including coffee and finance in particular and has a Ministry responsible for good governance and privatization, which is directly answerable to the President of the Republic. The Ministry's task is to supervise and conduct the policy for privatization of State owned enterprises, and to introduce the necessary related structural and institutional reforms.

Private Investment trends in EAC Bloc

The EAC has experienced fluctuations in private investment over the years. From figure 1.1, the oil crisis of 1979 may have contributed to the continued decline in private investment and the policies implemented by government which favour public investment. The 1984 drought together with debt crisis also led to further decline of private investment in the region.

According to Mariara and Kiriti (2002), there was a decline in private investment in the EAC region from 13% to 8 % in 1980-1990. This may be as a result of the donors imposing tough conditions on the governments before they can be given funds. For example the introduction of SAPs by IMF and World Bank forced the governments to borrow domestically which crowded out private investment especially in Kenya.

Private investment levels had been on a fluctuatin trend in years between 1990 and 2000; this may be attributed to the fact that East African Community had not been revived after its collapse in 1977 hence less business transactions among the five countries due to existence of trade barriers. Private investment started picking up from the year 2000 onwards which may have been contributed by the removal of both internal and external tariffs after the EAC was revived in 1999 by the three heads of states of Kenya, Uganda and Tanzania and later joined by Burundi and Rwanda in the year 2007. The levels of private investment further increased in the subsequent years after 2010 though at a slow rate.

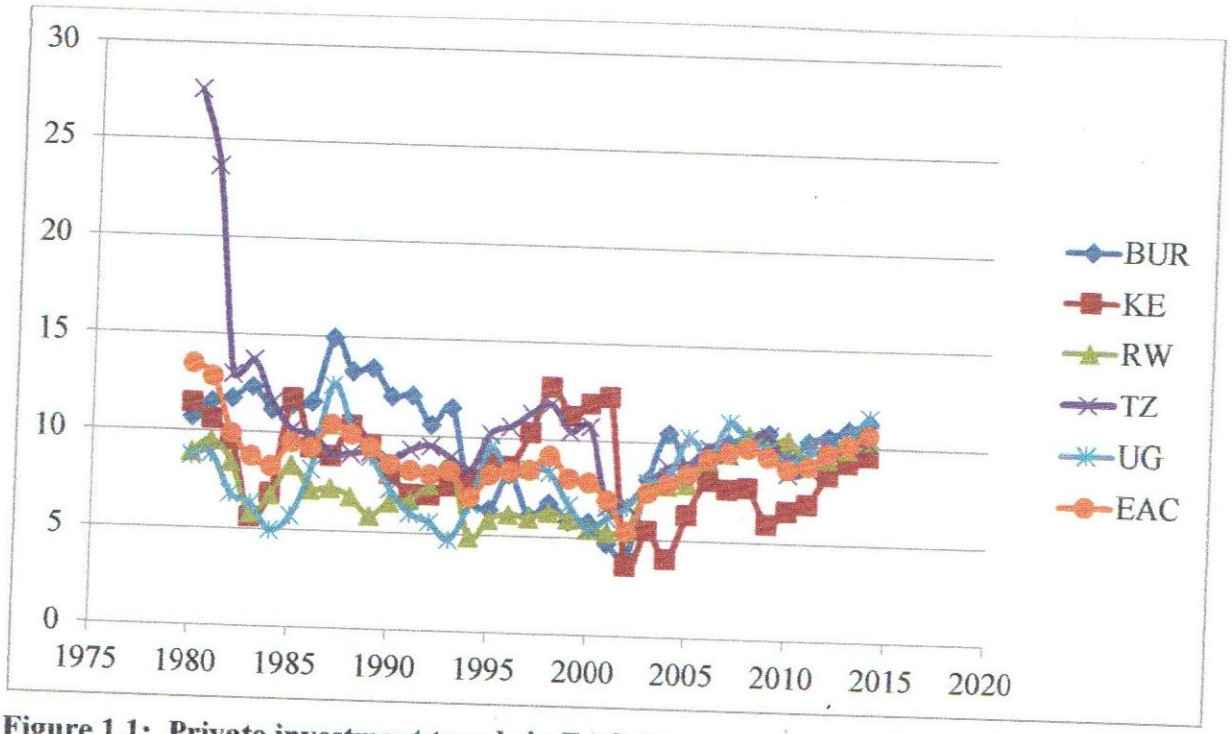


Figure 1.1: Private investment trends in EAC (As percentage of GDP)

Source: World Economic Outlook, 2014

Therefore by deepening regional integration in EAC, resources will be pooled and local markets expand, thus stimulating production and investment hence improving prospects for growth and development in the region. However, one of the main obstacles to integration as well as the development of regional value chains is inadequate and poor infrastructure. Following an EAC heads of state retreat on 5th December 2014 in Nairobi, The World Bank's country director for Burundi, Tanzania and Uganda Philippe Dongier said that the bank will provide $1.2 billion of funding to support infrastructure development and "improve the competitiveness" of countries throughout the East African Community.

1.1.3 The Intra-EAC Trade and Openness

The main objective of the Protocol establishing the EAC Customs Union is to facilitate inter and intra regional trade in goods and services. Data from the EAC secretariat shows that intra-EAC trade grew from $ 2.5 billion in 2005 to $ 5.5 billion in 2012 and this increase is mainly attributed to the implementation of customs union and common market Protocols. The volume of trade is expected to increase in the subsequent years due to elimination of several barriers across the region.

According to Paulo *et al* (2015), economic integration is beneficial to the East African community at large through increased efficiency and productivity. The entry into a single currency will eliminate bilateral foreign exchange risk, reduce transactions and accounting costs for intraregional trade, and foster financial integration. This will facilitate the expansion of regional trade and investment, which will promote economic growth and cross-border financial transactions, resulting in lower interest rates.

The private sector in the region should be more involved in decision making processes and the implementation of activities designed to address the challenges and issues of trade facilitation, taking into consideration that a large percentage of trade is carried out by the private sector. Therefore regional integration is a pathway to ensuring easier access to the markets and increased levels of trade resulting in higher economic growth. This is because trade stimulates the allocation of resources based on the perceived comparative advantage of the countries participating in trade (UNECA 2010).

The total exports from the intra EAC trade in 2013 amounted to US$ 3,508 million while the total imports amounted to US$ 2,315 million, thus giving an intra trade deficit of US$ 922 million. Kenya, Tanzania and Uganda recorded a surplus balance with Burundi and Rwanda recording a deficit (EAC Facts and Figures 2014).

Achieving middle income status is an aspiration of all the five partner states therefore all the countries have recognized the private sector as an essential growth engine for economic and social development and have introduced favorable policies to attract domestic and foreign investment. Governments are encouraging investments through providing fiscal incentives, establishing Export Processing Zones (EPZs), Investment Promotion Agencies (IPAs) and doing outreach activities (EAC Investment guidebook 2013).

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1.2 Statement of the Problem

Private investment is a key variable that contributes to faster economic growth in any economy. According to Matwanga (2000), it is because through extensive investment, advanced technology can be adopted, employment opportunities can be created, income levels rise and living standards of the people can improve and hence leading to faster economic growth. Since 1980's, the EAC countries have undertaken comprehensive economic reforms aimed at reducing direct government intervention in their economies and stimulating the growth of the private sector which is recognized as the engine of growth. However, the level of private investment as a percentage of GDP in EAC has been fluctuating and on downward trend for some periods for the last three decades. UNECA (1999) estimated that for African countries to reduce poverty by half by 2015, they need to attain and sustain a GDP growth rate of 8% per annum. However the rate of GDP growth in the EAC countries on average for the last five years is 5.2% which is below the projected level and this may be an indication that private investment in the region has not reached the expected levels that can accelerate economic growth.

The level of private investment in the East African Community on average according to World Economic Outlook data (2014) as a percentage of GDP are 10.632% .This percentage is low compared to the levels being experienced in successful economies such as the European Union countries in that according to Glovani (2014), the level of private investment in the United Kingdom is 15% of GDP while that of the core Euro Zone is 16.2% and is expected to increase to 17.6% in 2020. Furthermore, from the empirical literature review, little has been done with regard to regional integration effects on private investment. Therefore it was on these grounds that this study seeks to analyze the effects of regional integration on private investment in EAC for the period 1980-2014 so as to come up with policies aimed at guiding the policy makers in decision making and hence boosting private investment and consequently faster economic growth in the region.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective of this study was to examine the effect of EAC regional integration on private investment over the period 1980-2014.

1.3.2 Specific Objectives

Specifically, the study sort to:

i. To examine the effect of openness of the economy on private investment in EAC.
ii. To investigate the effect of credit to private sector on private investment in EAC.
iii. To determine the effect of fiscal deficit on private investment in EAC.

1.4 Research Hypotheses

i. Openness of an economy does not significantly affect private investment in EAC.
ii. Credit to private sector does not significantly effect on private investment in EAC.
iii. Fiscal deficit does not significantly affect private investment in EAC.

1.5 Significance of the Study

Private investment is a major contributor to economic growth and development in both developed and developing countries and therefore EAC may benefit from their integration by increasing the levels of private investment in the region. East African Community ascended from being a Custom Union to a Common Market in July 2010. The Customs Union is characterized by elimination all the internal tariffs and other similar charges on trade between member countries while Common Market entails free movement of persons, goods and services as well as factors of production.

The East African Community region aims at becoming a middle income region, F
(2012). Therefore the findings of the study are expected to guide policy m
formulation of strategies and policies that may enable the EAC countries gain f
integration by increasing the level of private investment in their respective
accelerating economic growth which may contribute to them beir
economies. This study will also contribute to the body of knowledge b
of regional integration on private investment and therefore ec
enhanced. In addition, this study gives areas of future research.

1.6 Scope and Limitations of the Study

This study focused on the effects of regional integration on private investment in the East African Community which comprises of Kenya, Uganda, Tanzania, Rwanda and Burundi. The study was restricted to the time period 1980-2014 based on data availability. This period was chosen because it was in 1980's when SAPs were introduced in developing countries by the IMF and the World Bank and hence private investment was given more emphasis. The period also enabled the researcher to compare the trend in private investment when EAC had collapsed and after it was revived. The main limitation of the study was that data for the years before 1980 were not available for some countries hence limiting the study to 1980 onwards. In addition, the study focused only on East African Community region, this in itself is a limitation since other regions had equal opportunity of being studied. This therefore creates a gap for future researchers to study other regional blocks both in Africa and the rest of the world so as to create a platform for comparison of findings.

1.7 Definition of Terms

Autocorrelation – it refers to correlation between two values of a variable at different time periods.

Cross-sectional dependence- This refers to the interaction between cross-sectional units.

Heteroscedasticity- refers to a case where the error terms do not exhibit a constant variance across observations.

Monetary Policy: This refers to the control of the quantity of money together with the level of interest by the central bank of a country so as to ensure stability of the economy.

Openness- it is given by the sum of the intra-EAC exports and imports divided by t GDP at the current prices. Openness has been used in this study as a proxy for regional integration in the EAC region

Panel Data refers to multi-dimensional data where multiple cases (people, firms, countries etc) are observed at two or more time periods. Panel data has been used in this study to estimate the relationships across the EAC countries because it allows for individual specific variables.

Private Investment - is the purchase and accumulation of capital assets that are expected to produce income and appreciate in value overtime. Private investment is expected to contribute to economic integration in EAC through regional integration.

Real Exchange Rate - is the ratio of the price level abroad and the domestic price level, where the foreign price level is converted into domestic currency units via the current nominal exchange rate.

Real Gross Domestic Product (real GDP Per capita) is a macroeconomic measure of the value of economic output adjusted for price changes i.e., inflation.

Regional Integration – It is the process by which two or more states agree to co-operate and work closely together to achieve peace, stability and wealth so as to better their economies.

Structural Adjustment Programmes (SAPs) - are economic policy reforms imposed on developing countries by the Bretton Woods Institutions i.e. the World Bank and International Monetary Fund (IMF) since the early 1980s through the provision of loans conditional on the adoption of such policies.

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

This chapter first presents the reviewed theories of investment and then discusses the theoretical framework as well as the conceptual framework that guides the study and finally the empirical literature related to the effect of regional integration on Private investment in the EAC.

2.2 Theoretical Literature

2.2.1 Keynesian Theory of Investment

Keynes, (1936), gives an explanation on the marginal efficiency of capital where interest rate and internal rate of return (IRR) continues to be the key determinants of investment. According to Keynes, investment by a firm occurs when the MEI (internal rate of return) on an addition to investment exceeds the rate of interest. The importance of entrepreneurs' long term expectations was also highlighted but did not provide a clear-cut explanation of how expectations are formed. However, Keynes' analysis suffers from the following limitations: it assumes that the funds used in investment have the same opportunity cost, profits are certain and assumption of no credit constraints.

2.2.2 Tobins Q Theory of Investment

This theory of investment is attributed to Tobin (1969). According to the theory; the main driving force of investment is the ratio of the market value of the existing capital stock to its replacement cost (the Q ratio). This implies that enterprises will invest if the increase in the market value of an additional unit exceeds the replacement cost. Tobin argues that the reason why Q would differ from unity is due to delivery lags and increasing marginal cost of investment. The main criticism of q theory is that its use tends to be chosen on an ad hoc basis rather than on optimization theory. Thus, theory is silent on the factors that govern the shape and length of the distributed lag specification.

2.2.3 McKinnon and Shaw Hypothesis

McKinnon and Shaw (1973) formulated a neoliberal approach to investment which stresses the importance of financial deepening and high interest rates as drivers of economic growth. According to them, developing countries suffer from financial repression whereby the interest rates are controlled in downward direction and therefore if these countries were liberated

from their repressive conditions, it would induce savings, investment and hence economic growth.

In their view, investment is positively related to the real rate of interest which is made possible because an increase in deposit interest rates will lead to an increase in the volume of financial savings through financial intermediaries and thereby raises investible funds, a phenomenon that McKinnon (1973) calls the "conduit effect".

2.2.4 The Accelerator Model of Investment

The acceleration principle was first suggested by Clark (1917) and it is well known for its applications by Samuelson (1939) to business cycles. The accelerator model assumes that firms' desired capital-output ratio is roughly constant. The model begins with the notion that a certain amount of capital stock (K) is necessary to support a given level of economic activity. This relationship is defined as being proportional to output (Y), that is $K_t = kY_t$ such that net investment is proportional to change in the desired output:

$$K_t - K_{t-1} = I_t = k\Delta Y_t \qquad (2.1)$$

Where k is the desired capital-output ratio, Y is output, I is the net investment, K_t is the capital stock in period t while K_{t-1} is the stock of capital at period t-1.

The simple accelerator approach is criticized on the following grounds: first the capital stock is optimally adjusted without any time lags and secondly for assuming that firms respond to changes in demand such that investment is always sufficient to keep the desired capital stock equal to the actual capital stock. In addition, the model also assumes that the ratio of desired capital to output is constant, yet this ratio varies with a variation in the cost of capital and technology. Therefore it has been less preferred as a model because of its stringent assumptions and an adjustment coefficient equal to unity. Thus the flexible accelerator model is used as an alternative in most investment studies.

2.2.5 The Flexible Accelerator Model

This model is attributed to Jorgenson (1967) and it assumes that capital adjusts towards its desired level by a constant proportion of the difference between desired and actual capital. The flexible-accelerator model is a macro model in which there is a variable relationship

between the growth rate of output and the level of net investment. Therefore the relation between the change in output and the level of net investment is the accelerator principle.

The basic notion behind this model is that the larger the gap between the existing capital stock and the desired capital stock, the greater a firm's rate of investment. The hypothesis is that firms plan to close a fraction of the gap between the desired capital stock, K*, and the actual capital stock, K, in each period. This gives rise to a net investment equation of the form of:

$$I_t = K_t^* - K_{t-1} = \delta(k^* - K_t) \qquad (2.2)$$

Where I_t = net investment, K* = desired capital stock, K_t = Actual period capital stock, K_{t-1}= previous period capital stock and δ = partial adjustment coefficient. Equation (2.2) illustrates that investment is a function of the gap between the desired and the existing capital stock and therefore the rate of investment activity rises when the gap between the desired and the existing capital stock increases.

The desired capital stock (K*) is the amount of capital that the sector would like to have in the future and the existing capital is accumulated value at the time (t). The desired capital (K^*_t) is negatively associated with the rental cost and positively related with the level of output growth. The incremental rate between the desired and the existing capital stock is given by:

$$I_t = \delta(K^* - K_{t-1}) \qquad (2.3)$$

This implies that the parameters that affect the desired level of capital tend to influence the level of investment. The decline in real interest rate and the growth in output lead to an increase in the rate of investment. Thus, the growth in GDP and real interest rates are determinants of private investments. The model is flexible in the sense that it allows investment to vary with other relevant variables, hence it is important when analyzing investment behaviour in developing economies.

According to Agénor and Montiel (1996), neither the neo-classical nor Tobin's-Q theories of investment are applicable in developing countries because of the restrictive assumptions on which these models are based such as perfect capital markets, a perfect flow of information and little or no government investment. Typically, these countries do not have equity markets

and have for a long time suffered financial repression, debt overhang, a dominant role of imported capital goods, and macroeconomic. On the other hand, the simple accelerator theory explains that investment is a function of output growth only but ignored the influence of other variables on investment. Although these factors act as barriers to private investment, they are often not incorporated in traditional models of investment. For example; private investors in developing countries face enormous financial and physical resource constraints such as credit and infrastructure, which are normally not considered in the traditional models. Therefore this study adopted a modified private investment model derived from the flexible accelerator model so as to suit the study.

2.2.6 The Theory of Regional Economic Integration.

Ricardo (1817), contributed to the Theory of Comparative Advantage. The theory holds that a country can gain from trade even if it has an absolute disadvantage in the production of all goods, or, that it can gain from trade even if it has an absolute advantage in the production of all goods. Ricardo argues that even if a country has an absolute advantage in production of a commodity compared to another country, it is beneficial for that country to specialize in the production of that commodity in which it has greater comparative advantage. The other country is left to specialize in the production of the commodity in which it has less comparative advantage.

This theory can be used to support regional economic integration because it allows every country to produce commodities using the factor which it is endowed with and exchanges the surplus with the imports from other countries in which it has cost disadvantage. The Regional Economic Integration theory plays a significant role in intra-regional trade through reduction of trade restrictions and barriers, hence promotes both domestic private investors and foreign direct investment in the region.

However the disadvantage of regional integration is that some countries may lose their national sovereignty by becoming more reliant on the trading bloc because they would have to give up some control over their fiscal and monetary policies or trade policies. The country would look to the trading bloc for imports and would only export to countries within the bloc. The governments of the countries might begin to look to the bloc for leadership, thus losing it identity.

2.3 Empirical Literature

A considerable amount of work has been done on the relationship between private and public investment in terms of 'crowding in' and 'crowding out' as the major focus of the analysis. Other studies have focused on the effects of regional integration on private investment in various regions.

Private investment in developing countries is commonly restricted by the availability of bank credit. This is because of limited financing and also the price mechanism is not allowed to operate smoothly. According to empirical study done by Green and Villanueva (2006) using the double logarithmic form of OLS (Ordinary Least Square), they investigated the determinants of private sector investment over a period of 1975-2005. The results from the study indicated that both the availability of credit and foreign exchange had significantly positive effects on private investments, confirming the result in most empirical studies where an increase in the real credit to private sector encourages private investment. A negative impact of exchange rate depreciation investment was also found to crowd in private investment.

Willem (2011), carried out a study on regional integration, growth and convergence with an aim of establishing how regional integration leads to convergence and growth amongst the developing countries. Using the standard growth model, the findings revealed that regional integration increases trade and foreign direct investment increases economic growth through the effects of increased trade and investment on growth.

Using time series regression analysis, Anwer and Sampath (1999) assessed the relationship between investment and sustainable economic growth for 90 countries using data from World Bank for the period 1960-1992. The study employed unit root and cointegration technique and Granger causality test to determine the long run relationship and direction of causality between GDP growth and investment for 90 countries. They found that no cointegration between investment and GDP growth for 25 countries and cointegration for 25 countries.

In a study to examine the relationship between private investments and growth in Zimbabwe, Jecheche (2010) used annual data for 1990-2009 and verified private investment behavior and its link to growth using VECM (vector correction mechanism) econometric technique. The results revealed that the private investment was a critical determinant of growth and public

investment appeared to provide long-run support for private investments and growth. The study also showed that adverse shocks such as deteriorating terms of trade could have long-lasting growth effects, while the impact of credit to the private sector was short-lived.

Okorie (2013) conducted a study to investigate the impact of private sector credit on private domestic investment in Nigeria using the error correction model technique. The study found out that an increase in private sector credit though not statistically significant leads to increase in private domestic investment. The non statistical significance of private sector credit showed that there was need for increase in private sector credit in the Nigerian economy.

Menjo and Kotut (2012) investigated the effects of fiscal policy on private investment and economic growth in Kenya. The study employed a time series data from 1973 to 2009. The method of Two stage Instrumental variable estimation was employed to perform regression analysis. The results showed that fiscal policy impacts on private investment and private investment plays a major role in the determination of the economic growth in Kenya. The recommendation from the study was that government spending be re-examined so as to eventually make it complementary to investment, more credit channeled to the private sector, and finally designing of appropriate policies that deal with the current high domestic public debt and budget deficit.

Geda and Kibret (2002) conducted a country level study in COMESA region on Regional Economic Integration in Africa. Their findings revealed that the participation of the private sector in the region is hampered by lack of government resources to ensure full participation. The establishment of specific government entities would promote and administer economic integration at a country level and therefore enhance the effectiveness of regional block.

Asante (2000) conducted a study to analyze the determinants of private investment in Ghana using time series and cross sectional data. The results showed that macroeconomic instability was a major obstacle in smoothing the path of private investment. They also proved that both private and public investment were complementary and suggested that the government should develop infrastructural based economy to boost private sector. Aschauer (1989), claims that the positive influence of public investment towards private investment can be explained by

the public capital hypothesis and provides empirical evidence in favor of this hypothesis in United States.

Lesotlho (2006) carried out a study on the determinants of private investment in Botswana. The study used a methodology that combined the static OLS with the co-integration and error correction model procedures to establish both the short-term and long-term effects simultaneously. The results of the study showed that macroeconomic factors affected private investment both in the short-term and in the long-term. The short-run variables were public investment, bank credit to the private sector and the real interest rate while the long-run variables were GDP growth and real exchange rates. The study indicated that real output growth was positive and statistically significant determinant of private investment in Botswana in the long-run. The findings showed that public investment crowds-out the private sector investment. The real exchange rate in the research measured the effect of exchange rate policy on private investment. The results proved that an appreciation of the real exchange rate would positively affect private investment in the long-term. The real interest rate had a positive and statistically significant effect on the private investment.

Najarzadeh and Shanhaghi (2006), conducted a study on the effects of regional integration on foreign direct investment in MENA countries during 1995-2000. The results from the study showed that regional integration among Islamic countries of MENA would increase the volume of foreign direct investment among the countries. This was attributed to more cooperation among the countries in the region.

Therefore the empirical studies reviewed in this study have made useful contribution towards understanding the importance of private investment in achieving economic growth. However most of them focus mainly on the determinants of private investment in various countries while other studies are based on effects of regional integration on FDI but none of these studies has captured the effect of regional integration on domestic private investment. It is therefore on these grounds that this study seeks to fill the gap by examining the effect of regional integration on private investment in the East African Community.

2.4 Theoretical Framework

The theory of flexible accelerator has been developed in various forms by Chenery (1952) and Koyck (1954). The approach by Koyck was chosen for this study since it is based on the

assumption that investment by firms is a fraction of the difference between the actual level of capital and the desired level of capital hence it is aligned to Jorgenson's idea on the flexible accelerator. The Koyck lag model assumes that the firm's investment level in each period is a fraction $(1-\lambda)$ of the gap between its existing level of capital and its desired level.

This approach assumes that the actual capital stock depends on all past output levels with weights declining geometrically. It can therefore be illustrated as follows:

$$K_t = v(1-\lambda)\left(Y_t + \lambda Y_{t-1} + \lambda^2 Y_{t-2} + \cdots \lambda^n Y_{t-1}\right) \quad (2.4)$$

Where, $0 < \lambda < 1$. If there is no change in income and it is equal to $\bar{Y}$ the expected volume of output also remains unchanged, then

$$\bar{K} = v\,(1-\lambda)\,(\bar{Y} + \lambda\,\bar{Y} + \lambda^2\,\bar{Y} + \ldots\ldots\ldots\ldots \lambda^n\,\bar{Y})$$

$$= v(1-\lambda)\bar{Y}(1+\lambda+\lambda^2+\ldots\ldots\ldots+\lambda^n) \quad (2.5)$$

Where $(1+\lambda+\lambda^2+\ldots\ldots\ldots+\lambda^n) = 1/(1-\lambda)$ are the weights in geometric series and equation (2.5) becomes:

$$\bar{K} = v\,\bar{Y}\,(1-\lambda)^*\,1/(1-\lambda)$$

Given that $\bar{K}=vY$ and if equation (2.4) is valid, then K_{t-1} is also true. Therefore we can write equation (2.4) as

$$K_{t-1} = v\,(1-\lambda)\,(Y_{t-1} + \lambda^2\,Y_{t-2} + \lambda^3\,Y_{t-3} + \ldots\ldots\ldots\ldots \lambda^n\,Y_{t,n})$$

Multiplying by λ we have

$$\lambda K_{t-1} = v\,(1-\lambda)\,(\lambda\,Y_{t-1} + \lambda^2\,Y_{t-2} + \lambda^3\,Y_{t-3} + \ldots\ldots \lambda^{n+1}\,Y_{t,n-1} \quad (2.6)$$

Subtracting equation (2.6) from (2.4) we get

$$K_t - \lambda\,K_{t-1} = v\,(1-\lambda)\,(Y_t + \lambda^{n+1}\,Y_{t,n-1}).$$

Since the term λ^{n+1} tends to zero, the above equation becomes

$$K_t - \lambda\,K_{t-1} = (1-\lambda)\,v\,Y_t$$

$$K_t = (1-\lambda)vy_t + \lambda\,K_{t-1} \quad (2.7)$$

This process of rewriting equation (2.4) as equation (2.7) is called the Koyck transformation. Net investment is the change in the stock of capital, $K_t - K_{t-1}$. Therefore we subtract K_{t-1} from both sides of the equation to get the expression of net investment

$$K_t - K_{t-1} = (1-\lambda)\,v\,Y_t + \lambda\,K_{t-1} - K_{t-1}$$

$$I_{n,t} = (1-\lambda)\,v\,Y_t + K_{t-1}(\lambda-1)$$

$$I_{n,t} = (1-\lambda)vY_t - (1-\lambda)K_{t-1} \quad (2.8)$$

The net investment $(K_t - K_{t-1})$ is called the distributed lag accelerator which is inversely related to the capital stock of the previous period and is positively related to output level. To convert

net investment to gross investment we add depreciation (D_t) to both sides of equation (2.8) to get,

$$I_{n,t} + D_t = (1-\lambda)v\ Y_t - (1-\lambda)\ K_{t-1} + D_t \quad (2.9)$$

Depreciation is assumed to be proportional to last year's capital stock and is estimated by $D_t = \delta K_{t-1}$. By adding this to equation (2.9), gross investment ($I_{g,t}$) is:

$$I_{g,t} = (1-\lambda)\ v\ Y_t - (1-\lambda)\ K_{t-1} + \delta K_{t-1}$$

$$= (1-\lambda)\ v\ Y_t - [(1-\lambda) + \delta]\ K_{t-1}$$

$$I_{g,t} = (1-\lambda)vY_t - (1-\lambda\delta)K_{t-1} \quad (2.10)$$

This equation represents the flexible accelerator principle. It suggests that net investment is some fraction of the difference between planned capital stock and actual capital stock in the previous period. The coefficient $(1-\lambda)$ tells us how rapidly the adjustment takes place. If $\lambda=0$, then adjustment takes place in the unit period.

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2.5 Conceptual Framework

The conceptual framework shows the independent variables which include: openness, credit to private sector, fiscal deficit, public investment, real GDP per capita, and nominal interest rates. The intervening variables are variables which may affect the model but are not controlled for and they include: political instability, government policies and external shocks. included the political instability, government policies corruption and external shocks. The study had the private investment as the only dependent variable. Trade openness was expected to influence private investment either positively or negatively through the intra-EAC exports, imports and GDP depending on a country. The domestic credit to private sector was expected to have a positive effect on private investment. Fiscal deficit was expected to have a negative relationship with private investment since the investible funds that would otherwise be available for private investment may be diverted to government consumption expenditure.

Public investment on the other hand may influence private investment either positively or negatively in that an increase public infrastructural investment by one unit may lead to more than proportionate increase in private investment while an increase in government non-infrastructural investment may have a negative impact on private investment. The availability of credit to private sector was expected to have a positive effect on private investment.

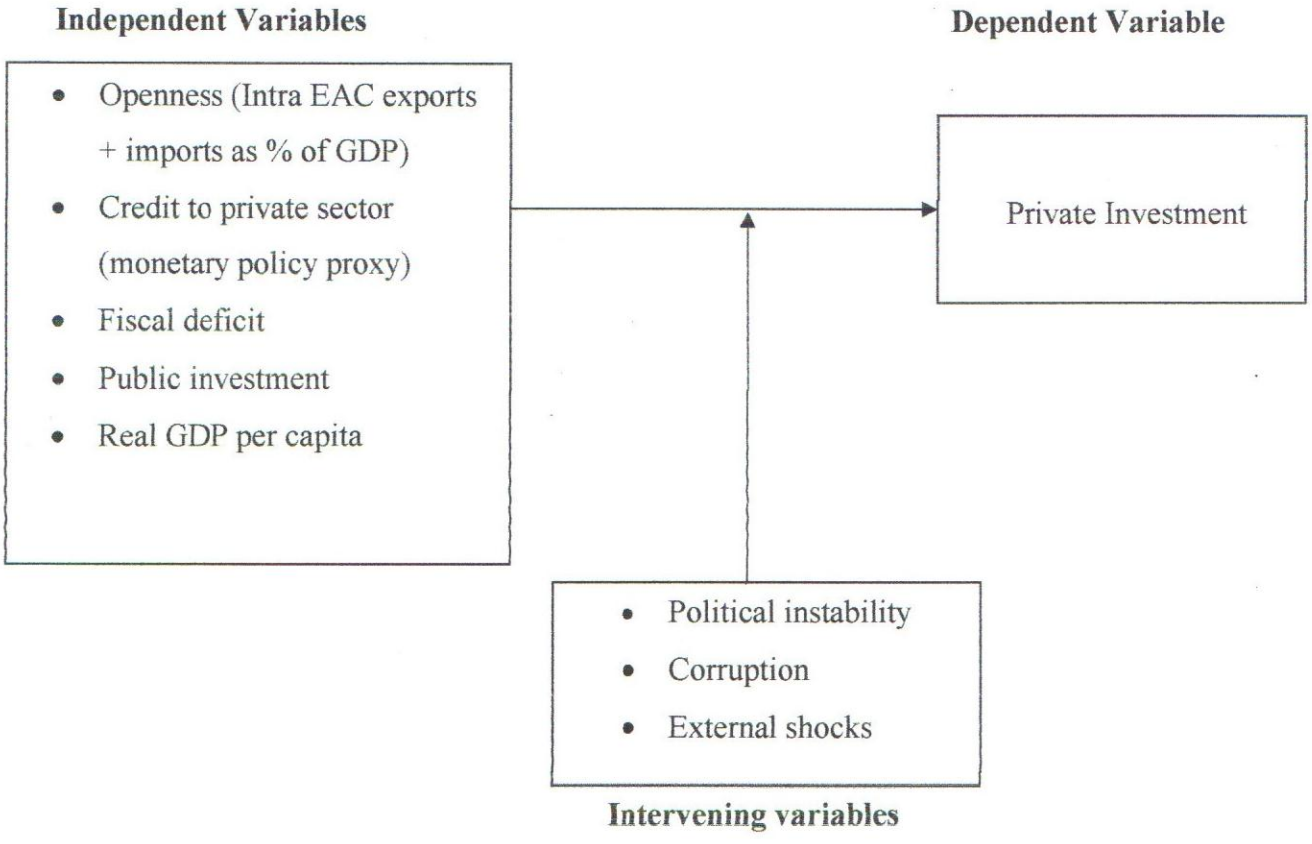


Figure 2.1: Conceptual Framework

Source: Author (2016)

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research design, the model upon which the study was based, variables in the model, sources of data, methods of analyzing data and presentation of findings.

3.2 Research Design

The study used historical research design as it seeks to establish the effect of regional integration on private investment in EAC over the period 1980-2014. This research design was chosen because it enabled the researcher to capture the trend in private investment among the EAC countries: Kenya, Uganda, Tanzania Rwanda and Burundi.

3.3 Study Area

The East African Community (EAC) is the regional intergovernmental organization of the Republics of Burundi, Kenya, Rwanda, Tanzania, Uganda and Southern Sudan, with its headquarters in Arusha, Tanzania. The EAC was first formed in the year 1967 by the three heads of states of Kenya, Uganda and Tanzania and it collapsed in 1977 and was later revived in 1999. The Republic of Rwanda and the Republic of Burundi acceded to the EAC Treaty on18th June 2007 while Southern Sudan joined in the year 2015. The Southern Sudan was not chosen for the study given that it joined the East African Community region recently hence its' impact in the region had not been realized.



Figure 3.1: Map of Study Area

Source: NystromHorff Jones Education Division (2015)

3.4 Data Type and Sources

The data employed in this study was quantitative and it was collected from secondary sources such as World Development Indicators (WDI) (2014) database, World Economic Outlook of the World Bank and the East African Community Facts and Figures.

3.5 Data Analysis and Presentation

This study used descriptive methods to show the relevance of the information as well as tables and graphs to present the results of the analysis. The data for the study was quantitative therefore it was analyzed using the STATA statistical package so as to show significance of the variables in the study in influencing private investment.

3.5.1 Panel Unit Root Test

The unit root test was carried out to establish the stationarity of a data series. This test is necessary because failure to do this may lead to generation of spurious results. A panel unit root test for panel data developed by Levin, Lin and Chu (2002) was employed in the study since it requires that the ratio of the number of panels to time periods tend to zero asymptotically and it is suitable for data sets with small number of panels like in this study.

The null hypothesis is that each individual time series contains a unit root against the alternative that each time series is stationary. The model is specified as;

$$\Delta Y_t = \mu_i + \rho Y_{t-1} + \sum_{l=1}^{pi} \theta_{iL} \Delta Y_{it-L} + \alpha_{mi} d_{mt} + \varepsilon_{it} \qquad m=1,2,3 \qquad (3.1)$$

The panel unit root test evaluates the null hypothesis of H_0: $\rho = 0$, for all i, against the alternative hypothesis H_1: $\rho < 0$ for all i. The lag order ρi is unknown and is allowed to vary across individuals. The panel unit root test is implemented as follows; the Augmented Dickey-Fuller (ADF) regressions are run for each individual *i*. The orthogonalized residuals are then generated and normalized. Model (3.2) below was estimated;

$$\Delta Y_t = \rho Y_{t-1} + \sum_{L=1}^{pi} \theta_{iL} \Delta Y_{it-L} + \alpha_{mi} \partial_{mt} + \varepsilon_{it} \qquad (3.2)$$

where ρi represents selected lag orders.

The two orthogonalized residuals are generated by the following two auxiliary regressions;

$$\Delta Y_{it} = \sum_{L=1}^{pi} \theta_{iL} \Delta Y_{it-L} + \alpha_{mi} \partial_{mt} + \mu_{it} \qquad (3.3)$$

$$\Delta Y_{it-1} = \sum_{L=1}^{pi} \theta_{iL} \Delta Y_{it-L} + \alpha_{mi} \partial_{mt} + W_{it-1} \qquad (3.4)$$

When the difference operator is incorporated it becomes;

$$\Delta Y_t = \varphi Y_{t-1} + \mu_t \qquad (3.5)$$

The residuals are saved as $\tilde{u}_{it}$ and $\acute{w}_{it-1}$ respectively. To remove the heteroscedasticity, the residuals $\tilde{u}_{it}$ and $\acute{w}_{it-1}$ are normalized by the regression standard error from the ADF regression.

3.5.2 Panel Co-integration Test

Panel co-integration test was carried out to identify whether there exist a long run relationship between private investment and the explanatory variables. The method suggested by Pedroni (1995, 1999) was used to run the panel co-integration test on the model. Pedroni (1999) extended the procedure of residual-based panel co-integration tests that he introduced in Pedroni (1995) for the models, where there are more than one independent variable. He proposes several residual-based null of no co-integration panel co-integration test statistics.

The Pedroni cointegration test was used in this study since it allows for considerable heterogeneity among the individual members of the panel in the short-run while in the long-run information is selectively pooled across the panel, Pedroni (1999).First, the regression residuals from the hypothesized co-integrating regression were computed as follows:

$$Y_{i,t} = \propto_i + \delta_i + \beta_{1i} X_{1i,t} + B_{2i} X_{2i,t} + \cdots + \beta_{Mi} X_{Mi,t} + \varepsilon_{i,t} \ldots \quad t=1,\ldots,T:\ I=1,\ldots,N \tag{3.6}$$

where;

T - is the number of observations over time

N- denotes the number of individual members in the panel

M - is the number of independent variables.

Here Xand Y were found to be integrated of order one. The slope coefficients $\beta_{1i}, B_{2i} \ldots \beta_{Mi}$ and the specific intercept $\propto_i$ vary across individual member of the panel.To compute the relevant panel co-integration test statistics the panel co-integration regression in the above equation should be estimated for each cross section. The first difference of the original series was taken and the residuals of the following regression estimated so as to compute panel ρ and the t statistic.

$$\Delta Y_{i,t} = b_{1i} \Delta X_{1i,t} + b_{2i} \Delta X_{2i,t} + \cdots b_{Mi} \Delta X_{Mi,t} + \mu_{i,t} \tag{3.7}$$

The null hypothesis of no co-integration for the panel co-integration test is the same for each statistic,

H_0: $\alpha_i=1$ for all i= 1,... N,

While the alternative hypothesis for the between-dimension-based statistic is:

H_1: $\alpha_i <$ for all i=1,.....N,

Where a common value of $\alpha_i = \alpha$ is not required. The alternative hypothesis for within-dimension-based statistic is given by:

H_1: $\alpha_i <$ for all i=1,....N, assumes a common value for $\alpha_i = \alpha$.

Under the alternative hypothesis, the panel co-integration test statistics considered in this study diverges to negative infinity. Thus, the left tail of the standard normal distribution is used to reject the null hypothesis.

3.5.3 Hausman Test

Hausman (1978) test specification posits that either fixed effect or random effect model is appropriate based on the given data and helps to find out the parameters to be estimated in the

model. Hausman test was carried out in this study so as to ascertain whether to employ fixed effects model or random effects model. The test basically tries to establish whether the error terms are correlated with the regressors or not. The null hypothesis states that explanatory variables are uncorrelated with variation across the region while the alternative one states that explanatory variables are correlated with variation across the region. When null hypothesis is true, then RE is more efficient than FE model.

3.6 Empirical Model Specification

The neoclassical flexible accelerator model has been the most widely accepted general theory of investment behavior, and empirical tests of the model from industrial countries have been quite successful, for example, the studies by Jorgenson (1967) and Clark (1917). However, it has generally been difficult to test this model in developing countries, because the key assumptions such as perfect capital markets and enormous role of government in capital formation in these countries makes the model inappropriate. In addition, data for certain variables such as capital stock and real wages are either unavailable or inadequate in developing countries. Accordingly, research has proceeded in several directions, in the process identifying a number of economic variables that might be expected to affect private investment in developing countries. These efforts, however, have not yet produced a suitable model of investment behavior in developing countries.

Therefore following the review of literature in this study and specifically the flexible accelerator model, a modified private investment model was derived from the flexible accelerator model to include openness, domestic credit to private sector, public investment and real GDP per capita so as to permit for the study of the effect of regional integration on private investment in EAC.

The modified model of flexible accelerator theory included variables such as GDP growth, public investment and real interest rates as determinants of private investment. The basis of this is to overcome the limitation of data thus the variables included in the model contain observable characteristics.

A more general form of the private investment model modified specifically for this study is:

$$PI_{i,t} = \propto_i + \beta_i X_{i,t} + v_i + \varepsilon_{i,t} \qquad (3.8)$$

where;

PI- is the Private investment

v_i - are the unobserved country characteristics that are constant over time and influences private investment

ε_i -is the stochastic error term with constant variance and zero mean

Subscripts i and t - denote country and time respectively

$\propto_i$ and β_i - are parameters that were estimated

X_i - stands for a vector of explanatory variables that influence private investment which include openness, domestic credit to private sector, fiscal deficit, public investment, real GDP per capita growth and nominal interest rates.

$$X_i = f(OPN, CRP, FD, PBI, RGDPPC) \quad (3.9)$$

Thus, a private investment model can be specified in functional form as:

$$PI = f(OPN, CRP, FD, PBI, RGDPPC) \quad (3.9.1)$$

where,

PI = Private investment

OPN = Openness of the economy (Intra-EAC imports + exports/GDP)

CRP = Credit to private sector

FD = Fiscal deficit

PBI = Public investment

$RGDPPC$ =Real Gross Domestic Product Per Capita

Following the earlier works of Ouattara (2004), natural logs of the variables will be taken for the estimation of the model so as to allow for regression coefficients to be treated as elasticities. Therefore the basic regression equation that was used to investigate the effects of regional integration on private investment in EAC is given by equation (3.8) below:

$$\ln PI_{i,t} = \alpha_0 + \alpha_1 \ln(OPN)_{i,t} + \alpha_2 \ln(CRP)_{i,t} + \alpha_3 \ln(FD)_{i,t} + \alpha_4 \ln(PBI)_{i,t} + \alpha_5 \ln(RGDPPC)_{i,t} + \varepsilon_{i,t} \quad (3.9.2)$$

Log transformation is necessary to reduce the problem of heteroskedasticity because it compresses the scale in which the variables are measured, thereby reducing a tenfold difference between two values to a twofold difference (Gujarati, 2007).

3.7 Justification for Panel Approach

The use of panel data in estimating common relationships across countries is appropriate because: first, it allows the researcher to identify country-specific characteristics that control for missing or unobserved variables (Judson and Owen, 1996). Secondly, panel data estimation combines time series and cross-sectional observations hence allows for more degrees of freedom due to large sample size especially when relatively large number of regressors are used. Since panel data relate to individuals, for example countries over time, heterogeneity is bound to exist in these units. Thirdly, the panel data technique of estimation takes such heterogeneity explicitly in to account by allowing for individual specific variables. Finally, panel data estimation may avoid the problem of multicollinearity caused by high correlation of explanatory variables and minimizes estimation bias.

3.8 Justification of Variables, Measurement and Sources of Data.

The data for this study were collected from the following secondary sources: International Financial Statistics, World Development Indicators (2014) of the World Bank, World Economic Outlook (WEO) Data.

Private Investment (% of GDP) - Private investment was measured as the totality of domestic private investment and foreign direct investment and expressed as a percentage of GDP over the study period. Private investment is measured by the incremental capital output ratio. Data for this variable was obtained from World Economic Outlook (2014).

Openness to Trade – This is a proxy for regional integration, the trade to GDP ratio measures country's openness with regard to intra-EAC trade. It is given by the intra-EAC exports plus imports as a share of GDP at current prices. The reduction of trade barriers through liberalization creates an advantage to the export sector and thus improves the current account balance and increases investment incentives. In addition, with import opportunities, the available quality and quantity supply of inputs for production increases with increased competitiveness and productivity. Therefore, the increased participation in intra-EAC trade by the partner countries is expected to contribute to faster economic growth in the region. The data were obtained from EAC partner states (EAC Facts and Figures 2014).

Credit to Private Sector (%GDP) – it is an indicator and a measure of financial development through the financial resources provided to the private sector by financial

intermediaries to facilitate investment and economic growth. Increase in credit to the private sector can serve as an incentive to the private sector. Hence the potential private investors can increase their investment level all other factors being equal. Therefore a positive effect of credit to private sector on private investment in EAC is expected. The credit to the private sector was chosen because it is more effective than the interest rate channel in capturing the effectiveness of monetary policy (Dailami and Giugale, 1991). Data for this variable were obtained from the World Development Indicators (2014).

Fiscal Deficit (% of GDP) – This variable was measured by the difference between the total government revenue and the total government expenditure. Fiscal deficit is an indication of the total borrowing needed by the government so as to finance its budget which may have exceeded the available funds. High levels of fiscal deficit are harmful to the economy because it may be an indication that the government will increase taxes in the future in order to service the government debt reduces the aggregate savings which raises the interest rates in the financial institutions hence may reduce the level of private investment in the region. The coefficient for this variable is expected to be negative. Data for this variable were obtained from World Development Indicators (2014).

Public Investment (% of GDP) – Public investment indicates the investment activity of the government. Complementarities between private and public investment may arise especially in the input-output relationship whereby the output of one sector is used as input by another sector (private sector). In addition, public investment can spur private output through increased demand for inputs and other services. It may also augment general resource availability by expanding aggregate output and savings. On the other hand when public investment is financed by market borrowing, it imposes restrictions on resources allocated to the private sectors and hence negatively affects private investment. Therefore the effect of public investment on private investment is ambiguous. Data for this variable were obtained from World Economic Outlook (2014)

Real GDP per capita Growth- An indication for real output growth rates of the economies of EAC countries. According to the neoclassical theory of investment, there is a positive relationship between private investment and growth rate of output. The real GDP per capita growth was used to capture the aggregate demand conditions in the EAC countries and this variable is expected to have a positive effect on private investment through the accelerator

effect. Given that investment is in itself a key factor contributing to real GDP growth (Ghura and Goowin, 2000. Data for this variable were obtained from World Development Indicators (2014).

3.9 Post Estimation Diagnostic Tests

Post-estimation panel diagnostic tests were carried out in this study before estimating the models in equation (3.9). These tests include: cross sectional dependence, autocorrelation and test for heteroscedasticity.

3.9.1 Test for Cross-Sectional Dependence

Testing for cross-sectional dependence was necessary because macro panels with long time series (over 20-30 years) suffer with the problem of cross-sectional dependence compared to micro panels with few years (Baltagi, 2005). Cross sectional dependence leads to efficiency loss for least square estimators and hence render those conventional t-tests and F-tests that use variance covariance estimators invalid. This study used the Breusch- Pagan Lagrange multiplier approach test. The tests null hypothesis posits that there exists no correlation of residuals across the entities.

3.9.2 Test for Autocorrelation

The presence of autocorrelation complicates the application of statistical tests because it reduces the number of independent observations. According to Wooldridge (2006), when errors are correlated across time, it is called Autocorrelation. For example, when $\mu_{t-1}>0$, then the error in the next period of time or μ_t could be positive too, on average. Therefore, corr(μ_t, μ_{t-1}) >0, which means these errors are serial correlated.

According to Drukker (2003), serial correlation in linear panel data makes the standard errors to be biased and therefore the results will be less efficient. This could lead to the misleading confidence intervals and hypothesis tests. Wooldridge (2006) was employed in this study.

3.9.3 Test for Heteroscedasticity

Heteroscedasticity can be caused by errors of measurement or if there is sub-population differences. Even though heteroscedasticity does not lead to biased parameter estimates, it can cause standard errors to be biased and this could lead to biasness in tests statistics and confidence intervals. Therefore this study employed Modified Wald Test for GroupWise

Heteroscedasticity. This test is appropriate when the assumption of normality is violated, especially in asymptotic terms. The tests null hypothesis states that: $\delta_i^2 = \delta^2$, for all i=1,....N_g, where N_g is the number of cross-sectional units.

CHAPTER FOUR
ANALYSIS AND DISCUSSION OF RESULTS

4.1 Introduction

This chapter presents the results and discussions on the effect of regional integration on private investment in East African Community for the period 1980-2014. The first section presents the descriptive analysis which is composed of the descriptive statistics and correlation matrix. Secondly, it presents the unit root test using Levin-Lin-Chu which was conducted so as to determine the stationarity of variables in order to avoid the problem of spurious results. The chapter then presents cointegration results using Pedroni (1999) test which was carried out to establish the long-run relationship among variables. Finally, panel data estimation results using random panel estimation model is presented.

4.2 Descriptive Analysis

4.2.1 Descriptive Statistics

The results from Table 4.1 which presents the descriptive statistics shows that openness of the economy and public investment has relatively larger variation compared to other variables in the study. The openness of the economy ranges between -0.471 and 1.456 while public investment ranges between 1.504 and 3.451. This implies that intra-EAC openness has relatively high volatility compared to other variables. This may suggest that developments outside the EAC region may be volatile since they are influenced by other exogenous factors such as the macroeconomic climate and policies made by other regional blocs since most of the EAC member countries belong to more than one regional bloc.

The public investment is the other variable with relatively high volatility as shown by its standard deviation and range. This is because most of the investments by the public sector are controlled by the government and hence it is not independent. Therefore it implies that the government policies influences public investment since it determines whether the investments to be undertaken are developmental or non-developmental.

Table 4.1: Descriptive Statistics

Variable	*LnPI*	*LnOPN*	*LnCRPS*	*LnFD*	*LnPBI*	*LnRGDPPC*
Obs	175	175	175	175	175	175
Mean	2.248	.872	2.184	1.981	2.629	2.059
Std.deviation	.212	.385	.223	.240	.354	.209
Variance	.0450	.149	.0497	.058	.126	.044
Skewness	-.702	-1.379	-.814	.016	-.179	-.183
Kurtosis	3.248	4.779	3.384	2.539	3.680	2.798
Minimum	1.589	-.471	1.463	1.333	1.574	1.504
Maximum	2.74	1.456	2.617	2.562	3.451	2.610

Where,

LnPI= natural log of private investment

LnOPN= natural log of intra-EAC openness

LnCRPS= natural log of domestic credit to private sector

LnFD= natural log of fiscal deficit

LnPBI= natural log of public investment

LnRGDPPC= natural log of real GDP per capita

On the other hand, real GDP per capita has the smallest variation compared to other variables in the study. This may imply that although the growth rate of population within the EAC region is high, its significance on private investment in the region is negligible. The domestic credit to private sector and the fiscal deficit have almost the same variation. For the credit to private sector, it may imply that most of the funds used for investment by the private sector are obtained from other sources other than the banking institutions hence not controlled by the central banking authorities of the respective governments.

4.2.2 Correlation Matrix

The correlation matrix presents the correlation coefficients between private investment and the explanatory variables in the study. A correlation coefficient is used to measure the degree of linear association of any two variables whereby the values ranges from -1 and 1. A value of zero indicates absence of correlation while a value of 1 and -1 indicate a perfect positive and perfect negative correlation respectively. The correlation results are presented in Table

4.2 where diagonal matrix has its values being unity (1.00) which implies that a variable is perfectly correlated with itself. The results from the table shows a strong positive correlation of (0.8361) between private investment and domestic credit to private sector in EAC region and it is statistically significant at 1 percent level of significance. These results suggest that domestic credit to private sector is positively related to private investment and therefore an increase in the credit to private sector may lead to increase in private investment in the region.

Table 4.2: Correlation Coefficient Results for the Relationship between Private Investment and the Explanatory Variables

	ln *pi*	ln *opn*	ln *crps*	ln *fd*	ln *pbi*	ln *rgpc*
ln *pi*	1.0000					
ln *opn*	0.7964**	1.0000				
ln *crps*	0.8361**	0.7597**	1.0000			
ln *fd*	-0.7232**	-0.7859**	-0.6349**	1.0000		
ln *pbi*	-0.6621**	-0.6399**	0.7276**	-0.7908**	1.0000	
ln *rgpc*	0.7182 **	0.7027**	0.6806**	-0.6669**	0.6970**	1.0000

** Means that the Correlation is significant at 1% level (2-tailed test).

Source : Author (2015)

A fairly strong and significant positive correlation of 0.7964 exists between the intra-EAC openness and private investment and it is significant at 1% level. This implies that the level of private investment in the EAC region improves as the region expands the volume of trade among its member states hence becomes more open. There is a relatively strong negative correlation of -0.7232 between fiscal deficit and private investment in the region. This suggests that high levels of fiscal deficit lead to deterioration of private investment in EAC. This is because both the public and private investments compete for the same investment resources and this is even worse when the public sector engages itself in non-infrastructural developments.

4.3 Diagnostic Tests

4.3.1 Panel Unit Root Test

The non-stationarity of time series data is one of the econometric problems and therefore conducting panel unit root test is a necessary step prior to estimation of the model in the study so as to determine the order of integration of the variables. This is because failure to do so may lead to generation of spurious regression results and inconsistent estimates hence meaningless inferences. Therefore the study employed Levin-Lin-Chu (LLC, 2002) method since it is suitable for data sets with small number of panels as is the case for this study. The test's null hypothesis is that each time series contains a unit root while the alternative one is that each time series is stationary. The unit root test results are shown in Table 4.3 below.

Table 4.3: Unit Root Test Results using Levin-Lin-Chu

Variables	LLC test at level	LLC P-value at Level	LLC test at First difference	LLC P-value at first difference	Order of integration
Ln Pi	-4.6867	0.1393	-9.2004	0.0000	I(1)
	-1.0833		-6.0523		
Ln Opn	-4.8729	0.1252	-10.2594	0.0000	I(1)
	-1.1492		-6.7780		
Ln Crps	-4.7232	0.0851	-10.0756	0.0000	I(0)
	-1.3718		-.6.7175		
Ln Fd	-4.0252	0.3202	-9.4246	0.0000	I(1)
	-0.4673		-6.0836		
Ln pbi	-4.5145	0.2133	-10.6504	0.0000	I(1)
	-0.7949		-6.4948		
Ln Rgdppc	-4.5093	0.1168	-10.243	0.0000	I(1)
	-1.1914		-7.1452		

The results from Table 4.3 reveal that all the variables in the study except the domestic credit to private sector were non-stationary at level. The variables were then differenced once and they became stationary, meaning that the variables are integrated of order one [I(1)].

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4.3.2 Cointegration Test

Having conducted the panel unit root test and established that the series are non stationary that is I(1) except the domestic credit to private sector, the next step was to test whether there exist long-run relationship between the variables in the study. Therefore cointegration test was carried out using Pedroni (1999) cointegration test so as to establish whether two or more non-stationary variables move together in the long-run. The cointegration results are presented in Table 4.4 below.

Table 4.4: Cointegration Test Results

Within dimension		**Between dimension**	
Test statistics		Test statistics	
Panel v-statistics	0.4525	Group rho-statistic	-0.2286
Panel rho-statistics	-0.8631	Group P-statistic	-3.3768
Panel PP-statistics	-3.169	Group ADF statistic	-4.135
Panel ADF statistics	-3.487		

(Significance level 5%)

From the results in the table, except the variance ratio statistic test, the results of the within-group test and the between-group tests have a negative sign. Therefore the cointegration results show that all the six test statistics reject the null hypothesis of no cointegration at 5% level of significance. Hence it is established that long-run relationship exists between private investment and explanatory variables in the study for the panel of East African Community countries.

Both the PP (-3.327) and ADF (-3.487) statistics shows that the statistic values are higher than the critical value except the panel v-statistics. The Pedroni cointegration test results therefore indicate that there is a longrun relationship between private investment and explanatory variables.

4.3.3 Hausman Test

Hausman (1978) proposed a test used to decide whether to use Random effect (RE) or Fixed effects (FE) model. The null hypothesis of the test is that the preferred model is the RE

against the alternative FE. According to the model, if the country specific effects are correlated with the regressors, then the RE estimator is inefficient and inconsistent while the FE is consistent. Therefore to test the efficiency of the RE estimates, Hausman and Taylor (1981) suggested a comparison of the RE and FE estimates. Hausman test was therefore carried out in the study and the results are presented in Table 4.5.

Table 4.5: Hausman Test Results

Variables (V)	**(b) Fixed**	**(B) Random**	**(b-B) Difference**	**Std.Error**
Ln Opn	0.2933649	0.2912602	-0.0021047	0.0113377
Ln Crps	0.2722363	0.2687407	0.0043956	0.010458
Ln Fd	-0.1838637	-0.1801715	-.0036922	0.0068145
Ln Pbi	-0.34099186	-0.3365829	-0.0043357	0.0151671
Ln Rgdppc	0.2484363	0.2459337	-.0025026	0.0112657
χ^2 (5) = 0.32			Prob> χ^2 = 0.41	

From the Hausman test results, the p-value 0.41 which is greater than 0.05 and therefore we accept the null hypothesis and conclude that the country specific effects are uncorrelated with the regressors and hence we choose the RE model.

4.4 Regression Analysis

The regression results are presented in Table 4.6 and have been tested for the following econometric problems: cross-sectional dependence, heteroscedasticity and autocorrelation. All of which were absent. The findings of the study are explained as follows:

4.4.1 Effect of Intra-EAC Openness on Private Investment

Openness of the economy, as indicated by the regression results, has a positive and significant effect on private investment in the EAC at 1 percent level. When the openness of the economy is increased by one percent, it leads to 0.2913 percent increase in private investment in the region. This may imply that the volume of trade between the EAC countries is high and significant. This is further confirmed by UNCTAD (2013) where the EAC region

had high volume of trade compared to other economic communities in Africa. Since openness has been used in this study as a proxy for regional integration, it therefore implies that regional integration has a positive effect on private investment in East African Community. This may be due to the fact that trade liberalization in the region has led to the transfer of ideas and technological diffusion thus allowing for expansion of domestic industries and establishment of new firms within the region. The use of advanced technology enhances efficiency of investment hence increased production of output.

The positive sign of the coefficient also suggests that trade openness plays a significant role in improving private investment in EAC through boosting of exports and enabling easy access of imports among the member countries. These results are consistent with those of Asante (2000). It therefore means that the scope of association between private investment and regional integration increases with the level of integration. For example, when EAC was a customs union, the main area of interest was the elimination of tariffs and customs by each member country.

However, as the EAC integration deepened to common market, the interest of the private sector are mainly decided at regional level which include the free movement of factors of production, tax policies and investment regulations. Therefore lack of progress by the EAC countries in ensuring deeper integration may retard the interest of the private investors to extensively invest in the region. Deeper integration helps in reducing the transaction cost and therefore the cost of doing business becomes low in the region and this may motivate private investors to undertake huge investments.

Trade liberalization creates an enabling environment for private sector investment to take place due to the removal of trade barriers, free movement of factors of production and loose government policies regarding trade. Hence the respective governments within EAC should sustain policies that promote free trade so as to boost private investment in the region through the removal of tariffs which leads to efficiency in production and hence economies of scale.

4.4.2 Effect of Domestic Credit to Private Sector on Private Investment

From the regression results, the sign of the coefficient of domestic credit to private sector is positive and significant at 1 percent level and this conforms to a priori expectations. An increase in domestic credit to private sector by 1 percent leads to 0.2687 per cent increase in

private investment in the EAC region. This therefore implies that the monetary policies which have been put in place by the EAC facilitate credit to private sector which encourages the growth of the private sector.

These results are consistent with those of Mohan (2008) who found a positive correlation between monetary policy and investment. An example of India was given which had low growth initially but due to increase in gross domestic savings, the loanable funds were made available leading to increased private investment. According to the bank lending channel, it is assumed that monetary contraction decreases bank reserves and deposits and hence lowers the quality of bank loans available for investment.

The positive sign of the coefficient also suggests that government should reduce its domestic borrowing so as to enable the financial institutions have enough investment funds available to private sector who would in turn borrow and invest leading to economic growth in the region. The credit to private sector is a constraining factor to the growth of private investment in EAC and this may be because of less developed financial institutions and stringent financial regulations in the region.

According to Onodugo *et al.* (2013), most developing countries have limited access to credit facilities which may have been contributed by the inconsistent and inefficient government policies regarding the administration of credit to the private sector. Therefore EAC being in the category of LDCs means that the private sectors in the region do not have access to adequate funds to finance its investments.

4.4.3 Effect of Fiscal Deficit on Private Investment

The results of the estimated model show that the sign of the coefficient of fiscal deficit is negative (-0.1802) and statistically significant at 1 percent level. These results conform to the apriori expectations that lower budget deficits lead to higher levels of private investment. Therefore a 1 percent increase in fiscal deficit leads to 0.1802 percent decrease in private investment. This is an indication that fiscal deficit crowds out private investment in the region with a consequence of impeding economic growth.

These results are consistent with the findings by Asogwa (2013) and Isah (2012), who also found that budget deficits crowds out private investment. The crowding out effect of fiscal

deficit on private investment in EAC region may be contributed by the government policies regarding the financing of the deficit. These deficits are mainly financed through sale of bonds in the stock exchange market which decreases the loanable funds available for private investment due to the increase in lending rates. This leads to decline in private investment due to inefficient allocation of resources and therefore low economic growth in the region. The high levels of fiscal deficits can lead to increase in the level and volatility of inflation especially when there is lack of independence of the Central Bank since the government may resort to more printing of money. This therefore may lead to significant decline in the level of private investment. Large fiscal deficit also signifies macroeconomic instability and therefore private investors may not be willing to carry out huge investments in the region.

The large fiscal deficit may also be as a result of non-developmental expenditure due to servicing the existing debts in the EAC countries. According to Ram (1986), when the size of public expenditure is large, it will impede the growth of an economy since it reduces the efficiency of the private sector. When the government finances its deficit through borrowing from the domestic financial institutions, it retards the growth of the private sectors in the region which indicates the existence of financial crowding out.

4.4.4 Effect of Public Investment on Private Investment

The regression results show a negative significant relationship between public investment and private investment with the coefficient being (-0.3366). This implies that 1 percent increase in public investment leads to 0.3366 percent decline in private investment. The empirical literature gives inconsistent results concerning the effect of public investment on private investment. However, the results are consistent with the findings of Erenburg (1995) and Wai and Wong (1982).

According to Gwartney& Samida (2000), the negative impact of public investment on private investment is due to the effect of larger public sector which tends to lower the productivity of private sector. This may also be explained by the increase in government non infrastructural investment in the region given that infrastructural development by the government complements private investment.

The undesirable impact of public investment on private investment may have been contributed by the budget constraint in the region which makes the cost of inputs to increase

hence decline in the growth of output in the private sector since they compete for investment resources. The crowding out may be more significant if public investments are made in state enterprises that produce output complementary with the goods and services provided by private sector.

The Keynesian economists argue that the provision of public goods whereby no competition is expected from the private sector can lead to faster economic growth. On the contrary, the government expenditure on public goods may crowd out private sector investment hence may result in low levels of economic growth in the region. Therefore better policies should be put in place by the policy makers in the EAC region so as to ensure a balance between the two and this may enable the region to achieve progressive economic growth.

4.4.5 Effect of Real GDP Per capita on Private Investment

The real GDP per capita shows a positive effect on private investment and it is statistically significant at 1percent. It has a coefficient of (0.2459) which implies that an improvement in the real GDP per capita by 1 percent may lead to an increase in private investment by 0.2459 percent. The results obtained in this study are similar to those of Sakr (1993) as well as those of Green and Villanueva (1991) who found a positive relationship between GDP per capita growth and private investment.

The value of the adjusted R^2 is (0.8164) statistically significant indicating that the model had a good fit. This means that 81.64 percent of the variations of the dependent variable are explained by the variations in the explanatory variables.

4.5 Post Estimation Diagnostic Tests

4.5.1 Test for Cross-Sectional Dependence

Cross-sectional dependence refers to interaction between cross-sectional units and this can lead to efficiency loss for least square estimators. This test was done using the Breusch Pagan LM test of independence. The test's null hypothesis is that residuals are not correlated across entities. From the results, the p-value is 0.3273 which is greater than 0.05 and therefore the null hypothesis is accepted meaning that cross-sectional dependence is not present in the study.

4.5.2 Test for Heteroscedasticity

Test for heteroscedasticity was carried out in the study so as to establish whether the error terms exhibit constant variance across observations or not. The study employed the Modified Wald test for Groupwise Heteroscedasticity. The test's null hypothesis is that variance of error terms is constant. The results for Heteroscedasticity test are presented in Table 4.6. From the results, the p-value is (0.340) which is greater than 0.05 and therefore the null hypothesis is not rejected and the conclusion is that there was no heteroscedasticity.

4.5.3 Testing for Autocorrelation

Serial correlation test was carried out so as to establish whether the error terms of different time periods are correlated. The presence of serial correlation complicates the application of statistical tests because it reduces the number of independent observations and causes the standard errors of the coefficients to be smaller than they actually are. The Wooldridge (2006) test was used in this study and the results are presented in Table 4.6. From the results, (0.5931) which is greater than 0.05 and therefore the null hypothesis is accepted and the conclusion is that autocorrelation was not present.

Table 4.6: Long-run Regression Results of Regional Integration and Private Investment in EAC

Variable	Coefficient	Std .Error	Z Statistic	P Value
Ln Opn	0.2912602	0.0248928	11.70	0.000
Ln Crps	0.2687497	0.0228642	11.75	0.000
Ln Fd	-0.1801715	0.0532198	-3.39	0.001
Ln Pub	-0.3365829	0.0840969	-4.00	0.000
Ln Rgdppc	0.2459337	0.0297878	8.26	0.000
Const	0.129406	0.0411682	3.14	0.002
Adjusted R^2 =0.8164				
Breusch Pagan LM test of Cross sectional dependence			$Chi^2(10) = 8.614$ p-value= 0.3273	
Modified Wald test for groupwise heteroscedasticity			$Chi^2(10) = 5.816$ p-value= 0.3402	
Wooldridge Test for Autocorrelation			p-value= 0.5931	

4.6 Error Correction Model

After carrying out unit root test, all the variables in the model were found to be I(1). Therefore cointegration test was conducted using Pedroni (1999) and it was established that there was evidence of cointegration. The error correction model depicts the speed of convergence to equilibrium following exogenous shock. Equation (3.5) was therefore rewritten to include the error term as shown in equation (4.1).

$$\Delta PI_{t-1} = \alpha + \sum_{i=1}^{p} \Omega_i \, \Delta p_{t-i} + \sum_{i=0}^{p} \delta_i \, \Delta x_{t-i} + \gamma ECT_{t-1} + \varepsilon_t \qquad (4.1)$$

Where,

ECT – is the error correction term

Δ - is the difference operator

γ – is the error correction coefficient

The short-run model shows how the adjustment mechanism works to revert the deviations in each period to long-run equilibrium when it is subjected to exogenous shock. Theoretically, the coefficient of the error correction term should be negative and significant if disequilibrium is to be corrected in subsequent period and long-run equilibrium restored. On the other hand, a positive sign indicates movement away from equilibrium. The short-run regression results are shown in Table 4.7 below.

Table 4.7: Short-run Regression Results of Regional Integration on Private Investment in the EAC

Variable	Coeff	Std err	Z	p>/z/
Δln Opn	0.2335438	0.0343741	6.79	0.000
Δln Crps	0.1142607	0.0394855	2.89	0.004
Δln Fd	-0.1406437	0.0242067	-5.81	0.000
Δln Pub	-0.1807715	0.0532198	-3.39	0.001
Δln Rgdppc	0.0752103	0.0375335	2.00	0.045
ECT_{t-1}	-0.3355685	0.0839332	-4.00	0.000
Constant	0.5389554	0.2163021	2.49	0.013
Adjusted R^2 = 0.6083				

The regression results in Table 4.7 indicate that openness of the economy has a positive and significant effect on private investment in EAC in the short-run at 1 percent level. The results reveal that if the degree of openness is increased by one percent, private investment will increase by 0.233 percent. This indicates that openness to trade in the EAC region has promoted private investment as it enables easy importation of raw materials and exportation of finished products within the region.

The coefficient of domestic credit to private sector is positive and consistent with the long-run results. The short-run regression result is statistically significant at one percent level with a coefficient of (0.114). Therefore an increase in the credit to private sector by one percent will lead to an increase in private investment by 0.114 percent. The short-run results further confirm that fiscal deficit crowds-out private investment in the EAC. The coefficient of fiscal deficit is (-0.141) and it is statistically significant at 1 percent. This implies that a 1 percent increase in fiscal deficit will lead to a decrease in private investment in the region by 0.141 percent.

The regression results also show a negative and statistically significant effect of public investment on private investment at one percent level in the EAC with a coefficient of (0.181). This implies that an increase in public investment by one percent will lead to a decline in private investment by 0.181 percent. This provides evidence of public investment crowding-out private investment in the region both in the short-run and in the long-run. The real GDP per capita shows a positive effect on private investment it is statistically significant at 1 percent level. It has a coefficient of (0.075) which implies that an improvement in the real GDP per capita by one percent may lead to an increase in private investment in the region by 0.075 percent. It is now obvious from the results and existing theories that as the economy grows the new opportunities increases in country and the ability of people to save and invest also increases in such situation.

The coefficient of the ECT_{t-1} is negative and statistically significant at 1percent level with a value of (-0.3355). This implies that the previous period disequilibrium is corrected at an adjustment speed of 33.55 percent each year and incorporated into the long-run relationship.. This means the adjustment process towards equilibrium is relatively low hence disequilibrium can exist for a long period.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter gives the summary of findings of the study and presents conclusion and policy recommendations arising from the findings of this study. The chapter also recommends areas of further research.

5.2 Summary and key findings

This study has empirically examined the effect of regional integration on private investment in the East African Community using panel data over the period 1980-2014. To achieve this objective, the study used openness of the economy as a measure for regional integration. Openness was obtained by adding the intra-EAC exports and imports and expressing them as percentage of GDP. Other variables used in the study include domestic credit to private sector, fiscal deficit, public investment and real GDP per capita

Test for unit root was carried out in this study using Levin Lin Chu (2002) test with an intention of avoiding spurious regression results that occur due to non-stationarity of data. All the variables which included in the study except the domestic credit to private sector were found to be non-stationary at levels. The variables were then differenced once and tested for unit root and were found to be integrated of order one, I(1).

The study then proceeded to test for cointegration given that the variables were integrated of the same order. The Pedroni (1999) was used to test for the long-run relationship of the variables in the model. The results showed that there exists a cointegration between private investment and the explanatory variables in the model.

The Wooldridge (2006) Test for Autocorrelation was used to establish whether the error terms of different time periods are correlated and therefore after conducting the test, the presence of autocorrelation was ruled out on this study. The Breusch-Pagan Langrang Multiplier test was used to test for cross-sectional dependence and it showed that there was absence of correlation across the error terms of panel units. The Hausman test was conducted so as to select the preferred model between the fixed effect and random effect model. The results showed that the country specific effects were uncorrelated with the regressors and hence the RE model was selected for the study.

The regression results showed a positive and significant effect of openness on private investment and in this case openness of the economy was used as proxy for regional integration in EAC. This implies that regional integration is significant in influencing private investment in EAC. Therefore the region should work towards a deeper integration as well as conducting and signing some agreements geared towards private sector promotion.

The domestic credit to private sector was used in this study as a monetary policy proxy and it had a positive significant effect on private investment in the EAC region. This implies that the availability of credit to the private sector is crucial in increasing the level of private investment especially when the financial institutions give credit at affordable rates. The bank lending channel assumes that monetary contraction decreases the bank reserves and bank deposits and hence lowers the quality of bank loans available for investment.

There was a negative and significant effect of fiscal deficit on private investment in the region. This shows that budget deficits retard the growth of private sector investment in the region since most funds are diverted to servicing of recurrent and long-term debts by the respective governments. These funds could otherwise be reallocated to the private sector so as to boost its investments which has been viewed as an engine of growth.

The sign of the coefficient of public investment in relation to private investment was found to be negative and significant. This implies that public investment crowds out private investment in the region and therefore impedes the private sector growth. Therefore the region's policy makers should put in place measures that ensure that the public sector undertakes developmental investments such as infrastructural development which complements the private investment and hence progressive economic growth can be achieved in the region.

5.3 Conclusion

The key objective of this study was to investigate the effect of regional integration on private investment in East African Community so as to provide essential information for policy formulation and implementation with a view of raising the level of private investment in EAC region. Panel data technique was employed using the Random Effect model for the period spanning from 1980 to 2014.

The results show that the openness of the economy which was used as proxy for regional integration had a positive and statistically significant effect on private investment. From the regression results, the domestic credit to private sector had a positive and significant effect on private investment. This implies that the availability of credit for private sector investment leads to an increase in the level of private investment in the EAC region both in the short-run and in the long-run.

There was a negative and significant effect of fiscal deficit on private investment in the EAC region. The reason for this negative effect of fiscal deficit may be because the respective governments mainly finance their budget deficits though borrowing from the domestic banks which are the sole lenders to the private investors. This therefore reduces the liquidity of these banks hence may be unable to lend as much as is required to undertake private investment in the region.

Given that public investment crowds-out private investment in the EAC, then for the region to attain high levels of private investment there is need for respective EAC member governments to invest in infrastructure and this may increase the productivity of private sector capital. Therefore the EAC region countries should encourage both private and public investment such that the investments undertaken by the public sector are those that have positive externalities such as infrastructural development. This can be done through harmonization of regulatory framework so as to come up with a common investment platform that promotes both public and private investment.

5.4 Recommendations

Having conducted the study and established how regional integration affects private investment in the EAC, it is therefore necessary that the level of private investment be increased in the region. For this reason, policies that enhance private investment need to be formulated by the policy makers and be implemented in order for the region to realize improvement and sustainable levels of private investment and hence economic growth. For the EAC region to achieve a common goal of high levels of private investment, the member countries should be willing to retreat from being members of more than one Regional Economic Community. For example, most of the EAC member states belong to at least two other RECs such as SADC, IGAD and COMESA and this diverts the interests of the region since multiple membership leads to conflicting goals and policies.

The main obstacle to boosting the potential of intra-regional trade is the sluggish implementation of the signed trade agreements which govern the regional block. From the data, it is clear that EAC countries maintained trade relations by importing and exporting more from the EAC even after the collapse of the first EAC. Therefore for the region to achieve higher levels of intra-EAC trade, which implies that it becomes more open, the member states should put in place policies to ensure quick implementation of the trade agreements. The region should also create a stable political environment so as to boost the confidence of private investors to invest more in the region and hence may realize sustainable economic growth.

From the regression results, it was evident that fiscal deficit negatively impacts on private investment. Since this deficit mainly increases due to the fact that most of the EAC countries are heavily indebted, it therefore implies that these countries should adopt debt reduction strategies so as to improve the state of fiscal deficit and hence boost private investment and promote economic growth in the region. The EAC should also formulate fiscal policies that favour private sector investment by discouraging high levels of government expenditure. The domestic private investors should be given incentives such as tax holidays and import duties on equipment and machinery required to start a business so as to reduce the production costs and hence increase the productivity of domestic investors.

For private investment to remain as engine of growth in the region, it is necessary that the amount of domestic credit to private sector be increased in the EAC since the regression results show that it has a positive impact on private investment. The credit to private sector is a constraining factor to the growth of private investment in EAC and this may be because of less developed financial institutions and stringent financial regulations. Therefore the region should put in place measures that ensure an increase in the domestic credit to the private sector, for example the provision of incentives to financial institutions by the respective governments. This will enable them to channel more credit to the private sector at affordable rates and this may improve the private investment levels and hence contribute to overall economic growth of the region.

The EAC regulatory body should devise methods of encouraging the financial institutions within the region to channel credit facilities to the private investors so as to promote private

investment. The lending rates should also be regulated by the EAC central authority to enable easy access to loanable funds by prospective investors. Given the low levels of savings in the region, the citizens should be encouraged to save more in the banks through increasing the interest rate on savings hence making available the credit for investment purposes. Therefore the respective governments of EAC should put in place measures to ensure that potential private investment can easily access credit to undertake investments in the region.

5.5 Areas for Further Research

This study has focused on the effects of regional integration on private investment in the EAC region but the effect at country level has not been examined. Therefore there is need for future researchers to focus on the effects of regional integration on private investment on other regions as well as at individual country level so as to provide a platform for comparison of the findings.

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