FINANCIAL INTEGRATION, TRADE INTEGRATION, MACROECONOMIC VOLATILITY AND ECONOMIC GROWTH IN THE EAST AFRICAN COMMUNITY

BY

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DECLARATION

This thesis report is my original work and has not been presented for a degree in any other University.

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DEDICATION

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

CAPM:	Capital Asset Pricing Model
CM:	Common Market
COMESA:	Common Market for Eastern and Southern Africa
CU:	Customs Union
DF:	Dickey Fuller
DSE:	Dar es Salaam Securities Exchange
EAC:	East African Community
ECOWAS:	Economic Community of West African States
EG:	Economic Growth
EMH:	Efficient Markets Hypothesis
EMU:	European Economic and Monetary Union
EU:	Economic Union
FDI:	Foreign Direct Investment
FI:	Financial Integration
FSD:	Financial Sector Deepening Policy
FTA:	Free Trade Area
GDP:	Gross Domestic Product
GMM:	Generalized Method of Moments
G2SLS:	Generalised two-stage least squares
G2SLS-REMIV:	Generalised Two-Stage Least Squares Random Effects Instrumental variable
InMEVERV:	Natural Logarithm of (Macro-economic volatility) Exchange rate Volatility
InMEVGDPCapV:	Natural Logarithm of (Macro-economic Volatility) GDP per capita Volatility
InMEVIV:	Natural Logarithm of (Macro-economic Volatility) Inflation Volatility

IPS:	Im- Pesaran-Shit Test
LFL:	Less Financially Liberalized
LIBOR:	London Interbank Overnight Rate
LOOP:	Law of One Price
MEV:	Macro-economic Volatility
MFL:	More Financially Liberalized
MU:	Monetary Union
NSE:	Nairobi Securities Exchange
NYSE:	New York Stock Exchange
OCA:	Optimum Currency Area
OCR:	Optimal Currency Region
OECD:	Organization for Economic Cooperation and Development
PPP:	Purchasing Power Parity
SADC:	Southern African Development Community
S & P:	Standard & Poors
TI:	Trade Integration
USE:	Uganda Securities Exchange
U.S:	United States
USAID:	United States Aid
VIF:	Variance Inflation Factor
WBG:	World Bank Group
WPI:	Wholesale Price Index

ABSTRACT

This study sought to investigate the influence of macroeconomic volatility and trade integration on the relationship between financial integration and economic growth in the EAC member states. Specifically, the study aimed at determining the: relationship between financial integration and economic growth in the EAC; moderating effect of macro-economic volatility on the relationship between financial integration and economic growth in the EAC; intervening effect of trade integration on the relationship between financial integration and economic growth in the EAC and finally, the joint effect of financial integration, trade integration, macro-economic volatility on economic growth in the EAC. To achieve these specific objectives, four hypotheses were developed, including: There is no significant effect of Financial integration on economic growth; there is no significant moderating effect of macro-economic volatility on the relationship between financial integration and economic growth; there is no significant intervening effect of trade integration on the relationship between financial integration and economic growth; and lastly, there is no significant joint effect of financial integration, macroeconomic volatility and trade integration on economic growth. The study adopted a positivistic research philosophy and casual research design. Diagnostic tests were carried out to meet the requirements for conducting correlation and regression analysis on panel data. These include; Multicollinearity tests, Im- Pesaran-Shit Test (IPS) panel unit root test and Hausman test for fixed effects and random effects models. Descriptive statistics such as the mean, standard deviation, coefficient of variation as well as correlation analysis were conducted as the preliminary statistical analysis. Generalized-two stage least squares instrumental variable regression model (G2SLSIV) was then conducted to test the hypotheses. The findings of the study showed that: macro-economic volatility does not have a significant moderating effect on the relationship between financial integration and economic growth; there is no significant intervening effect of trade integration on the relationship between financial integration and economic growth. Overall, financial integration, macroeconomic volatility and trade integration do not have a joint effect on economic growth. These findings contribute to knowledge in the sense that, the positive and significant correlation between financial integration and economic growth confirms that, an increase in gross capital flows is accompanied by increase in economic growth. It also contributes to knowledge by revealing that, financial deepening contributes positively to financial integration which further contributes to accelerating economic growth. Therefore, the study is useful to the governments of respective member states in formulating policies aimed at achieving macro-economic stability, similarity in economic structures and ensuring the quality of institutions. The study culminates with acknowledging the limitations encountered and provides suggestions for further research.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

International financial integration occurs when exchange controls are removed and the capital account is freed to allow financial resources to flow freely in and out of the country. With the increased degree of international financial integration around the world, many countries especially developing countries are now trying to remove cross-border barrier and capital control, relaxing the policy on capital restrictions and deregulating domestic financial system. Trichet (2005) argues that, financial integration fosters financial development, which in turn creates potential for higher economic growth. Financial integration enables the realization of economies of scale and increases the supply of funds for investment opportunities. The actual integration process also stimulates competition and the expansion of markets, thereby leading to further financial development. In turn, financial development can result in a more efficient allocation of capital as well as a reduction in the cost of capital. At the same time, financial integration is blamed for increasing a country's vulnerability to international financial crises, which tend to occur during periods of sudden reversals in international capital flows.

The conceptualization of this study was based on the following theories; Hegemonic Stability Theory, optimum currency area, purchasing power parity theory, customs union theory and the new economic integration theory. Heather, et al. (2004) argues that, within the hegemonic stability framework, trans-border integration is driven and shaped by powerful states rather than by forces endogenous to markets.

The concept of purchasing power parity contends that, prices of similar goods ought to be the same in different currencies or that exchange rate changes should offset international differences in price movements or inflation rates (Rogoff, 1996). The originators of the Optimum Currency Area (OCA) define a common currency area in terms of the extent of trade and factor mobility. Mundell (1961), McKinnon (1963), and Kenen (1969) seek to show that an economy's characteristics should be a determinant of its exchange-rate regime. Fama (1970) first defined the term efficient market as one in which security prices fully reflects all available information. The market is efficient if the reaction of market prices to new information should be instantaneous and unbiased.The presence of a hegemon, prices being similar, having a single currency and markets being efficient would lead to more integrated markets, less volatility and hence increased economic growth.

The objective of the East African Community (EAC) is inspired by the interest of the member states of Burundi, Uganda, Rwanda, Kenya and Tanzania to improve the standard of living of the population. This is to be achieved through increased competitiveness, value addition in production, trade and investment. It is through improving the standard of living of its people that, sustainable development of the envisaged economic bloc can be promoted. EAC sees regional financial cooperation as a means of promoting intra-regional trade and exploiting economies of scale by pooling small and fragmented domestic markets to support industrialization (Kasekende and Ng'eno, 2000).

1.1.1 Financial Integration

De Brouwer (2005) defines financial integration as the process through which financial markets in an economy become more closely integrated with those in other economies or with those in the rest of the world. This implies an increase in capital flows and a tendency for prices and returns on traded financial assets in different countries to equalize. Economic Commission for Africa (2008) confirms that, this requires the elimination of some or all restrictions on foreign financial institutions from some (or all) countries. Ideally, financial institutions would be able to operate or offer cross-border financial services, as well as establish links between banking, equity and other types of financial markets. Financial integration could also arise even in the absence of explicit agreements. Such forms of integration could include entry of foreign banks into domestic markets, foreign participation in insurance markets and pension funds, securities trading abroad and direct borrowing by domestic firms in international markets.

Ho (2009) shows that financial market integration could proceed with enforcement of a formal international treaty. This refers to two distinct elements. One is the provision for concerted or cooperative policy responses to financial disturbances. The other is the elimination of restrictions on cross-border financial operations by member economies including harmonization of regulations of financial systems. Both elements are necessary to achieve full unification of regional financial markets, and taxes and regulations between member economies.

Broadly, financial market integration occurs in three dimensions, nationally, regionally and globally (Reddy, 2002). A major rationale for the push for regional financial integration centers on the role of the financial sector in promoting the mobilization of savings, facilitating access to credit and enhancing resource allocation (McKinnon, 1973; Shaw, 1973). From an alternative perspective, financial market integration could take place horizontally and vertically. In the horizontal integration, inter-linkages occur among domestic financial market segments, while vertical integration occurs between domestic markets and international/regional financial markets (USAID, 1998).

On the investment point of view, higher transaction costs and lower market liquidity are the main reasons that make smaller markets less attractive to institutional investors and thus represent important barriers to investment in and thus integration of these markets. Other barriers to international investment (including taxes on foreign security holdings and ownership restrictions) are crucial factors that prevent market integration. Consequently, in partially integrated economies, investors' portfolios may be biased towards home assets because the benefits of international diversification are not large enough to offset its costs (Black, 1974; Stulz, 1981; Errunza and Losq, 1985; Eun and Janakira-Manan, 1986; Cooper and Kaplanis, 2000).

In theory, if financial markets are not integrated, entailing differential investment and consumption opportunity sets across countries, investment barriers will affect investors' portfolio choices and companies' financing decisions. If purchasing power parity does not hold, exchange rates affect the cost of consumption across countries, and, thus, exchange rate risk influences the price of assets to investors abroad. International asset pricing models recognize these effects by including exchange rate risk as priced factors (e.g. Solnik, 1974; Stulz, 1981; Adler and Dumas, 1983) and can, thus, be used to empirically investigate the issue of financial market integration (Dumas and Solnik, 1995).

1.1.2 Economic Growth

Balcerowicz (2001) defines economic growth as a process of quantitative, qualitative and structural changes, with a positive impact on economy and on the population's standard of life, whose tendency follows a continuously ascendant trajectory. The idea of an economic system growing exclusively because some exogenous factors make it grow has variously been put forward in the history of economic thought as a standard of comparison. For example, Marshall (1890) introduced the 'famous fiction of the "Stationary state" to contrast the results which would be found there with those in the modern world'. By relaxing one after another of the rigid assumptions defining the stationary state, Marshall (1890) sought to get gradually closer to the 'actual conditions of life.

Theoretical analysis of determinants of economic growth is based on both the neoclassical and endogenous growth theories. The neoclassical growth theories, follows the pioneering work by Solow (1956) and predicts that, in steady-state equilibrium, the level of GDP per capita will be determined by the prevailing technology and the exogenous rates of saving, population growth and technical progress.

The theories key assumption is that, technical change is exogenous and that the same technological opportunities are available across countries. This implies that, the steady state growth solely depends on exogenous population growth and exogenous technical progress. The endogenous growth models on the other hand, by assuming non-diminishing returns to the accumulation of broadly defined capital, predict permanent or long-term effects of economic integration (Walz, 1997). That is, the introduction of human capital and if it keeps up with other investment and knowledge flows freely, returns can be sustained and trade patterns can transfer technology. The access to larger technological base through integration arrangements may in turn speed growth. Economic integration is also seen as expanding the consumer base which may also increase the necessary competition and hence mitigate redundancy in research and development required to generate growth. Economic integration may also lead to intersectoral and international reallocation effects or trigger economic geography forces (Krugman, 1991).

Empirical studies reveal that, many factors have been identified as determinants of growth, with various factors attributed for Africa's dismal economic performance. They include poor domestic policies, relatively small sizes of individual economies, geography, colonial legacy, political instability, weak institutions, lack of openness, and inhospitable external environment among other factors. Besides, economic factors such as initial conditions, investments, population growth, human capital development, government consumption, openness, financial development and the political environment among other factors, have been found to determine economic growth in Africa (Collier and O'Connell, 2004; Burnside and Dollar (2000); Bates (2005); Bloom and Sachs (1998) among others).

1.1.3 Macroeconomic Volatility

The numerous global economic crises of the 20th century have made macroeconomic volatility a key issue in analyzing the determinants of economic growth. The multiplicity of ways in which it affects the long-term growth potential of economies, its diverse causes and the array of methods by which it is measured, make economic volatility a complex and multidimensional phenomenon. Macroeconomic volatility reflects the exposure of a country to domestic and external shocks affecting the economy, and the country's vulnerability to these shocks or its ability to mitigate the effects of the shocks (Denizer et al., 2002).

Measuring economic volatility involves evaluating the deviation between the values of an economic variable and its equilibrium value. This equilibrium value, or reference value, in turn refers to the existence of a permanent state or trend. In statistical terms, economic volatility is traditionally measured by the second (standard deviation) or sometimes a higher moment 1 (Rancière et al, 2008), of the distribution of a variable around its mean or a trend. The mean, therefore, represents the equilibrium value (to which the variable tends to return quickly after deviating in response to a shock).

Most of the research proposes measuring volatility on the basis of the standard deviation of the growth rate of a variable, which assumes that said variable is stationary at first difference. In other words, this approach puts forward restrictive hypotheses as to the behaviour of a series without any prior testing. Ramey and Ramey (1995), for example, proposed studying the effect of economic variability using the standard deviation of the growth rate of GDP per-capita. Servén (1997) examines the effects of volatility on investment in sub-Saharan Africa and uses two measures of macroeconomic volatility, namely the standard deviation and coefficient of variation of several aggregates (terms of trade, black-market premium, inflation, etc.).

Raddatz (2007) also uses measures based on the standard deviation of the growth rate of several macroeconomic variables (price of primary products, terms of trade, aid per inhabitant, GDP per inhabitant and LIBOR) to examine the contribution of external shocks to the volatility of GDP in African countries. This study borrows from the works of Ramey and Ramey (1995), Servén (1997) and Raddatz (2007), narrowing the measurement of macro-economic volatility to standard deviation of inflation, exchange rate and GDP per capita.

1.1.4 Trade Integration

Babylon (2011) defines regional integration as a process in which states enter into a regional agreement in order to enhance regional cooperation through regional institutions and rules. The objectives of the agreement could range from economic to political, although it has generally become a political economy initiative where commercial purposes are the means to achieve broader socio-political and security objectives. It could be organized either on a supranational or an intergovernmental decision-making institutional order, or a combination of both.

The literature on regional trade integration dates back to Viner (1950) who suggested that the effects of regional trade integration can be either trade creating or trade diverting. Trade creating is when trade replaces or complements domestic production while trade diverting occurs when a partner country replaces trade from the rest of the world. If a country becomes a member of a region that "diverts" trade to its members, it would have been better to liberalize globally.

The traditional theories of trade, which assume constant returns to scale and focus on static gains, provide a limited practical insight to regional integration policy issues, in particular in developing countries such as in Africa. Even the theoretical insights of the more recent trade theories do not fare better. For instance, Krugman's (1991) 'economic geography' model which attempts to explain the determinants of regional concentration of economic activity, is yet to be fully explored and its practical relevance to be tested (particularly in the African context). The basic idea of Krugman's hypothesis is that under assumption of increasing returns to scale, economies of scale and trade cost considerations determine the location of economic activity. The implication of this hypothesis for regional integration is that regional blocks could enhance economies of scale by locating a production activity in one location rather than each activity in each country. Similarly, reducing trade costs will add to production efficiency (Lyakurwa, 1997).

Foroutan (1993) posits that, one of the reasons for the failure of regional integration in Sub-Saharan Africa is the fear of some countries, particularly the poor ones that the few industries they have may migrate to relatively more advanced neighbours. Therefore, while the basic principles of trade theories provide us with some general insights, they fall short of serving as practical guides in the African context.

Traditionally, five stages of the integration process are distinguished; a free trade area (FTA), a customs union (CU), a common market (CM), an economic/ monetary union (EU/MU) and a complete integration (Elly, 2014). McCarthy (2004) posits that, regional integration reaches its pinnacle when monetary and fiscal integration is added to free trade in goods and services, based on the hierarchical view of the steps of integration. This ultimate form of monetary integration is referred to as the monetary union (MU) where having a single currency within the integrated region further reduces the transaction costs of trade and also removes the problem of exchange rate uncertainty with its negative impact on intra-regional trade and cross border investment.

1.1.5 Benefits of Financial Integration

Baele et al. (2004) or Economic Commission for Africa (2008) consider three widely accepted interrelated benefits of financial integration: more opportunities for risk sharing and risk diversification, better allocation of capital among investment opportunities and potential for higher growth. Some studies also consider financial development as a beneficial consequence of financial integration.

1.1.5.1 Risk Sharing

Economic theory predicts that, financial integration should have an effect on facilitating risk sharing (Jappelli and Pagano, 2008). The integration into larger markets or even the formation of larger markets is beneficial to both firms and financial markets and institutions. According to Baele et al. (2004), financial integration provides additional opportunities for firms and households to share financial risk and to smooth out consumption inter-temporally.

Financial integration allows project owners with low initial capital to turn to an intermediary that can mobilize savings so as to cover the initial costs. These avenues indicate a strong link between financial institutions and economic growth (Levine, 1997). The exploitation of economies-of-scale can allow firms, in particular those small and medium-sized ones that face credit constraints, to have better access to broader financial or capital markets.

Risk-sharing opportunities make it possible to finance highly risky projects with potentially very high returns, as the availability of risk-sharing opportunities enhances financial markets and permits risk-averse investors to hedge against negative shocks. Because financial markets and institutions can handle credit risk better, integration could also remove certain forms of credit constraints faced by investors. The law of large numbers guarantees less exposure to credit risk as the number of clients increases. Individual risks could also be minimized by integrating into a larger market and, at the same time, enhancing portfolio diversification.

Through the sharing of risk, financial integration leads to specialization in production across the regions. Furthermore, financial integration promotes portfolio diversification and the sharing of idiosyncratic risk across regions due to the availability of additional financial instruments. It allows households to hold more diversified equity portfolios, and in particular to diversify the portion of risk that arises from country-specific shocks. Similarly, it allows banks to diversify their loan portfolios internationally. This diversification should help Euro area households to buffer country-specific income shocks, so that shocks to domestic income should not affect domestic consumption, but be diversified away by borrowing or investing abroad (Jappelli and Pagano, 2008). Kalemli-Ozcan et al. (2003) provide empirical evidence that, sharing risk across regions enhances specialization in production, thereby resulting in well-known benefits.

1.1.5.2 Improved Capital Allocation

It is a generally accepted view that, greater financial integration should allow a better allocation of capital (Levine, 2001). An integrated financial market removes all forms of impediments to trading of financial assets and flow of capital, allowing for the efficient allocation of financial resources for investments and production. In addition, investors will be permitted to invest their funds wherever they believe these funds will be allocated to the most productive uses. More productive investment opportunities will therefore become available to some or all investors and a reallocation of funds to the most productive investment opportunities will take place (Baele et al., 2004). Kalemli-Ozcan and Manganelli (2008) show that, by opening access to foreign markets, financial integration will give agents a wider range of financing sources and investment opportunities, and permits the creation of deeper and more liquid markets. This allows more information to be pooled and processed more effectively, and capital to be allocated in a more efficient way.

1.1.5.3 Economic Growth

Theoretical literature proposes various mechanisms through which financial integration may affect economic growth. In the neoclassical framework, all effects are generated through capital flows. In the standard model, opening international capital markets generates flows from capital-abundant towards capital-scarce countries, thereby accelerating convergence (hence short term growth) in the poorer countries. In a more sophisticated context, productivity may also increase since capital flows may relieve the economy from credit constraints and thus allow agents to undertake more productive investments (Bonfiglioli, 2008). Furthermore, in the standard neoclassical growth model, financial integration enhances the functioning of domestic financial systems through the intensification of competition and the importation of financial services, bringing about positive growth effects (Levine, 2001). An alternative view of Saint-Paul (1992); Obstfeld (1994) suggests that, international capital mobility may affect productivity independently of investment, by promoting international risk diversification, which induces more domestic risk taking in innovation activities, thereby fostering growth.

There is ample evidence in the literature that, financial integration leads to higher economic growth. Gianetti et al., (2002) demonstrate that, financial integration facilitates access to investment opportunities and an increase in competition between domestic and foreign financial institutions. This in turn leads to improved efficiency of financial institutions as financial resources are released for productive activities. In addition, financial integration leads to increased availability of intermediated investment opportunities, and consequently higher economic growth. Authors also argue that, the integration process will increase competition within less developed regions and thereby improve the efficiency of their financial systems by, for instance, reducing intermediation costs.

1.1.5.4 Financial development

According to Hartmann et al., (2007) financial development can be understood as a process of financial innovations, and institutional and organizational improvements in the financial system. Combined, the process have the effect of reducing asymmetric information, increasing the completeness of markets and contracting possibilities, reducing transaction costs and increasing competition.

Jappelli and Pagano (2008) show that, the main channel through which the removal of barriers to integration can spur domestic financial development is increased competition with more sophisticated or lower-cost foreign intermediaries. This competitive pressure drives down the cost of financial services for the firms and households of countries with less developed financial systems, and thus expands local financial markets. In some cases, the foreign entrants themselves may supply the additional financial services.

The link between financial development and financial integration is of utmost importance, as there is strong evidence that financial development is linked with economic growth (Baele et al., 2004). As described in Levine (1997), financial systems serve some basic purposes. Among others, they first, lower uncertainty by facilitating the trading, hedging, diversifying and pooling of risk; secondly, allocate resources; and thirdly, mobilize savings. These functions may affect economic growth through capital and technological accumulation in an intuitive way. However, while Levine (1997) recognizes the positive relationship between economic growth and financial development, he is careful not to infer any causality. Indeed, economic growth and financial development are so intertwined that it is difficult to draw any firm conclusion with respect to causality. Nevertheless, more research has found evidence that financial development affects growth positively. Rousseau (2002) finds empirical evidence that, financial development promotes investment and business by reallocating capital. Industry-level studies like that of Jayaratne and Strahan (1996) show that, financial development causes economic growth.

1.1.6 Expected Relationships

Based on existing literature, Edison et al., (2002), Njoroge (2010) it was expected that financial integration of the East African community will have a positive significant effect on the growth of the economy. It was also expected that, financial integration and trade integration will have positive association. This expectation was based on the works of (Lane, 2000); Heathcote and Perri (2004). Additionally, the findings were expected to depict a negative significant influence of macro-economic volatility on the relationship between financial integration and economic growth.

Given the positive relationship between trade integration and economic growth, the expectations were that, trade integration will positively explain (positive intervening effect) the relationship between financial integration and economic growth in the East African Community. Further, the joint influence of financial integration, trade integration and macro-economic volatility on economic growth was expected to be positive and significant. A comparison between these expectations and the actual findings is presented at the end of chapter five, pointing out any surprise element of the results that are treated as a potential source for further research.

1.1.7 The East African Community

The East African Community (EAC) is a regional inter-governmental organization established under Article 2 of the Treaty for the Establishment of the East African Community that entered into force in July 2000. Membership of the Community comprises the Republics of Burundi, Kenya, Rwanda, Uganda and the United Republic of Tanzania. Pursuant to the provisions of paragraph 1 of Article 5, the Partner States undertake to establish among themselves, a Customs Union, a Common Market, subsequently a Monetary Union and ultimately a Political Federation in order to strengthen and regulate the industrial, commercial, infrastructural, cultural, social and political relations. This is meant to enhance accelerated harmonious, balanced development and sustained expansion of economic activities (EAC, 2011).

The Community operationalizes the Treaty through medium-term development strategies. The 1st Development Strategy covered the period 1997-2000 and focused on the re-launching of EAC, a period usually referred to as the confidence building phase. The 2nd Development Strategy covered the period 2001-2005 and mainly focused on the establishment of the EAC Customs Union and laying the groundwork for the Common Market. The 3rd Development Strategy (2006-2010) prioritized the establishment of the EAC Common Market, while the 4th Development Strategy covering the period July 2011 to June 2016 mainly focuses on the implementation of the EAC Common Market and the establishment of the EAC Monetary Union. In all these Strategies, cross-cutting projects and programmes in sectors such as legal and judicial, infrastructure, energy, social development, and institutional development were also carried out. The 4th Development Strategy (2011-2016) takes into account consolidating the benefits of a fully-fledged Customs Union, full implementation of the Common Market and laying the foundation for the attainment of Monetary Union and Political Federation and continuing implementation of other priority projects and programmes (EAC, 2011) .

The ultimate goal of regional integration in East Africa is the attainment of long term high economic growth that can achieve and sustain human development. Towards this end, EAC Partner States committed themselves to maintaining an economic convergence criteria, stated in various benchmarks. Such benchmarks include; for EAC Partner States to achieve middle income status, they need to achieve sustained economic growth rates in excess of 7 per cent. This benchmark is captured in the 3rd Development Strategy (2006-2010). Other benchmarks include budget deficits of less than 5%, 4-months import cover, sustainable public debt and single digit inflation rates. In spite of the positive developments, the challenge of macro-economic convergence in the major macroeconomic indicators for all Partner States persisted in the 3rd EAC Development Strategy (2006-2010). The economic, social and political development for the EAC Partner States is supported by their strategic visions as indicated in Table 1.1 below.

Table 1.1: EAC Partner States Strategic Visions

Partner State	Time Frame	Strategic Vision	Priority areas
Kenya	Vision 2030	Globally competitive and prosperous Kenya with a high quality of life.	To achieve sectoral objectives including meeting regional and global commitments
Uganda	Vision 2035	Transform Ugandan society from peasant to a modern prosperous country.	Prominence being given to knowledge based economy
Tanzania	Vision 2025	High quality of life anchored on peace, stability, unity, and good governance, rule of law, resilient economy and competitiveness.	Inculcate hard work, investment and savings culture; knowledge based economy; infrastructure development; and Private Sector Development.
Rwanda	Vision 2020	Become a middle income country by 2020	Reconstruction, HR development and integration to regional and global economy
Burundi	Vision 2025	Sustainable peace and stability and achievement of global development commitments in line with MDGS.	Poverty reduction, reconstruction and institutional development.
EAC	Treaty	Attain a prosperous, competitive, secure and politically united East Africa	Widen and deepen economic, political, social and cultural integration at regional and global

Source: EAC (2011)

While the Partner States visions and strategies were prepared independently, they are in line with the objectives of the Community which is meant to develop policies and programmes aimed at widening and deepening co- operation among the Partner States in political, economic, social and cultural fields, research and technology, defence, security and legal and judicial affairs, for the Partner States' mutual benefits. All the Partner States share in the dream of achieving a middle income status by 2030 (EAC, 2011).

1.2 Research Problem

The concept of international financial integration (or financial integration) refers to the specific links of a country with international capital markets (Prasad et al. 2003). In other words, international financial integration can be likened to the opening of domestic financial systems, such as financial markets and institutions and banking systems, to the rest of the world and the internationalization of financial assets and liabilities managed by resident entities. Barro (2001) revealed that, financial instability leads to drops in economic growth. This weak growth is the result of excessive capital inflows and outflows and, more generally, the instability of net financial flows (Prasad et al., 2003; World Bank, 2000) and IMF, 2001). Indeed, financial instability can also impact on the poverty level and have other consequences for the social situation (World Bank, 2000).

The macroeconomic environment is characterized by uncertainty sourced from various types of macroeconomic activities which may lead agents to mistaken decisions and large transaction costs. This could decrease the rate of capital formation and consequently the economic growth. Stable macroeconomic environment therefore, represents a substantial fundamental pillar of a long-term economic growth. Jeanne (2004) argues that, macroeconomic volatility in developing countries is also worsened by the international contagion phenomenon. Though not directly linked, it has been proved that countries which are more open to trade are also more open financially (Lane, 2000); Heathcote and Perri (2004).

The East African Community (EAC) is keen on improving the standard of living of the population through increased competitiveness, value addition in production, trade and investment. Sustainable development of the envisaged economic bloc can be promoted, through the improved standards of living (http://www.statistics.eac). However, the East African Community continues to experience low economic performance mainly attributed to a number of factors. These factors include the countries' inability, like many other African countries, to secure access to larger markets, inherent high intra-country trade costs, lack of an effective framework for regional cooperation and resource pooling and the pressure from development partners pursuing their own foreign policy objectives in the continent (Njoroge, 2010).

As a way of addressing these challenges, the EAC has over the years embarked on widening and deepening the cooperation among member states through the process of regional integration. In pursuit of this goal, the EAC has attached great importance to financial sector development. One of the pillars of this effort as enumerated in Chapter 14 of EAC treaty is the pursuit of financial integration with a view to maximizing the ability of financial sectors to mobilize resources and efficiently allocate them to productive sectors of the region. However, the frequent experience of macroeconomic volatility which is one of the basic features of developing economies has to be managed.

This is so because, the experience is professed to have detrimental effects on long term economic growth and development (Calderon and Schmidt-Hebbel, 2008).

Conceptually, the debate on the relationship between financial integration and economic growth is inconclusive given that, empirical studies have yielded inconsistent results. Some indicate a positive relationship (Edison et al, 2002; Blomstrom et al., 1994; Quinn, 1997; Borenzstein, De Gregorio, and Lee, 1998; Alfaro, Chanda, Kalemli-Ozcan, and Sayek, 2003). (Osada and Saito, 2010; Arteta et al., 2001 and Kraay, 1998) show that the effects vary substantially while IMF (2002) indicates a negative relationship. Equally, studies have not clearly indicated the intervening effect of trade integration and the moderating effect of macroeconomic volatility on economic growth (Krugman, 1993) and Razin and Rose, 1994). Kose et al (2003a) examined the impact of financial integration on macro-economic volatility but did not consider what moderating effect macro-economic volatility would have on the relationship between financial integration and economic growth.

On a similar note, studies that establish the joint influence of financial integration, trade integration and macro-economic volatility on economic growth are not known to exist. Contextually, studies on how financial integration influences the economic growth of the East African community have fallen short of capturing the moderating and intervening effect of macro-economic volatility and trade integration, respectively, in this relationship (Njoroge, 2010; Muthoga et al, 2013 and Elly, 2014). These conceptual and contextual gaps lead to the following research question: What is the influence of trade integration and macro-economic volatility on the relationship between financial integration and economic growth in the East African community?

1.3 Research Questions

The general question of this study is: What is the influence of macro-economic volatility and trade integration on the relationship between financial integration and economic growth in the EAC? This study therefore undertook to answer the following specific research questions;

i. What is the relationship between financial integration and economic growth in the EAC?
ii. What is the moderating effect of Macro-economic volatility on the relationship between financial integration and economic growth in the EAC?
iii. What is the intervening effect of trade integration on the relationship between financial integration and economic growth in the EAC?
iv. What is the joint effect of financial integration, trade integration, macro-economic volatility on economic growth in the EAC?

1.4 Research Objectives

The general objective of the study was to investigate on the influence of macroeconomic volatility and trade integration on the relationship between financial integration and economic growth in the EAC. The specific objectives were to determine the:

i. Relationship between financial integration and economic growth in the EAC
ii. Moderating effect of Macro-economic volatility on the relationship between financial integration and economic growth in the EAC.

iii. Intervening effect of trade integration on the relationship between financial integration and economic growth in the EAC.

iv. Joint effect of financial integration, trade integration, macro-economic volatility on economic growth in the EAC.

1.5 Value of the Study

This study sought to investigate the influence of macroeconomic volatility and trade integration on the relationship between financial integration and economic growth in the EAC. This study was beneficial to policy makers because of its contribution towards enhancing the policies that have so far been formulated to ensure the success of the East African community integration. It was particularly useful to the governments of the respective member states in proposing the formulation of policies aimed at achieving macro-economic stability, similarity in economic structures and ensuring the quality of institutions. Recommendations on how to enhance financial markets development; a key driver to financial integration, are also provided in chapter six. It was also useful on the theoretical front, in establishing that the existing theories do not support the inter-relationship between financial integration, macro-economic volatility, trade integration and economic growth, based on the conceptual framework provided in this study. The fact that, the findings contradicted the existing theories, opens more room for critic on the theories by the academicians interested in this area.

1.6 Organization of the Thesis

This thesis is organized into six chapters: Introduction, literature review, research methodology, data description and analysis, hypothesis testing and discussion of findings and summary of findings, conclusions and implications.

Chapter one introduces the study to the readers by providing the background of the study, definition of all the four variables of the study, the expected relationships, the context of the study and the research problem. The research problem is broken down into specific research questions as well as research objectives. The value of the study to different parties is provided at the end of the chapter.

Chapter two provides a review of theoretical and empirical literature on financial integration with a focus on approaches to measurement of financial integration and the effects of financial integration, trade integration and macro-economic volatility on economic growth. The theories reviewed include the Optimum currency are theory, hegemonic stability theory, purchasing power parity theory, efficient markets hypothesis, customs unions theory and new economic integration theory. The review culminates into a summary of identified research gaps and the conceptual framework derived to address the study gaps.

Chapter three presents the research design adopted, research philosophy and approaches used in the study with regard to data collection and analysis. Chapter four presents the analysis conducted for the study in investigating the influence of financial integration, trade integration and macro-economic volatility on economic growth. This study is based on five hypotheses which are individually tested and discussed in chapter five. Chapter six concludes the study with a summary of the findings, conclusions and recommendations. Contributions of the study to knowledge are also presented in chapter six. The chapter also underscores the limitations of the study and gives suggestions for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of theoretical and empirical studies on financial integration, trade integration, macro-economic volatility and economic growth both at the local and the global contexts. Section 2.2 discusses the theoretical review upon which the study is based while section 2.3 discusses the measurement of financial integration. This is followed by section 2.4 which discusses the empirical review on financial integration, trade integration, economic growth and macro-economic volatility and identifiable literature gaps. Section 2.5 covers the summary of literature review while section 2.6 outlines the conceptual framework for the study as derived from the literature. Section 2.7 concludes the chapter with a set of hypotheses derived for the study.

2.2 Theoretical Review

This section outlines the various theories relevant to the study and underscores the significance of each of the theories to the study. These theories include; Hegemonic Stability Theory, Purchasing Power Parity (PPP) Theory, Optimum Currency Area Theory, Customs Union Theory and the New Economic Integration Theory.

2.2.1 Optimum Currency Area Theory

Economic theory defines an Optimum Currency Area (OCA) which is also referred to as an Optimal Currency Region (OCR) as a geographical region in which it would maximize economic efficiency to have the entire region shares a single currency.

It describes the optimal characteristics for the merger of currencies or the creation of a new currency. The theory is used often to argue whether or not a certain region is ready to become a currency union, one of the final stages in economic integration. An optimal currency area is often larger than a country. For instance, part of the rationale behind the creation of the euro is that the individual countries of Europe do not each form an optimal currency area, but that Europe as a whole does form an optimal currency area (Baldwin et al, 2004). The creation of the euro is often cited because it provides the most modern and largest-scale case study of an attempt to engineer an optimum currency area, and provides a comparative before-and-after model by which to test the principles of the theory.

In short, the originators of OCA (Mundell, 1961) define a common currency area in terms of the extent of trade and factor mobility. The key proponents of this theory, Mundell (1961), McKinnon (1963), and Kenen (1969) seek to show that, an economy's characteristics should be a determinant of its exchange-rate regime. In answering the question on how the world should be divided into currency areas, Mundell (1961) argues that, the stabilization argument for flexible exchange rates is valid only if it is based on regional currency areas.

The notion of a currency that does not accord with a state, specifically one larger than a state, of an international monetary authority without a corresponding fiscal authority has been criticized by Keynesian and Post-Keynesian economists. They emphasize the role of deficit spending by a government (formally, fiscal authority) in the running of an economy.

They also consider using an international currency without fiscal authority to be a loss of "monetary sovereignty". Specifically, Keynesian economists argue that fiscal stimulus in the form of deficit spending is the most powerful method of fighting unemployment during a liquidity trap. Such stimulus may not be possible if states in a monetary union are not allowed to run sufficient deficits. The Post-Keynesian theory of Neo-Chartalism holds that, government deficit spending creates money, that ability to print money is fundamental to a state's ability to command resources, and that "money and monetary policy are intricately linked to political sovereignty and fiscal authority" (Goodhart, 1998). Both of these critiques considers the transactional benefits of a shared currency to be minor compared to these drawbacks. More generally, they place less emphasis on the transactional function of money (a medium of exchange) and greater emphasis on its use as a unit of account.

Offering a contrary criticism, Austrian economists have supported the disassociation of currencies from political entities entirely (Hayek, 1974). Whereas Keynesians see flaws in supranational currencies, Austrians see flaws in any centrally planned currency not determined by a free market process. This alternative approach seeks to limit deficit spending, as well as to increase the accountability of currency makers to their users in the same way that markets for other goods maximize the accountability of businesses to their customers. Founding Austrian economist Friedrich Hayek, advocated denationalization of money reasoning that, private enterprises which issued distinct currencies would have an incentive to maintain their currency's purchasing power and that customers could choose from among competing offerings (Hayek, 1899-1992). Thus, the Austrian critique of optimal currency areas does not prejudice any particular arrangement so long as, it is arrived at by a fair and competitive market process.

The viability of monetary unions is best assessed using the Optimal Currency Area (OCA) theories (Mundell, 1961). Proponents of these theories argue that, potential MUs should exhibit similarity in economic structure characterized by high degree of wage flexibility to allow for the adjustment of asymmetric shocks; a high degree of labor mobility; and a high degree of goods and market integration across States. The size and openness of the economy, degree of commodity diversification and fiscal integration are also important to the formation of a successful MU (Mckinnon, 1963; Kenen, 1969; Flemming (1971). Furthermore, the similarity in policies and desire for a political union are additional key factors (Haberler, 1970; Cohen, 1993).

This theory is relevant to the integration of the EAC because, having a single currency within the integrated EAC region will further reduce the transaction costs of trade. The use of a single currency by the East African community economies will also remove the problem of exchange rate uncertainty with its negative impact on intra-regional trade and cross border investment. Given the above argument, the theory was beneficial to determine; the direct relationship between financial integration and economic growth, the moderating effect of macro-economic volatility on the relationship between financial integration and economic growth, the intervening effect of trade integration on the relationship between financial integration and economic growth as well as the joint effect of financial integration, trade integration and macro-economic volatility on economic growth. This is because, the sharing of a currency is a necessary condition for integration to take place, with the benefits of reduced transaction costs and exchange rate volatility, an argument that encompasses all the objectives of this study. The findings on all the four objectives do not support this theory.

2.2.2 New Economic Integration Theory

Krauss (1972) argued that, studies by Viner (1950) and Cooper and Massell (1965) have concluded that, a nonpreferential tariff policy (free trade) is superior to customs unions as a trade liberalizing device. In other words, these studies have concluded that the argument that the reason behind forming customs unions is a better allocation of resources is no longer valid. Therefore, one should stop analyzing the welfare impacts of customs union using static effects. As a result, Balassa (1962), and Cooper and Massell (1965) have introduced another tool (dynamic effects) into the analysis of the welfare effects of economic integration, as a more efficient economic reason or rationale behind the formation of customs unions or economic integration schemes in general.

Balassa's dynamic theory of economic integration proved that, the static analysis in terms of trade creation and trade diversion is simply not enough to fully capture or analyze welfare gains from economic integration. Allen (1963) and Balassa (1962) listed the principle dynamic effects of integration as large-scale economies, technological change, as well as the impact of integration on market structure and competition, productivity growth, risk and uncertainty, and investment activity. The same view is shared by Kreinin (1963). According to Brada and Mendez (1988) integration is assumed to raise investment and reduce risks. This can be explained by the fact that, a larger market will raise the expected return on investments and reduce uncertainty by enabling firms to lower their costs as a result of increased economies of scale, and a bigger pool of consumers.

Heimenz and Langhammer (1990), Inotai (1991), and Shams (2003) have continued to argue that, complementarity or dissimilarity of economic structures would be better to the case of economic integration among developing countries. Greenway and Milner (1990), for example, argue that one significant problem of the poor trade and integration performance between South-South countries is that they are at comparable stages of development and therefore have comparable production structures. A union among similar (competitive) countries assumes that trade will come from intra-industry specialization. Such trade expansion has been evident in the case of developed industrialized countries, where market size and incomes may support such specialization. However, this is obviously less possible in the case of smaller poorer markets that characterize developing country markets. Therefore, a union among dissimilar (complementary) countries is encouraged.

A number of studies have suggested that, emphasis should be put on dynamic rather than static effects in evaluating the desirability of economic integration among developing countries (Sakamoto 1969; Abdel Jaber 1971, Axline 1977, and Khazeh and Clark 1990). Demas (1965) argued that, economic development can be attained to developing countries through economic integration because it will lead to an increase in the size of the market and allow them to benefit from economies of scale. A final important point was made by Rueda-Junquera (2006) who went beyond previous arguments of static and dynamic analysis, and argued that, most developing countries nowadays aim at making economic integration policies compatible with, and complementary to, other policies to enhance their international competitiveness in general, as part of their overall stabilization and adjustment programs as agreed with international organizations.

It is established that, trade between developing countries over the years has always been rather small in comparison to trade between developed countries, implying that welfare gains of economic integration between developing countries will tend to be small according to the arguments presented in Lipsey (1960). However, studies by Balassa (1965), and Bhambri (1962) argued that, this implication should not be taken as given, as the removal of certain factors that limit trade between developing countries should lead to an increase in trade between developing countries entering a trade agreement. Finally, Inotai (1991) argued that, although a growing level or share of intra or inter-regional trade to total trade of the member countries is widely considered as that the best indicator of a successful economic integration agreement, it should not be the only target. Other targets such as joint industrial development and establishment of infrastructural links should be of equal importance. In view of the arguments presented in the different studies above, this theory, just like the customs union theory, was beneficial in this study in determining all the four objectives. However, the findings of all the four objectives did not support the theory.

2.2.3 Purchasing Power Parity (PPP) Theory

The idea originated with the School of Salamanca in the 16th century and was developed in its modern form by Gustav Cassel in 1918 *(*Cassel and Gustav, 1918).The concept of purchasing power parity contends that, prices of similar goods ought to be the same in different currencies or that exchange rate changes should offset international differences in price movements or inflation rates (Rogoff, 1996). This is also referred to as the law of one price. Marshall (1930) posits that, the law of one price (LOOP), constitutes the fundamental principle underlying financial market integration.

Although it may seem as if PPPs and the law of one price are the same, there is a difference: the law of one price applies to individual commodities whereas PPP applies to the general price level. If the law of one price is true for all commodities, then PPP is also therefore true; however, when discussing the validity of PPP, some argue that the law of one price does not need to be true exactly for PPP to be valid. If the law of one price is not true for a certain commodity, the price levels will not differ enough from the level predicted by PPP (Krugman, 2009).

One set of limitations of PPP is statistical in nature, relating to the method of computing the parity itself. Pigou (1922) noted that, actual price indices are calculated from individual prices of only a sample of commodities rather than all commodities in the economy. Therefore, any computed price parity is an imperfect representation of the true theoretical parity. A related difficulty is present even if the entire population of commodities is used to construct the price measure in each country.

The value of the parity will, in general, depend on the kind of price level (or price index) selected. In other words, the parity will vary with the weighting pattern of the price measures. The sole exception, as noted by Vanek (1962), is when firstly, the ratio of the price of a given commodity in one country to its price in the other country is the same for all commodities and secondly, the identical weighting pattern is used for the computation of each country's price measure. Even if the price measures refer to traded goods alone and there is costless international arbitrage of these goods (no trade restrictions or transport costs and no imperfection in the arbitrage process), different weighting schemes for the countries' price levels (or price indices) will, in general, lead to different parities, none of which can be expected to equal the "true" parity (namely, the current exchange rate, in this case), which equalizes all individual commodity prices internationally.

Keynes (1930) was the first to point out that, a PPP calculated from traded-goods prices alone is close to a truism, drawing the implication that wholesale price indices (WPIs) are a poor basis for computing PPP. The reason is that, such indices are heavily weighted with traded goods ("the staple commodities of international trade") and therefore relative price parities calculated from these indices come close to the actual exchange rate, resulting in a spurious verification of the theory. Keynes' observation led subsequent observers to recommend against calculating parities with price indices weighted entirely or heavily with internationally traded goods and, in particular, to reject export and import price indices and WPIs for this purpose.

According to the LOOP, in the absence of administrative and informational barriers, risk-adjusted returns on identical assets should be comparable across markets. This theory was therefore beneficial to this study in determining the relationship between financial integration and economic growth. The theory was applied in this study, to support the Optimum Currency Area theory and the new economic integration theory. However, the findings did not support the theory, mainly because of the above limitations on the theory, specifically the use of different price indices by the different East African member states.

2.2.4 Hegemonic Stability Theory

Hegemonic stability theory (HST) is a theory of international relations, rooted in research from the fields of political science, economics, and history. HST indicates that the international system is more likely to remain stable when a single nation-state is the dominant world power, or hegemon (Joshua, 2005). Thus, the fall of an existing hegemon or the state of no hegemon diminishes the stability of the international system. When a hegemon exercises leadership, either through diplomacy, coercion, or persuasion, it is actually deploying its "preponderance of power." This is called hegemony, which refers to a state's ability to "single-handedly dominate the rules and arrangements of international political and economic relations" (Joshua, 2005).

Kindleberger (1973) is one of the first proponents of hegemonic stability theory; in “The World in Depression”. He argued that, a hegemon is a necessary (though not sufficient) condition for provision of the collective good of international economic stability. Because of incentives to cheat and free ride, any hegemonic regime is inherently unstable; stability only arises when a hegemon both bears the costs of providing this collective good and extracts the support of others. Heather, et al. (2004), a proponent of this theory argues that, trans-border integration is driven and shaped by powerful states rather than by forces endogenous to markets. Lake (1993) developed an argument that, the theory of hegemonic stability is not a single theory but is composed of two distinct theories, namely; leadership theory and hegemony theory. Leadership theory builds upon the theory of public good and focuses on the production of international stability also referred to as international economic infrastructure.

The first critics of hegemonic stability theory questioned the necessity of a hegemon for achieving cooperation. These critics argue that, solving collective action problems in no way requires leadership from a single state (Keohane, 1984; Olson, 1965; Schelling, 1978). This argument does not question whether a single state can facilitate cooperation, only that hegemony is a special case of leadership (Snidal, 1985). Later on, scholars called into question the sufficiency of a hegemonic state. Building on transaction-cost economics (Williamson, 1985) and contract theory (Grossman and Hart, 1986), these scholars argue that, because small states are more dependent on cooperation than the hegemon, the hegemon can exploit this dependence to renegotiate the contract, thereby extracting concessions from its junior partners (Lake, 2009; Rector, 2009). Anticipating this perverse incentive, the small states may choose not to cooperate. If the hegemon could somehow credibly commit to eschewing renegotiation, the problem would disappear. But for a hegemon, promising to not exploit its power is difficult.

Hegemony theory seeks to explain patterns of international economic openness where free trade is seen as dependent on the presence of a hegemon for whom benefits of supporting international openness would outweigh the costs. In other words, the presence of a hegemon is a necessary condition for integration to take place and bring in stability in the international economy. The implication is that, the international economy is likely to be unstable (characterized by high macro-economic volatility) in the absence of an hegemon. This theory was therefore beneficial in this study to determine the moderating effect of macro-economic volatility on the relationship between financial integration and economic growth. It was also beneficial to study the intervening effect of trade integration on the relationship between financial integration and economic growth. Essentially, it was applied to support the Optimum Currency Area theory and the new economic integration theory; the two main theories in this study. However, the findings on both objectives did not support the theory.

2.2.5 Customs Unions Theory

Studies discussing trade integration gains and explaining the theoretical implications of preferential trade agreements are based on the pioneering study of Viner (1950). His study, “Viner's Traditional Customs Unions Theory” was the first to identify concrete criteria to distinguish between the possible advantages and disadvantages of economic integration. Viner's so called "static analysis" of economic integration has divided possible effects of economic integration into the well-known trade creation and trade diversion effects. Trade creation refers to the case when two or more countries enter into a trade agreement, and trade shifts from a high-cost supplier member country to a low-cost supplier member country in the union. Trade diversion may occur when imports are shifted from a low-cost supplier of a non-member country of the union (third country) to a high-cost supplier member country inside the union. This may be the case if common tariff after the union protects the high cost supplier member country inside the union.

Hay (1957) and Meade (1955) has admired but criticized Viner's notion of trade diversion where a customs union may actually lead to misallocation of the world's resources. Meade (1955) argued that, Viner's analysis is only true under conditions of inelastic demand and completely elastic supply. So if demand was allowed to be more elastic, Meade concludes that, a customs union may actually increase the volume of trade even though there is trade diversion. This effect was named "trade expansion" by Meade. Meade (1955) argues that, this effect should be added to the traditional Viner analysis of trade creation and diversion, as trade diversion in this case may not be that harmful.

The Production and Consumption effects of Customs Unions is perhaps the most important contribution to the theory of customs unions. Lipsey (1957) argues that, Viner has concluded that, trade creation in the sense that production shifts from the high-cost source to the low-cost source is considered the "good thing", while trade diversion is considered the "bad thing" in terms of economic welfare. However, as Lipsey (1957) argues, this must not be the case, as economic welfare includes both production and consumption effects. The Viner analysis has concentrated on the production side only, neglecting the consumption effect. This is illustrated as follows: when a customs union is formed, relative prices in the domestic markets of member countries change as a result of the reduction in tariff barriers between them.

These price changes have two effects. A production effect as illustrated by Viner (1950), and secondly, a consumption effect where union members will obviously increase their consumption of each other's products, while reducing consumption from countries outside the union. According to Sheer (1981), the weakness in Viner's analysis was the assumption that consumption is independent of these relative price changes. Therefore, even if world production is fixed, there will still be some changes in world consumption due to the relative change in prices. Gehrels (1956-1957) identified consumption effects as the response of consumers to the drop in import prices caused by the tariff removal.

Lipsey (1957and 1960) argue that, the first effect "production effect of the union" has been taken into account by Viner, while the second effect "consumption effect of the union" has not. He claimed that, Viner's conclusion that trade diversion is a bad thing implies a welfare judgment. However, a welfare judgment in turn requires the combination of the two effects just mentioned, not only one. Consequently, Lipsey (1957) concludes that, although the Viner classification of trade creation and trade diversion is fundamental to classify changes in the production effect, it cannot be used to make judgments regarding the economic welfare of customs unions. This same point of view is shared by Gehrels (1956-1957), Lipsey (1960) and Krauss (1972).

Lipsey (1960) reviewed the issue of the production effect and consumption effect of customs unions as argued by Lipsey (1957) and Gehrels (1956-1957). The paper reached the conclusion that this distinction is not fully satisfactory. Viner's analysis, according to the paper, emphasized substitution in production, while ruling out substitution in consumption. Lipsey (1960) argued that this distinction is misleading because consumption changes in themselves will stimulate production changes. Therefore, he suggested that a more satisfactory distinction be made, and that is between "inter-country substitution" and "intercommodity substitution". Inter-country substitution is when one country is substituted by another as Viner's original trade creation and diversion analysis explains. While, inter-commodity substitution is when one commodity is substituted by another as a result of the relative price change.

Balassa (1965) argued that, the theoretical literature of economic integration has dealt almost exclusively with customs union among industrialized countries. These countries problems are not of economic development, but with relative marginal adjustments in production and consumption patterns. A number of studies have, consequently, repudiated the standard customs union theory, and rejected the traditional trade creation, trade diversion analysis. Studies by Meier (1960), Abdel Jaber (1971) and Andic, Andic and Dosser (1971) have argued that, the Viner analysis of economic integration has limited relevance, if any, to the case of developing countries.

Therefore, new theories of economic integration adjusted to the special needs of developing countries have emerged following the Viner period. Studies most cited in the literature include; Allen (1961), Brown (1961), Bhambri (1962), El-Naggar (1964), Cooper and Massell (1965b), Mikesell (1965), Chou (1967), Kahnert et al (1969), and Andic, Andic and Dosser (1971). The theory was included in this study to support the two main theories; optimum currency area theory and new economic integration theory, in determining the intervening effect of trade integration on the relationship between financial integration and economic growth. The study findings, however, did not support the theory.

2.3 Measuring Financial Integration

Various measures exist in the literature for assessing the level of financial integration. The methods which are used most are connected with growing investment opportunities. However, Ho (2009) says that a standard measure of financial integration is difficult to develop. There are many types of financial transactions and some countries impose a complex array of price and quantity controls on a broad assortment of financial transactions. This leads to enormous hurdles in measuring cross-country differences in the nature, intensity and effectiveness of barriers to international capital flows (Eichengreen, 2001). Given the variety of asset classes traded, the measurement of financial integration is not straight forward (Kalemli-Ozcan and Manganelli, 2008).

Financial integration is often measured following the approach adopted by Baele et al. (2004).They consider three broad categories of financial integration measures, namely; Price-based measures, which capture discrepancies in prices or returns on assets caused by the geographic origin of the assets, news-based measures, which measure the information effects from other frictions or barriers and quantity-based measures, which quantify the effects of friction faced by the demand for and supply of investment opportunities.

Price-based measures constitute to a direct check of the law of one price, which in turn must hold if financial integration is complete. If assets have sufficiently similar characteristics, it can base these measures on direct price or yield comparisons. Otherwise it needs to take into account differences in systematic (or non-diversifiable) risk factors and other important characteristics. The cross-sectional dispersion of interest rate spreads or asset return differentials can be used as an indicator of how far away the various market segments are from being fully integrated. Similarly, beta convergence, a measure borrowed from the growth literature, is an indicator for the speed at which markets are integrating. In addition, measuring the degree of cross-border price or yield variation relative to the variability within individual countries may be informative with respect to the degree of integration in different markets.

The news-based measures are designed to distinguish the information effects from other frictions or barriers. More precisely, in a financially integrated area, portfolios should be well diversified. Hence, one would expect news (i.e. arrival of new economic information) of a regional character to have little impact on prices, whereas common or global news should be relatively more important. This presupposes that, the degree of systematic risk is identical across assets in different countries; to the extent that it is not, financial integration is not completed and local news may continue to influence asset prices.

The quantity-based measures quantify the effects of frictions faced by the demand for and supply of investment opportunities. When they are available, we will use statistics giving information on the ease of market access, such as cross-border activities or listings. In addition, statistics on the cross-border holdings of a number of institutional investors can be used as a measure of the portfolio home bias. Of course, no measure can be used for all markets, as the specifics of some market or the data available for implementing a measure can differ across markets. However, the spirit is the same across all markets, as they capture the extent of possible asymmetries.

Schäfer (2009) presents that the classification of integration indicators can be geared to the type of data collected or to the information revealed. With this approach, indicators are calculated either on the basis of statistical data on actual business activities (e.g. interest rate statistics) or by means of surveys of banks and consumers' behaviour and intentions.

For example, surveys can be used, to learn about the banks' international strategies or about consumer attitudes towards foreign providers. With regard to the type of information mined, the indicators can be either qualitative or quantitative. The latter category, in turn, can be volume-based or price-based. Indicators can also be classified by their contribution to the measurement of integration as specified in the three definitions of the term given above. Accordingly there are: Indicators depicting the extent to which the economic objectives associated with the integration process have been met. In other words, what progress has actually been made on achieving integration, indicators depicting whether banks and consumers perceive the uniform internal market as a whole as their domestic market and indicators depicting the extent to which the legal prerequisites are in place for banks and consumers to take a pan-European view, i.e. how far the artificial hurdles have been removed.

Two problems may arise with each of the three groups of indicators. Firstly, it may be difficult to correctly measure the variables entered into the respective indicator owing to limited data availability. Secondly, if this is not an issue, it will then be necessary to check whether the calculated indicator permits constructive statements on the status of retail banking market integration (Schafer, 2009).

Three types of empirical analyses are usually employed to measure the degree of financial integration, or simply, financial openness. Frankel and MacArthur (1988) use interest rate differentials and forward premium/discount to assess the degree of capital mobility and capital account liberalisation.

However, due to the difficulty in accurately gauging the magnitude and effectiveness of government restrictions as well as the relatively limited coverage of countries and time periods, these measures remain a persuasive argument. The second type is the on/off indicator of the existence of rules/restrictions that inhibit cross-border-capital flows. One representative work to employ this dataset is Grilli and Milesi-Ferretti (1995). Quinn (1977) focuses on the International Monetary Fund (IMF)'s restriction measures by reading through its narrative descriptions of capital account restrictions and assigning scores of the intensity of capital restrictions. Other studies propose restrictiveness measures for a limited number of countries that focus on controls of international sales and purchases of equities only.

However, it can be argued that, a wide range of factors rather than direct administrative barriers alone could affect cross-border capital movements. For example, they could be a range of policies and circumstances such as the stance of monetary or fiscal policy, the size of the domestic economy, and conditions in the rest of the world, etc.

The third type uses actual international capital or financial flow or stock to measure financial openness. A popular indicator is the stock of international assets and liabilities as a percentage of GDP. If the ratio is high, it implies that an economy is financially open to the rest of the world. Unlike the second type of measure, this openness measure does not just capture the restrictiveness of capital controls, but also the impact of all other factors influencing the level of capital flows, such as the nature of domestic financial markets.

This is the kind of measure (generally referred to as defacto measures) applied in the current study to measure financial integration. Specifically, the study uses gross capital flows as an indicator of financial integration. The study borrows from Kose et al, (2004) approach of measuring financial integration using financial flows.

2.4 Empirical Literature Review

This section captures the key empirical studies related to the current study. The studies have been categorized according to the inter-relationships between the variables in line with the stated objectives. Subsection (2.5.1) is included basically to provide an insight into the extent of integration in the East African community. The main subsections as outlined below have covered studies on; Macro-economic Volatility and Economic Growth, Financial Integration and Economic Growth, Financial Integration and Macroeconomic Volatility, Macroeconomic Volatility and Trade Integration as well as Financial Integration, Macroeconomic Volatility and Economic Growth.

2.4.1 Extent of Financial Integration

Studies have been conducted to measure the extent of financial market integration. Some of these studies include; Babetskii et al. (2007), Opolot and Luvanda (2009) and Buigut(2011). A majority of these studies have concluded that, money market integration was completed within Europe in 2002 while integration in other financial markets has been still lacking. However, studies examining East Asian financial markets have been relatively rare. Babetskii et al. (2007) focused on the empirical dimension of financial integration among stock-exchange markets in four new European Union member states (Czech Republic, Hungary, Poland, and Slovakia) in comparison with the Euro area. Their aim was to test for the existence and determine the degree of the four states' financial integration relative to the euro currency union. Specifically, they were seeking to know whether there is convergence of the above stock markets and if it really exists, how fast it was and how it was changing over time.

Opolot and Luvanda (2009) investigate the extent of macroeconomic convergence in the East African Countries (EAC) using sigma convergence analysis. The findings were mixed and incoherent, with convergence being established only for some countries and indicators especially after 1995. With respect to nominal variables, there is evidence of some partial convergence of monetary policy variables, while for fiscal policy variables, there is absolutely no evidence of convergence. This study concluded that, there is need for the EAC countries to increase policy harmonization and co-ordination so as to establish a coherent policy environment in the region.

Buigut (2011) was motivated to fill the existing gap of lack of rigorous examination on the prevailing state (by the time of the study) of monetary policy convergence for the EAC. His study aimed at determining whether the member countries of the East African community would form a successful monetary union based on the long-run behaviour of nominal and real exchange rates, the monetary base and real GDP. The four variables were each analyzed for co-movements among the five countries (Kenya, Uganda, Tanzania, Rwanda and Burundi) using co integration technique. The findings of the study showed partial convergence for the variables considered, suggesting there could be substantial costs for the member countries from a fast-tracked process.

Cheung et al (2003) investigate the status of real and financial integration of China, Hong Kong, and Taiwan, using monthly data on 1-month interbank rates, exchange rates, and prices. Specifically, the degree of integration is assessed based on the empirical validity of real interest parity, uncovered interest parity, and relative purchasing power parity.

There is evidence stating that, these parity conditions tend to hold over longer periods, although they do not hold instantaneously. Overall, the magnitude of deviations from the parity conditions is shrinking over time. In particular, China and Hong Kong appear to have experienced significant increases in integration during the sample period. It is also found that, exchange rate variability plays a major role in determining the variability of deviations from these parity conditions.

2.4.2 Financial Integration and Economic Growth

In theory, there are various direct and indirect channels through which increased financial flows can enhance growth. The direct channels include augmentation of domestic savings, reduction in the cost of capital through better global allocation of risk, development of the financial sector (Levine, 1996) and Caprio and Honohan (1999), and transfer of technological know-how. The main indirect channels are associated with promotion of specialization (Kalemli-Ozcan, Sorensen, and Yosha, 2003) and inducement for better economic policies (Gourinchas and Jeanne, 2003).

Edison et al (2002) examine the relationship between International Financial Integration (IFI) and economic growth data over 20-25 years for 57 countries. Constructing a variety of measures of IFI, the study concluded that the dataset does not support the view that international Financial Integration promotes economic growth after controlling for specific economic, financial, institutional and policy characteristics. However, they note that, international Financial Integration is positively associated with real per capital.

Boyd and Smith (1992) argue that, financial integration in countries with weak institutions and policies, such as weak financial and legal systems, actually induces capital outflows from capital-scarce countries to capital-abundant countries with better institutions. Similarly, empirical studies are inconclusive on the effect of financial integration on growth. Some studies give the result that, FDI inflows, which could arguably be stimulated by an open financial system, are positively associated with economic growth when countries are sufficiently rich, educated or financially developed (Blomstrom et al., 1994). Quinn (1997) shows that, capital account openness is robustly positively correlated with long-run economic growth in 64 countries for 1958 to 1989, whereas Arteta et al., (2001) and Kraay (1998) indicate that, capital account liberalisation is as likely to hurt as to help growth.

There are well-established theoretical explanations suggesting a positive impact coming from the process of progressive financial openness. Nevertheless, in principle, the opposite direction of influence could be also assumed: more dynamic economies, with high expectations of profitable investment activities could attract more (domestic as well as foreign) financial flows (Guiso et al., 2004).

Njoroge (2010) examined the impact of economic integration on growth by constructing an economic integration index based on an average of most favoured nations tariffs and the level of regional cooperation for COMESA, EAC and SADC. The economic integration index developed by the study captured two main aspects that facilitate economic integration. First, it considered trade reforms within a particular trade bloc capturing the various efforts of individual member countries towards freer trade. Second, trade reforms by a particular trade bloc and with the rest of the world, capturing efforts at a trade bloc level to freer trade were considered. Overall findings of the study were that, economic integration had a positive and significant impact on growth.

Osada and Saito (2010), studied the effects of financial integration on economic growth using a comprehensive panel dataset of 83 international countries from 1974-2007. Their study made use of defacto measures of financial integration broadly categorized as stocks of external assets and liabilities. The findings of their study suggest that, the effects of financial openness on economic growth vary substantially depending on the type of external assets and liabilities. The justification Osada and Saito gave for this outcome was that, an increase in external assets may lead to a relocation of production units from the country that owns those assets to other countries.

Another set of empirical studies suggests that, the composition of capital flows determines the effects of financial integration on economic growth (Reisen and Soto, 2001) and Goldberg, 2004). In particular, these studies conclude that, FDI flows tend to be positively associated with output growth in those countries that have a sufficient level of human capital (Borenzstein, De Gregorio, and Lee, 1998) and well-developed domestic financial markets (Alfaro, Chanda, Kalemli-Ozcan, and Sayek, 2003).Other studies focus on the impact of equity market liberalization on the growth rates of output and investment. Bekaert, Harvey, and Lundblad (2001) find that, equity market liberalization induces a significant increase in the growth rate of output while Henry (2000) documents that, it leads to a substantial increase in the growth rate of investment.

IMF (2002) investigated the impact of international financial integration (IFI) on economic growth and assessed whether the IFI-growth relationship depended on the level of economic development and financial development. The study contributed to the existing literature by using new measures of international financial integration that is Foreign Direct Investment (FDI), portfolio, and total capital flows. The study used Generalized-Method-of-Moments (GMM) estimators developed for dynamic panel data. The panel consisted of data for a maximum of 57 countries over the period 1976-2000. The study did not support the view that, international financial integration per se accelerates economic growth even when controlling for particular economic, financial, institutional and policy characteristics.

Muthoga et al (2003) aimed at establishing effects of regional financial integration on economic growth in East African Community (EAC). Conflicting views on the effects of financial integration on economic growth prompted their study. Quantitative and qualitative data between year 2000 and 2009 from the East African community was used. They employed the general method of moments in data analysis. Results showed that, regional financial integration significantly stimulated economic growth of the EAC. The study recommended that, EAC coordinating committee promote effective bank supervision to achieve uniform bank spread, initiate ways of issuance of common bond and develop secondary markets for all financial assets in the region.

Elly (2014) investigated the influence of institutional quality proxied by rule of law and political stability on the relationship between market geography and financial markets segments integration and the Joint effects of market geography and institutional quality attributes on integration of financial markets segments. Structured as a longitudinal study on three equity, five Treasury bill and five interbank markets, the study applied monthly market return and market geographical data for a 14-year period (2000 to 2013). The main study findings revealed that, there are linkages in the money markets and long run integrating relationships amongst the equity markets though perfect and full integration has not been attained. The study establishes that GDP, remoteness, financial sector deepening policy (FSD) and adjacency are statistically significant geographical variables in explaining financial markets segments integration.

2.4.3 Financial Integration and Macroeconomic Volatility

In theory, financial integration could help lower the volatility of macroeconomic fluctuations in capital-poor developing countries by providing access to capital that can help them diversify their production base. Rising financial integration, however, could also lead to increasing specialization of production based on comparative advantage considerations, thereby making economies more vulnerable to industry-specific shocks (Kalemli-Ozcan, Sorensen, and Yosha, 2003). In addition, sudden changes in the direction of capital flows could induce boom- bust cycles in developing countries, most of which do not have deep enough financial sectors to cope with volatile capital flows (Aghion, Banerjee, and Piketty, 1999). Results from dynamic stochastic general equilibrium business cycle models suggest that, increased access to international financial markets should dampen the volatility of consumption while inducing an increase in investment volatility (Mendoza, 1994; Backus, Kehoe, Kydland, 1995) and Baxter and Crucini, 1995).

Easterly, Islam and Stiglitz (2001) explore the sources of macroeconomic volatility using data for a sample of 74 countries over the period 1960–1997. They find that, a higher level of development of the domestic financial sector is associated with lower volatility. On the other hand, an increase in the degree of trade openness leads to an increase in the volatility of output, especially in developing countries. Their results indicate that, neither financial openness nor the volatility of capital flows has a significant impact on macroeconomic volatility.

O'Donnell (2001) examines the effect of financial integration on the volatility of output growth over the period 1971–1994 using data for 93 countries. He finds that, a higher degree of financial integration is associated with lower (higher) output volatility in OECD (non-OECD) countries. His results also suggest that, countries with more developed financial sectors are able to reduce output volatility through financial integration. These studies fail to address the issue of whether output volatility has any influence on economic growth. It also does not examine the effect of financial integration on economic growth.

Buch, Dopke, and Pierdzioch (2002) used data for 25 OECD countries to examine the link between financial openness and business cycle volatility. They report that, there is no consistent empirical relationship between financial openness and the volatility of output. Gavin and Hausmann (1996) study the sources of macroeconomic volatility in developing countries over the period 1970-1992. They found that, there is a significant positive association between the volatility of capital flows and output volatility.

Rajmund et al. (2015) examined the relationship between international financial integration and output fluctuation by conducting an analysis on a large sample of developed and developing countries over the past 40 years. They followed the approach employed by Kose et al. (2003) and used cross-sectional median of financial liberalization to subdivide developing economies into two groups: More Financially Liberalized (MFL) and Less Financially Liberalized (LFL) economies. Their results indicated that, while the volatility of output growth rates experienced a decreasing trend over time, financial integration had a significant contribution to output fluctuations. However, the relationship was stronger in developing countries.

2.4.4 Macro-economic Volatility and Economic Growth

Ramey and Ramey (1995) established the benchmark result that, growth and volatility are negatively related. Using a dataset comprising 92 countries and covering the period 1950-1985, they show that the relationship is robust after introducing various control variables, including the share of investment in GDP, population growth, human capital, and initial GDP. Moreover, the negative effect of volatility stems mainly from volatility of innovations to GDP growth, which reflects uncertainty. They also investigated the relationship between growth and volatility in a model in which the variance of innovations to output is linked to the variance of innovations to government spending.

Martin and Rogers (2000), found a significant and quantitatively important negative relation between growth and the amplitude of the business cycle whether measured by the standard deviation of growth or the standard deviation of unemployment. However, this relation does not work through an impact of short-term instability on the level of investment in industrialized countries. This could be a natural explanation of the empirical results.

Fatás (2002) controlled for trade openness in his regression analysis, but the results indicate that, the trade openness variable has no significant impact on the relationship between volatility and growth. None of these studies has examined the effects of financial integration on volatility and growth. Hnatkovska and Loayza (2003), conclude that macroeconomic volatility and long-run economic growth are negatively related. This negative link is exacerbated in countries that are poor, institutionally underdeveloped, undergoing intermediate stages of financial development, or unable to conduct countercyclical fiscal policies. On the other hand, the volatility-growth association does not appear to depend on a country's level of international trade openness.

Other studies analyze the impact of macroeconomic volatility on growth and well-being through its effect on the quality of economic policy. Easterly et al (1993) show that, positive shocks in relation to terms of trade influence the long-term growth path of economies, in part, through an improvement in economic policy. Guillaumont and Combes (2002) show that, vulnerability to volatility in global prices has a negative effect on the quality of economic policy and growth. To take two other examples, both Fatas and Mihov (2005, 2007) and Afonso and Furceri (2010) have emphasized the negative impact of variability in budget policy on growth in both OECD countries and developing nations.

The negative effect of macroeconomic volatility on growth and well-being, based on volatility in public and private consumption, has also been examined in a number of studies. Aizenman and Pinto (2005) and Wolf (2005) point out that, in the case of imperfect financial markets, the State and individual households are unable to protect themselves fully against risks which affect their revenue and adjust their consumption to the vagaries of economic activity. The result is that, volatility driven by external factors, for example in relation to terms of trade, generates internal volatility in relation to consumption, particularly in developing countries (Aguiar and Gopinath, 2007; Loayza et al, 2007).

2.4.5 Macroeconomic Volatility and Trade Integration

Krugman (1993) posits that, the theoretical impact of trade integration on macroeconomic volatility depends greatly on patterns of trade specialization and the nature of shocks**.** He further argued that, if trade openness is associated with increased interindustry specialization across countries and industry-specific shocks are important in driving business cycles, the result could be a rise in output volatility. If these shocks are highly persistent, then they could increase the volatility of consumption as well.

Razin and Rose (1994) made the contribution that, if increased trade is associated with increased interindustry specialization across countries, which leads to a larger volume of intermediate inputs trade, then the volatility of output could decline. These results indicate that, the impact of trade integration on volatility is also ambiguous in theory. Neither of the two studies above captures the influence of both macroeconomic volatility and trade integration (independently) on economic growth.

Kose and Prasad (2002) found that, both terms of trade shocks and foreign aid flows are particularly important in accounting for highly volatile macroeconomic fluctuations in small states, which seem to exhibit higher degrees of trade and financial openness than do other developing countries. Small states in this study were defined as countries with a population below 1.5 million.

Caporale et al. (2009) found a negative relationship between real exchange rate volatility and trade openness for the period 1979 - 2004. Their results show that there is a positive relationship between real exchange rate volatility and financial openness for the entire sample, which comprises 39 developing countries (20 from Latin America, ten from Asia, and nine from MENA5). These results are similar to Amor & Sarkar (2008). However, the regressions for the three separate regions find different results. For the Asian region, they find that financial openness causes real exchange rates to be more volatile, but REER volatility is mainly due to domestic real shocks, while external shocks play a small role. For the MENA region, they find that financial openness causes the real exchange rate to be less volatile, but REER volatility is mainly caused by monetary and real shocks. For the Latin American region, they find that, external and monetary shocks are the main sources of real exchange rate volatility.

2.4.6 Financial Integration, Macroeconomic Volatility and Economic Growth

Buch, Dopke and Pierdzioch (2002**)** examined the impact of financial integration on output growth volatility. Overall, the study found out that, international equity integration helps emerging and developing economies to better manage shocks to their domestic output growth, conditional upon having a diversified production base. The study failed to provide evidence that, developing countries have limited coping abilities to deal with the effect of shocks to domestic output as well as providing sufficient evidence of a strong agglomeration effect with regard to the attraction of foreign equity flow.

Bekaert, Harvey and Lundblad (2002) investigated a large cross-section of liberalized and segmented markets, using information before and after liberalization for a large number of emerging market economies. They established that, volatility did not significantly increase. Focusing on the years preceding the last Southeast Asia crisis, they asserted that volatility actually decreased, which is especially true for the volatility of consumption growth.

Kose, et al (2003a), in contrast to the above study, found that, trade and financial integration appear to attenuate the negative growth-volatility relationship. Specifically, they found that, the estimated coefficients on interactions between volatility and trade integration are significantly positive. This suggests that, countries that are more open to trade appear to be able to tolerate higher volatility without hurting their long-term growth**.** We find a similar, although less significant, result for the interaction of financial integration with volatility. Thus, both trade and financial integration appear to give more room for economies to handle volatility without adversely affecting growth.

Mougani (2012) provided an empirical analysis of some of the impacts of international financial integration on economic activity and macro-economic volatility in African countries. The results showed that, the impact of external capital flows on growth seems to depend mainly on the initial conditions and policies implemented to stabilize foreign investment, increase domestic investment, productivity and trade, develop the domestic financial system, expand trade openness and other actions aimed at stimulating growth and reducing poverty. Additionally, the results showed that, financial instability was particularly severe as from the nineties. The instability was more pronounced in the case of portfolio investments than in foreign direct investments because of the longer-term relationship established by the latter. Similarly, trends in official capital flows were less unstable than in private capital flows.

Rajmund and Aneta (2014) examined the relationship between international financial integration, volatility of financial flows and macroeconomic volatility. They content that, examination of the international financial integration and its effects on macroeconomic volatility or stability is particularly important due to existence of generally expected positive relationship between macroeconomic volatility and economic growth, common trends of decreased macroeconomic instability worldwide and occurrence of negative sides of financial integration - financial crises. Following their results, they suggest that, relationship between financial integration, volatility of financial flows and macroeconomic volatility is positive, however not significant. Moreover the relationship is stronger in case of developing countries.

2.5 Summary of Literature Review and Research Gaps

The gaps identified from the literature review above relate to conceptualization and contextualization of the variables. Conceptually, the debate on the influence of financial integration on economic growth is inconclusive given that some empirical studies have yielded inconsistent results. Some indicate a positive relationship (Edison et al,. 2002) while others show that, the effects vary substantially (Osada and Saito, 2010). Equally, studies have not clearly indicated the effect of trade integration and macroeconomic volatility on economic growth (Krugman, 1993) and Razin and Rose (1994). Additionally, the relationship between financial integration, macro-economic volatility and economic growth has resulted to mixed findings (Bekaert, Harvey and Lundblad, 2002) and Kose et al,. (2003a).

Studies that establish the joint influence of financial integration, trade integration and macro-economic volatility on economic growth are scarce. Contextually, studies on how financial integration influences the economic growth of the East African community have fallen short of explaining conclusively the role of macro-economic volatility as well as trade integration, in this relationship (Njoroge, 2010).

The summary of the knowledge gaps are provided in detail in the table below;

Table 2.1: Summary of Empirical Literature Review and Research Gaps

Researcher(s)	Focus of Study	Research Methodology	Research Findings	Research Gaps	Addressing the gaps
Babetskii, et al. (2007)	Existence of financial integration of four new EMU Member States using data for the period 1995 – 2006 at country level and at sector level.	Beta convergence and Sigma convergence techniques. (through the use of standard and rolling correlation analysis, time series and panel regression analysis and state-space techniques).	The absolute values of the beta coefficient are close to 1 for all the countries. Since 2005, stock markets of the Czech Republic, Hungary and Poland started diverging from the Euro area stock market and Hungary and Poland have the lowest degree of stock market integration with the Euro area at the end of the period under review.	The study falls short of explaining the diverging levels of integration with economic growth and macroeconomic volatility other than sectoral risks. It also doesn't derive the causal linkages between the markets. It is also not clear how assets with different payoffs are standardized.	Requires the conducting of a study which starts by establishing the short run market linkages. The long run relationships established are also explained by other institutional quality variables other than sectoral risks and market geography. Individual cross listed shares are analyzed to standardize assets of different payoffs.
Bekaert et al (2002)	Examining the effects of equity market liberalization on GDP and consumption growth variability.	They considered three different country samples, which were chosen based on data availability. While real per-capita GDP and consumption growth rates were available for all three samples, the control (additional right-hand side) variables were not. Sample I includes 95 industrialized, emerging, and frontier countries at varying degrees of economic development. In contrast, Sample II includes 50 primarily industrialized and emerging	Excluding the 1997-2000 years, dominated by the consequences of the South-East Asia crisis, they found an economically and statistically significant decrease in both GDP and consumption growth variability post liberalization. When the 1997-2000 years were taken into account, the negative volatility response of consumption growth is weakened and is no longer significant for a sample of emerging markets, but	This study considered the equity markets, limiting the findings to only a single sector. Therefore, it did not capture financial integration as a whole and its effect on economic growth and volatility.	The current study considers financial integration of an economy as whole, by using gross capital flows as a percentage of GDP as the measure of financial integration. It also captures macro-economic volatility using GDP volatility.

Researcher(s)	Focus of Study	Research Methodology	Research Findings	Research Gaps	Addressing the gaps
		countries that have active equity markets for which additional data describing equity market trading conditions are available. In Sample III, we focus primarily on the temporal effect by including only 30 countries that house emerging equity markets.	remains significant for a larger set of countries. These results hold for both total and idiosyncratic consumption growth volatility.		
Buch, Dopke, and Pierdzioch, 2002).	The aim of the study was to examine the impact of financial integration on output growth volatility.	A dynamic panel regression analysis was undertaken using data on emerging and frontier market economies in the region.	The study found out that international equity integration helps emerging and developing economies to better manage shocks to their domestic output growth, conditional upon having a diversified production base. The study fails to find a link between openness and volatility.	The study failed to provide evidence that developing countries have limited coping abilities to deal with the effect of shocks to domestic output.	The current study introduced an aspect of economic growth and trade integration. Overall, more variables were included to study both the moderating effect and the intervening effect; macro-economic volatility being the moderating variable and trade integration being the intervening variable.
Elly(2014)	Establish integration relationships between Kenyan and other EAC financial markets segments as well as the Joint effects of market geography and institutional quality attributes on integration of financial markets segments	Structured as a longitudinal study on three equity, five Treasury bill and five interbank markets, the study applied monthly market return and market geographical data for a 14 year period (2000 to 2013) to test five hypotheses using convergence and regression analysis.	The study findings revealed that, there are linkages in the money markets and long run integrating relationships amongst the equity markets though perfect and full integration has not been attained. The study establishes that GDP, remoteness, financial sector deepening policy (Fsd) and	The study lacked a primary relationship on which moderating and intervening effect would be applied. The focus of the study was also limited to a single sector; financial markets and therefore the findings do not	The current study considers financial integration of an economy as whole, by using gross capital flows as a percentage of GDP as the measure of financial integration. It also introduces a primary relationship between financial integration and

Researcher(s)	Focus of Study	Research Methodology	Research Findings	Research Gaps	Addressing the gaps
			adjacency are statistically significant geographical variables in explaining financial markets segments integration. Institutional quality as a factor in financial markets integration is confirmed when political stability moderates the influence of geography on integration and rule of law mediates the same relationships.	necessarily apply to the whole economy.	economic growth.
Grier and Tullock (1989)	Empirically examined the relationship between output volatility and growth	The study applied experimental design that allows testing of both the temporal and cross-country stability of the model coefficients using pooled regression analysis. Annual data on a five-year average is used for 113 countries over the period 1950-1981.	For OECD, they found a strong convergence effect and a persistent negative correlation between the growth of government's share in GDP and economic growth. We find no positive association between inflation and growth and a significant negative relationship between inflation variability and growth.	The results demonstrated that, we do not have a single empirical model of secular growth that applies around the world. Therefore, much more research is needed on the causes of economic growth in less advanced countries.	The current study recognized the existence of a relationship between financial integration and economic growth and went ahead to explore the moderating effect of macro-economic volatility as well as the intervening effect of trade integration on this relationship.
Hnatkovska and Loayza (2003)	The paper studies the empirical, cross-country, relationship between macroeconomic volatility and long-run economic growth.	The study made use of single cross-section of countries and a pooled sample of country and time series observations over the period 1960-2000.Correlation as well as simple and multiple regression analysis was	Macroeconomic volatility and long-run economic growth are negatively related. This negative link is exacerbated in countries that are poor.	The study did not examine the effects of financial openness on the relationship between macro-economic volatility and economic growth.	The current study addressed this gap by examining the moderating effect and the intervening effect of macro-economic volatility and trade integration respectively, on the relationship between financial

Researcher(s)	Focus of Study	Research Methodology	Research Findings	Research Gaps	Addressing the gaps
		applied. A sample of 79 countries was used			integration and economic growth.
Kaijage and Nzioka (2012)	Extent of financial integration in EA using stock market convergence and co integration with data from 2007 to 2012.	Beta Convergence and Cointegration analysis was applied using secondary data over the period 2007-2012 to test for speed of integration and long-run relationships between Kenya, Uganda and Tanzania.	Level of integration is evidenced by a beta coefficient of 0.6. Absence of long run equilibrium. Integration between USE and NSE is stronger than that between DSE and NSE with in significant difference in Beta convergence between Uganda and Tanzania.	Study recommends rigorous econometric analysis of the levels of financial integration that control for other variables. These variables should be captured by the inclusion of trade integration and the use of capital flows instead of equity market measures.	The study introduced inter-relationships on several variables and took focus on their joint effect on economic growth; the main objective behind financial integration. To capture integration in totality, gross capital flows will be used.
Kose, Prasad, and Terrones (2003a)	Examining the effect of trade and financial integration on the relationship between growth and volatility.	Cross-sectional and panel regression analysis over the period 1960-99. The study was focused on industrial, more financially integrated and less financially integrated economies.	The estimated coefficients on interactions between volatility and trade integration are significantly positive.	The study did not explore in detail the relationship between growth and the volatility of output.	The current study treated financial integration as the independent variable and trade integration as the intervening variable, while Kose et al(2003) study treated trade integration as the independent variable. This study also explored on the moderating effect of macro-economic volatility.
Martin and Rogers (2000)	Studying the impact of learning by doing on the relation between growth and short-term instability at the aggregate level.	Regression analysis using three samples; The first sample consists of 90 European regions using data for 1979 -1992, the second sample consists of	The study found a significant and quantitatively important negative relation between growth and the amplitude of the business cycle whether measured by	The relation established in this study does not work through an impact of short-term instability on the level of	Instability in the current study was addressed by studying the moderating effect of macro-economic volatility on the direct relationship between

Researcher(s)	Focus of Study	Research Methodology	Research Findings	Research Gaps	Addressing the gaps
		the 24 industrialized countries, data period being 1960 -1988. The third sample consists of the 72 non- industrialized and non-oil-producing countries using data the entire period; 1960 -1988.	the standard deviation of growth or the standard deviation of unemployment.	investment in industrialized countries.	financial integration and economic growth. Volatility is measured using a number of macro-economic variables; inflation, exchange rate and GDP per capita.
Muthoga et al (2013)	Establishing effects of regional financial integration on economic growth in East African Community (EAC).	The general method of moments panel regression analysis was used. The data used the period 2000-2009 for four member countries of the East African Community (Kenya, Uganda, Tanzania and Rwanda). Three measures of regional financial integration were used. These included the squared dispersion of the bank rate spread from the mean of the four countries, the squared dispersion of the government security rate from the mean of the four countries, and the squared dispersion of the real exchange rate from the mean real exchange rate of the four countries.	The empirical results showed that regional financial integration significantly stimulated the economic growth of the EAC. This is because the higher the dispersion from the mean squared, the lower the regional financial integration and vice versa. Financial integration is likely to strengthen domestic financial systems, provide support for a monetary union in the region, encouraging efficient allocation of capital and higher growth. The joining of EAC by Rwanda and Burundi had a statistically significant positive effect on economic growth.	This study explored the direct relationship between financial integration and economic growth but did not consider establishing the intervening effect and moderating effect of trade integration and macro-economic volatility.	The current study addressed this gap by examining the moderating effect and the intervening effect of macro-economic volatility and trade integration respectively, on the relationship between financial integration and economic growth.

Researcher(s)	Focus of Study	Research Methodology	Research Findings	Research Gaps	Addressing the gaps
Njoroge (2010)	Examined the impact of economic integration on growth by constructing an economic integration index based on average Most Favoured Nations (MFN) tariffs and the level of regional cooperation for COMESA, EAC and SADC.	The general method of moments panel regression analysis was used. The study covered the period 1970 to 2008. The three trade blocs of Eastern and Southern Africa cut across most of SSA countries whose poor economic performance has attracted a lot of interest in the growth literature. Besides, using the three trade blocs provides a richer data set than would be a single trade bloc in the sense that the sample of countries is relatively heterogeneous besides increasing the degrees of freedom necessary for consistent and efficient system GMM estimation.	The study established a positive relationship between economic integration and economic growth. Economic integration and trade, separately and jointly, have a positive and significant impact on growth.	This study explored the direct relationship between financial integration and economic growth but did not consider establishing the intervening effect and moderating effect of trade integration and macro-economic volatility.	The current study addressed this gap by examining the moderating effect and the intervening effect of macro-economic volatility and trade integration respectively, on the relationship between financial integration and economic growth.
Osada and Saito (2010)	The study examined the effects of international financial integration on economic growth using a comprehensive panel dataset that covers 83 countries for 1974-2007.	The study applied the system GMM method of regression analysis proposed by Blundell and Bond (1998). he vector of variables other than financial integration were years of schooling (a proxy for human capital), population growth, inflation rate, terms of trade (the	The effects of financial integration on economic growth differ considerably depending on the type of external assets and liabilities. In particular, when we break down external liabilities into FDI and equity liabilities and debt liabilities, the former has a positive impact on	This study only explored the direct relationship between financial integration and economic growth but did not consider establishing the intervening effect and moderating effect of trade integration and macro-economic	The current study introduced financial integration and trade integration as independent and intervening variables respectively, with macro-economic volatility playing a moderating effect on the relationship between financial integration and economic

Researcher(s)	Focus of Study	Research Methodology	Research Findings	Research Gaps	Addressing the gaps
		price of exports divided by the price of imports, changes from five years ago), trade openness (sum of exports and imports divided by GDP), a variable that measures the extent of domestic financial depth (stock of domestic private credit as a ratio of nominal GDP), and a measure of institutional quality constructed by Kauf- mann et al. (2009	economic growth while the latter has a negative impact. The negative impact of debt liabilities on economic growth is relatively larger when the external funds are used by public institution.	volatility.	growth.
Ramey and Ramey (1995)	Establishing the relationship between growth and volatility	Correlation and regression analysis using two samples of countries. The first sample of 92 countries using data for the period 1960- 1985 and the second sample consist of only 24 OECD countries from 1950 to 1988.	They showed that, the relationship is robust after introducing various control variables, including the share of investment in GDP, population growth, human capital, and initial GDP. Moreover, the negative effect of volatility stems mainly from volatility of innovations to GDP growth, which reflects uncertainty	The study simply explored the direct relationship between economic growth and volatility, without considering any factors/variables which influence/could influence the direct relationship	The current study introduced financial integration and trade integration as independent and intervening variables with macro-economic volatility playing a moderating effect on the relationship between financial integration and economic growth.
Tornell, Westermann, and Martinez (2004)	Establishing the link between financial liberalization growth and crises.	A simple dynamic general equilibrium model of an economy with two sectors: A tradables (T) sector that produces the consumption good, and a nontradables (N) sector that produces an intermediate good.	Empirical analysis shows that, in countries with severe credit market imperfections, financial liberalization leads to more rapid growth, but also to a higher incidence of crises. In fact, most of the fastest-growing countries of	The paper examined the relationship between financial liberalization and growth but not financial integration. The two concepts are not the same. The	The current study focused on the influence of trade integration and macro-economic volatility on the relationship between financial integration and economic growth.

Researcher(s)	Focus of Study	Research Methodology	Research Findings	Research Gaps	Addressing the gaps
			the developing world have experienced boom-bust cycles.	context of the paper is equally different from the context of the current study.	
Vajanne (2006)	Assessment of integration of retail banking in the euro area.	Beta Convergence and Sigma Convergence using price- based indicators constructed from newly harmonised Monetary Financial Institutions (MFI) interest rate (MIR) data across euro area member countries. Panel regression analysis using 462 country-month observations was applied over the period 2003-2006.	There is evidence of a process of convergence in retail banking credit interest rates for households and non-financial corporations.	Lack of integration should also be attributed to differences in regulation in the banking industry which is within the country institutional arrangements.	This study introduced a multiple regression analysis model which examined the moderating effect of macro-economic volatility on the relationship between financial integration and economic growth

Author: Researcher (2015)

2.6 The Conceptual Framework

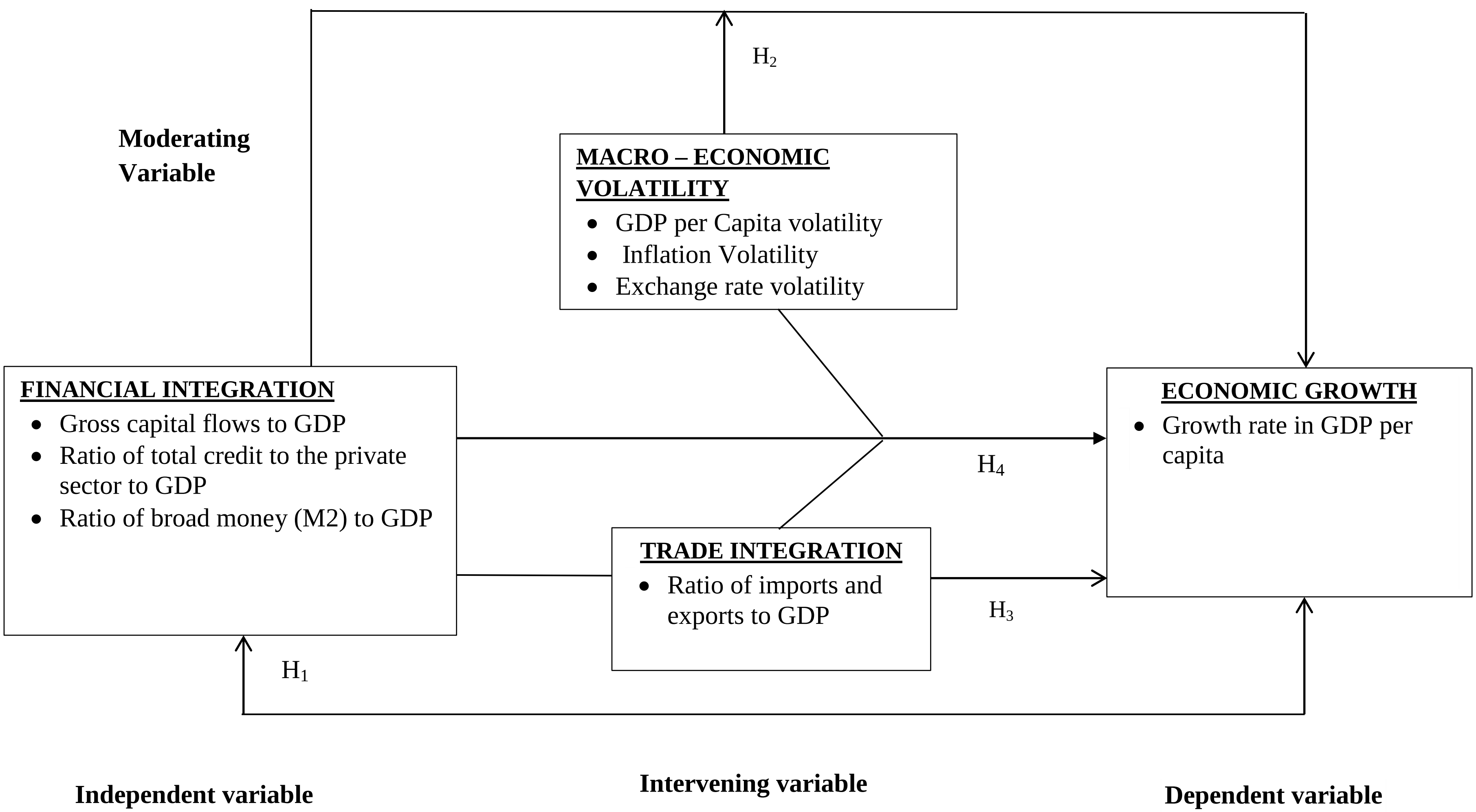
A discussion of the dependent, independent, moderating and intervening variables was undertaken in this section to explain the conceptual model. The dependent variable in the study is economic growth of the East African economies. The growth of any economy depends on several macro-economic factors as well as external global factors and international initiatives. Some of the international initiatives are geared towards building regional economic blocs. Such include economic integration, which is categorized into financial integration and trade integration. The study identified financial integration as the independent variable, because when countries are financially integrated, there is faster economic development than when they are not financially integrated.

The study used the ratio of gross capital flows to GDP to measure financial integration. To control for the robustness of the relationship between financial integration and economic growth, the degree of financial deepening in these countries was considered using the M2/GDP ratio (Chowdhury, 2001). M2 is strictly used to measure the degree of financial deepening. The assumption is that an increase in financial deepening would enhance growth. Financial depth was also controlled, using the ratio of private sector credit to GDP. Given that, financial integration may contribute to a faster technological development of the financial sector, the inclusion of this variable permits to separate the direct effect of financial liberalization from the effect mediated by financial depth (De Gregorio and Guidotti (1995), Calderón and Liu (2003)). Most importantly, it has the merit of concentrating exclusively on credits received by the private sector from financial intermediaries, excluding thus credits issued to the public sector and also credits stemming from the central banks.

The study incorporated trade integration as the intervening variable in the relationship between economic growth and financial integration. Empirically, the level of trade between countries explains the nature and degree of the relationship between financial integration and economic growth. In this study, the ratio of imports and exports to GDP was used to measure trade integration. The other indicator of trade; the share of exports in GDP was not considered in this study because it only captures the level of exports and not entire trade by a country.

Macroeconomic volatility was identified as the moderating variable in the relationship between financial integration and economic growth. Volatility indicates how much and how quickly the value of an investment, market, or market sector changes. Arguably, the changes in the values of investments, markets or market sectors are expected to have an influence on the economy, positively or negatively. The study made use of inflation volatility, exchange rate volatility and GDP per Capita volatility as indicators of macro-economic volatility, because a change in any of these indicators will always impact on the economy.

Figure 2.1: The Conceptual Model



2.7 Research Hypotheses

This study sought to establish the influence of Macroeconomic volatility and trade integration on the relationship between financial integration and economic growth in the EAC by testing the following five hypotheses.

Hypothesis 1: There is no significant effect of financial integration on economic growth.

Hypothesis 2: There is no significant moderating effect of macro-economic volatility on the relationship between financial integration and economic growth.

Hypothesis 3: There is no significant intervening effect of trade integration on the relationship between financial integration and economic growth.

Hypothesis 4: There is no significant joint effect of financial integration, macroeconomic volatility and trade integration on economic growth.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research methodology applied in this study. It discusses the research philosophy in section 3.2, research design in section 3.3 and the population and sample size in section 3.4. The data collection methods and research procedures are outlined in section 3.6, as section 3.7 discusses the data analysis techniques adopted in the study.

3.2 Research Philosophy

To guide the research effort, a researcher requires an appropriate research philosophy. Selection of research philosophy has a choice between four options: positivism, constructivism or interpretivism, advocacy participatory and pragmatism. The main features of these alternatives are shown in Appendix 3. However, the identifiable extreme philosophies are phenomenology and positivism.

The phenomenological paradigm is also known as the qualitative, subjectivist, humanistic or interpretive research paradigm, whereas the positivistic paradigm is alternatively known as the quantitative, objective, scientific, experimentalist or traditionalist research paradigm (Blumberg et al., 2005). A phenomenological research paradigm or mindset is concerned with understanding human behaviour from the researcher's own frame of reference. The act of investigating a reality within a phenomenological context is thus seen as having an effect on that reality.

Researchers using this paradigm essentially focus on the meaning that individuals attach to actual experiences related to a concept or a phenomenon rather than on measuring it (Miller & Salkind, 2002). This further implies that, phenomenologists have to interact personally with the objects (or units of analysis) being investigated. According to this approach, the opinions of experts are sought rather than drawing samples from a population (Collis & Hussey, 2003).

A positivistic paradigm consists of several beliefs about how a researcher can make sense to others, and it is based on the assumption that all researchers are fallible. As such, it is posited that, human behavioural studies should be conducted in the same manner as studies in the natural sciences (Blumberg et al., 2005). It can be stated that, positivism is based on realism, in that, it searches for the truths 'out there'. In positivism studies, the researcher is independent from the study and there are no provisions for human interests within the study. Crowther and Lancaster (2008) inform that as a general rule, positivist studies usually adopt deductive approach, whereas inductive research approach is usually associated with a phenomenology philosophy. Moreover, positivism relates to the viewpoint that researcher needs to concentrate on facts, whereas phenomenology concentrates on the meaning and has provision for human interest.

Researchers warn that "if you assume a positivist approach to your study, then it is your belief that you are independent of your research and your research can be purely objective. Independent means that you maintain minimal interaction with your research participants when carrying out your research. ”In other words, studies with positivist paradigm are based purely on facts and consider the world to be external and objective.

This study was anchored on a positivism research philosophy because it is based on existing theory and it formulated quantitative hypotheses that were tested. The positivist paradigm allowed for deriving the relationship between financial integration, trade integration, Macro-economic volatility and Economic growth in the EAC. Borrowing from existing literature, theoretical relationships among the four variables above were hypothesized/formulated in form of objectives. To achieve these objectives, appropriate measures for each variable were identified, data was collected and subjected to both descriptive and inferential statistical analysis. Specifically, inferential statistical analysis was conducted to establish the significance of the relationships. Details of the results are presented in chapter five.

3.3 Research Design

Three broad classifications of non-experimental research designs are identified as exploratory research design, descriptive research design and causal (explanatory) research designs. The causal survey design seeks to establish the cause and effect relationship between two or more variables. Causal effect (nomothetic perspective) occurs when variation in one phenomenon, an independent variable, leads to or results, on average, in variation in another phenomenon, the dependent variable. However, conclusions about causal relationships are difficult to determine due to a variety of extraneous and confounding variables that exist in a social environment.

This means causality can only be inferred, never proven. If two variables are correlated, the cause must come before the effect. However, even though two variables might be causally related, it can sometimes be difficult to determine which variable comes first and therefore to establish which variable is the actual cause and which is the actual effect. The study sought to establish the relationship between financial integration and economic growth and the influence of macro-economic volatility and trade integration on the established relationship. It was therefore justifiable to use the causal research design in the study because the objectives sought to establish the cause and effect relationships between several variables.

Financial integration is the independent variable which is said to be endogeneous in this study, because it is also influenced by financial depth. In that case, financial depth is included in the study and measured using two instruments; the ratio of M2 to GDP and the ratio of private sector credit to GDP. It is the inclusion of these two instruments which compelled the researcher to apply the instrumented variable regression analysis technique. Specifically, the generalized two-stage least squares instrumental variable regression method was applied. It is two-stage because, the first stage involved the estimation of financial integration (endogeneous/instrumental variable) using the two instruments of financial depth. The second stage is a regression of the original equation, with all of the variables replaced by the fitted values from the first-stage regressions. The coefficients of this regression are the two stage least squares estimates.

3.4 Population of the Study

The East African Community (EAC) is the regional intergovernmental organization of the Republics of Burundi, Kenya, Rwanda, the United Republic of Tanzania, and the Republic of Uganda, with its headquarters in Arusha, Tanzania. All these republics are technically referred to as the five member/partner states in the EAC. For inclusivity, the population of interest was all the five partner states in the EAC. Together as an economic bloc, the member states were used as the unit of analysis in this study, simply because, the primary focus was on financial integration and economic growth of the East African community.

EAC was chosen as the context of the study because its primary objective is to develop a single market and investment area in East Africa that is anchored on the twin pillars of internal free trade and liberal trade with the rest of the world. The regional financial cooperation acts as a means of promoting intra-regional trade and exploiting economies of scale by pooling small and fragmented domestic markets to support industrialization (Kasekende and Ng'eno, 2000). The promotion of trade, exploitation of economies of scale as well as industrialization are expected to translate to increased economic growth, in the long run.

3.5 Operationalization of the Variables

Operationalization of the study variables was informed by concepts from the hegemonic stability theory, the purchasing power parity theory, the optimum currency area theory, the efficient market hypothesis, customs union theory and the new economic integration theory. To construct a measurement instrument is a long and tedious process and is therefore advisable to borrow ideas from studies which have used similar instruments to enhance construct validity (Gomez- Haro et al, 2011).

The constructs under scrutiny in this study were operationalized to enable the researcher measure their relationships quantitatively. Financial integration played the independent role while economic growth was operationalized as the dependent variable. Trade integration took an intervening role between financial integration and economic growth while macro-economic volatility played a moderating role on the relationship between financial integration and economic growth. The measurement of the independent, moderating, intervening and dependent variable is shown in table 3.1 below.

Table 3.1: Operationalization of Variables

Variable	Variable Name	Indicator	Level of Measurement	Source
Independent variable	Financial Integration	Gross capital flow to GDP The ratio of total credit to the private sector to GDP Ratio of broad money (M2) supply to GDP	Ratio Ratio	Kose(2003)
Intervening variable	Trade integration	Ratio of imports and exports to GDP between two countries	Ratio	Kose(2003)
Moderating variable	Macro-economic Volatility	The standard deviation of GDP per Capita The standard deviation of Inflation rate The standard deviation of exchange rate The coefficients of variation for each of the macro-economic volatility indicators	Ratio Ratio Ratio Ratio	Ramey and Ramey (1995) Servén (1997) Servén (1997)
Dependent variable	Economic Growth	GDP growth rate	Ratio	Kose(2004)

Source: Researcher (2015)

3.6 Data Collection

The study used secondary data for the period (1963 to 2014). Several landmark initiatives by the East African community have been operationalized over this period. This makes it necessary to consider the entire period for purposes of capturing the impact of all the initiatives undertaken towards the integration of the respective economies.

Annual data on gross capital flows, broad money supply (M2), imports and exports, inflation, exchange rates, Annual GDP figures, growth rate in GDP per capita and total credit to the private sector was retrieved from the respective partner state central bank databases, the national statistical organs, the East African community secretariat, the international monetary fund and the world bank.

3.7 Data Analysis and Diagnostic Tests

Measures of central tendency (Arithmetic mean) as well as measures of dispersion (the range, coefficient of variation and standard deviation) were appropriately applied on the indicators to provide a comparative situation analysis for all the five member states. For this analysis, broad money supply, gross capital flows, exports, imports, inflation, exchange rates and total credit to the private sector were converted to a common currency (US dollars).

The variables were further subjected to instrumental variable regression analysis and correlation analysis using panel data in order to achieve each of the four objectives. Coefficient of determination, R^2, was computed to assess the strength of fitness of the overall model. The respective individual regression coefficients were tested for statistical significance using the z-test.

However, before estimating the different models to address the study objectives, the researcher first conducted a panel unit root test to establish whether there were any variables in the model that were non-stationary.

The Im- Pesaran-Shit Test (IPS) panel unit root test was conducted. The IPS estimates the t-test for unit roots in heterogenous panels (Wicks-Lim, 2005). The test allows for individual effects, time trends and common time effects. It is based on the mean of the individual Dickey-Fuller (DF) t-statistics of each unit in the panel, and assumes that all series are non-stationary (have unit roots) under the null hypothesis.

In order to choose between fixed effects and random effects models, the test suggested by Hausman (1978) was conducted. The fixed effects model assumes individual heterogeneity, while the random effects model assumes that the variations are probabilistic. The determination of the lag structure entailed selecting the number of lags using an information criterion such as the Schwarz information criterion. Any particular lagged value of one of the variables were retained in the regression, if it was significant according to a z-test or the lagged values of a variable jointly added explanatory power to the model according to the chi-square -test.

Table 3.2: Analytical Interpretation of Data

Objective	Hypothesis	Analytical Model	Analysis Techniques	Interpretation
Determine the relationship between financial integration and economic growth.	$H_{1:}$ There is no significant relationship between financial integration and economic growth	H_1: EG = $\beta_0 + \beta_1$FI + ε where EG= Economic growth, FI = Financial Integration, β_0= Intercept, β_1= regression coefficient and ε= error term	Correlation, regression analysis	Relationship exists if β_1 is significant
Determine the moderating effect of Macro-economic volatility on the relationship between financial integration and economic growth.	H_2: There is no significant moderating effect of Macro-economic volatility on the relationship between financial integration and economic growth.	H_2: EG = $\beta_0 + \beta_1$ FI+ β_2 MEV+ β_3FI*MEV + ε Where; FI= Financial Integration, EG= Economic Growth, MEV= Macro-economic volatility	Correlation, Regression, analysis	$\beta_3$should be significant for Macro-economic Volatility to qualify as a moderating variable.
Determine the association between financial integration and trade integration	H_3: There is no significant association between financial integration and trade integration	No model is applicable	Correlation, analysis	Significant positive association exists if r >0 and p<0.05
Determine the intervening effect of trade integration on the relationship between financial integration and economic growth.	$H_{4:}$ There is no significant intervening effect of trade integration on the relationship between financial integration and economic growth	EG = $\beta_0 + \beta_1$FI + ε TI = $\beta_0 + \beta_2$ FI + ε EG = $\beta_0 + \beta_3$TI+ ε EG = $\beta_0 + \beta_4$ FI $_+$ β_5 TI+ ε, where TI = Trade integration	Correlation, Regression analysis	Relationship exists if β1, β3 and β5 are significant
Examine the joint effect of financial integration, trade integration, macro-economic volatility on economic growth of the EAC.	H_5: There is no significant joint effect of financial integration, trade integration and macro-economic volatility on economic growth of the EAC.	EG = $\beta_0 + \beta_1$FI+ β_2 MEV+β_3 TI + ε	Correlation, Regression, analysis	Relationship exists if at least one of $\beta_{1\text{-}}$ β_3 is significant

Source: Researcher (2015)

3.8 Assumptions of the Study

The study applied a number of assumptions in carrying out successful hierarchical regression analysis to evaluate the moderating and intervening effects. On causality, the study assumed that, the independent variable and the moderating variable must both cause the dependent variable. There is need to know causal direction of the independent variable to dependent variable relationship. In the cases where causality is unclear or the two variables may not even be a direct causal relationship, moderated regression analysis should not be conducted. The study also assumed that, the use of a product term implies a linear relationship between the moderating variable and the independent variable to the dependent variable relationship (linear moderation). In other words, the effect of X (independent variable) on Y (dependent variable) changes by a constant amount as the moderating variable increases or decreases. This assumption was extended to apply (assume) linear effect of the independent variable.

3.9 Ethical Considerations

Since ethics has become a core part of the research process, some ethical considerations were made in the conduct of this study. Borrowing from the principles of ethical considerations documented by Bryman and Bell (2007), any type of communication in relation to the research was done with honesty and transparency. Besides this, the accuracy or explanatory power of the data used was not exaggerated. The conduct of the study was also informed by the Ethical Guidelines for Statistical Practice of the American Statistical Association (1998), which states that quantitative researchers and statisticians should present their findings and interpretations honestly and objectively.

The guidelines also stipulate that, the researcher should avoid untrue, deceptive, or undocumented statements and should collect only the data needed for the purpose of their inquiry. Still, one should be prepared to document data sources used in an inquiry; known inaccuracies in the data; and steps taken to correct or to refine the data, statistical procedures applied to the data, and the assumptions required for their application.

CHAPTER FOUR

DATA DESCRIPTION AND ANALYSIS

4.1 Introduction

This chapter presents the findings of the study based on descriptive statistics analysis and correlation analysis of the various variables considered in the study. Specifically, section 4.2outlines the descriptive statistics for the study variables per country(member state), section 4.3 discusses multicollinearity tests, 4.4 discusses correlation analysis and 4.5 discusses the diagnostic tests (the unit root test and the Hausman test) as necessary conditions to be satisfied before conducting regression analysis. Section 4.6discusses the rationalization of the choice of statistical models adopted in the study. The chapter ends with providing a summary under section 4.7 on all the sections above.

4.2 Descriptive Statistics for the EAC Member states

A key measure of central tendency (arithmetic mean), the range, standard deviation and coefficient of variation as measures of dispersion were computed for each variable, per country, as a way of screening the macro-economic environment and presenting a comparative situation analysis of the member states. The comparative situation analysis was useful in identifying or establishing the existence of a dominant state among the various member states, and confirming the hegemonic stability theory.

4.2.1 Descriptive Statistics for Burundi

Table 4.2.1 below which presents the descriptive statistics for Burundi shows that, the mean economic growth for Burundi was 2.90% and the average gross capital flow to GDP was 0.13. The ratio of M2 to GDP was on average 16.80 while the mean private bank credit to GDP was 9.55. Burundi's ratio of exports and imports to GDP was on average 0.33. This implies that, the country has generally experienced slow economic growth. This, to some extent can be attributed to low capital flows as indicated by the average value of 0.12. The macroeconomic volatility measures had a mean of 3,858.68 for GDP per capita volatility, 65.85 for inflation volatility and exchange rate volatility was on average 216,816.50. However, the coefficient of variation indicates that economic growth, inflation volatility and exchange rate volatility have the highest variations compared to the other variables. The high volatility values point to instability of the macro-economic environment.

Table 4.2.1: Descriptive Statistics for Burundi

Variables	Number of Observations	Mean	Standard. Deviation	Coefficient of Variation	Minimum	Maximum
Economic growth	52	2.9025	5.28506	1.821	-8	21.33
Gross capital flows to GDP	52	0.12895	0.0787	0.610	0.02857	0.30542
Ratio of M2 to GDP	52	16.8006	5.10725	0.304	8.278	26.984
Private Bank Credit to GDP	52	9.54885	6.33885	0.664	1.36	25.26
Exports and imports to GDP	52	0.32539	0.08705	0.268	0.21	0.54
GDP Per capita volatility	52	3858.68	3598.79	0.933	0.23503	12421.1
Inflation volatility	52	65.8506	123.844	1.881	0.0025	715.563
Exchange rate volatility	52	216817	257719	1.189	297.908	1264680

Author Researcher (2015)

On the trend analysis presented by figure 4.2.1, EG stands for economic growth, IGDP is gross capital flow, TI is trade integration, lnMEVGDPCapV is natural log of GDP per capita volatility, lnMEVIV is the natural log of inflation volatility, and lnMEVERV is the natural log of exchange rate volatility.

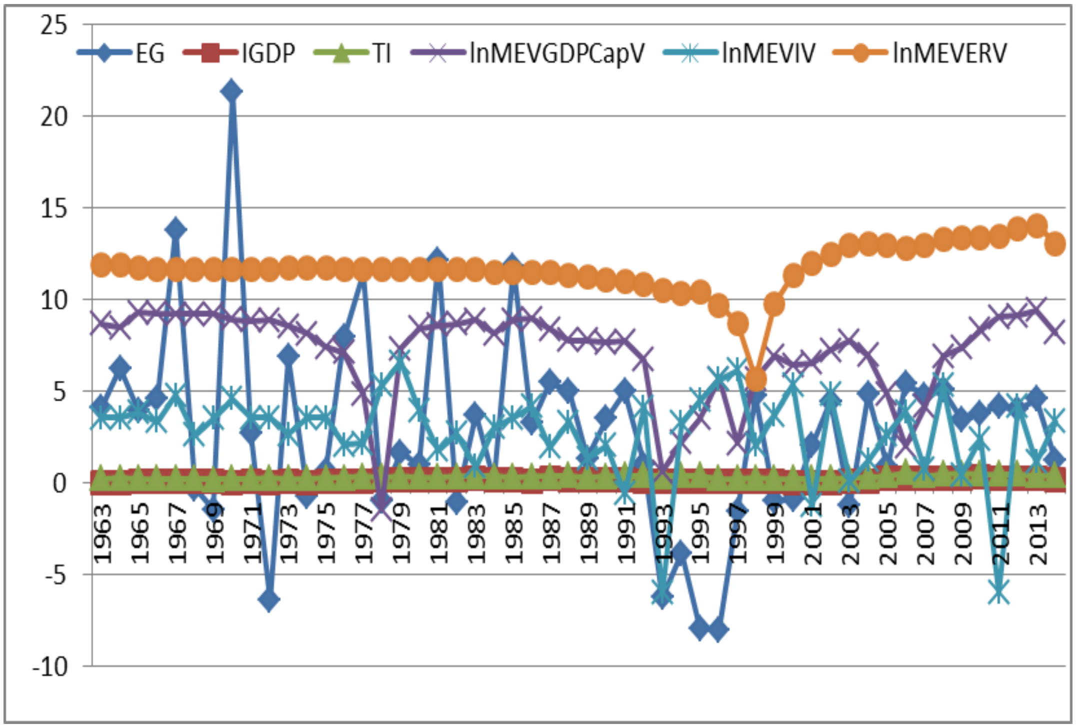


Figure 4.2.1: Trend Analysis on Burundi

Figure 4.2.1 above shows that, economic growth (EG) exhibits spikes especially in the early years of 1967, 1970, 1972, 1977, 1981 and 1985. However, gross capital flow to GDP (IGDP) and trade integration (TI) oscillated about the value 0. Exchange rate volatility for Burundi oscillated between the value of 10 and 15 for the entire period with an exception of a spike in 1998 and the value of less than 10 in the period 1995 to 1999. The country's background information provided below gives insights into the above trend analysis.

The period 1960-1972 was characterized by institutional instability and economic Decline. Most of the factors explaining economic decline during this period were a consequence of the chaotic departure of Belgians from their three colonies. Firstly, the legacy of high ethnic tensions inherited from the Belgians paralysed institutions culminating, in 1965, in the first large-scale political violence. Secondly, as already noted, Congo and Rwanda's independence spelt the end of the economic union, resulting in the loss of most of Burundi's export markets. Large trade deficits ensued. Thirdly, the scarcity of qualified manpower and capital stock following decolonisation resulted in a sluggish economy, especially within the modern sector. During this period, Burundi's economic growth was lower than the African average and much lower than the average for Asian highly performing countries. The second period from 1972 to 1988 saw the expansion of the basis for economic rents to cater for the needs of young members of the elite. Per capita GDP increased but the cost was massive borrowing and alarming inefficiencies. The third period from 1988 to date is characterized by war and an unprecedented economic crisis.

4.2.2 Descriptive Statistics for Kenya

The descriptive statistics for Kenya is given in Table 4.1.2 below which shows that, the mean economic growth for Kenya for the period 1963 to 2014 was 4.8 and the average gross capital flow to GDP was 0.2071. The ratio of M2 to GDP was on average 31.53 while the mean private bank credit to GDP was 21.00. Kenya's ratio of exports and imports to GDP was on average 0.5871. Indicatively, the Kenyan economy depicts the best economic performance, on average.

This position is supported by the relatively high capital flows (an average of 20.70% of GDP), the highest level of financial deepening in the region (an average money supply of 31.53 of GDP and 21.00 private sector credit to GDP) as well as the highest level of trade openness as measured by the ratio of imports and exports to GDP.

The mean GDP per capita volatility was 76585.84, 71.29 for inflation volatility and exchange rate volatility was on average 968.12. The volatility figures clearly indicate that, there are relatively high variations in GDP per capita compared to the variations in inflation and exchange rate. The high variations in GDP per capita point to instability in the macro-economic environment. The trend analysis below confirms this argument as clearly indicated by the spikes. GDP per capita volatility and inflation volatility depict the highest relative variability compared to the other indicators. The coefficients of variations of 1.79 and 2.5 indicate that, GDP per capita volatility and inflation volatility have higher variations than their respective average values. This points to clear instability in the macro-economic environment.

Table 4.2.2: Descriptive Statistics for Kenya

Variables	Number of Observations	Mean	Standard Deviation	Coefficient of Variation	Minimum	Maximum
Economic growth	52	4.79423	4.37145	0.912	-4.66	22.17
Gross capital flows to GDP	52	0.20709	0.03792	0.183	0.13	0.30377
Ratio of M2 to GDP	52	31.5338	8.48103	0.269	4.28932	42.9272
Private Bank Credit to GDP	52	20.9979	5.24299	0.250	12.23	33.58
Exports and imports to GDP	52	0.58712	0.06194	0.106	0.48	0.75
GDP Per capita volatility	52	76585.8	137251	1.792	15.8301	682558
Inflation volatility	52	71.2869	178.64	2.506	0.25	1239.04
Exchange rate volatility	52	968.122	607.251	0.627	25.4016	2657.4

Author: Researcher (2015)

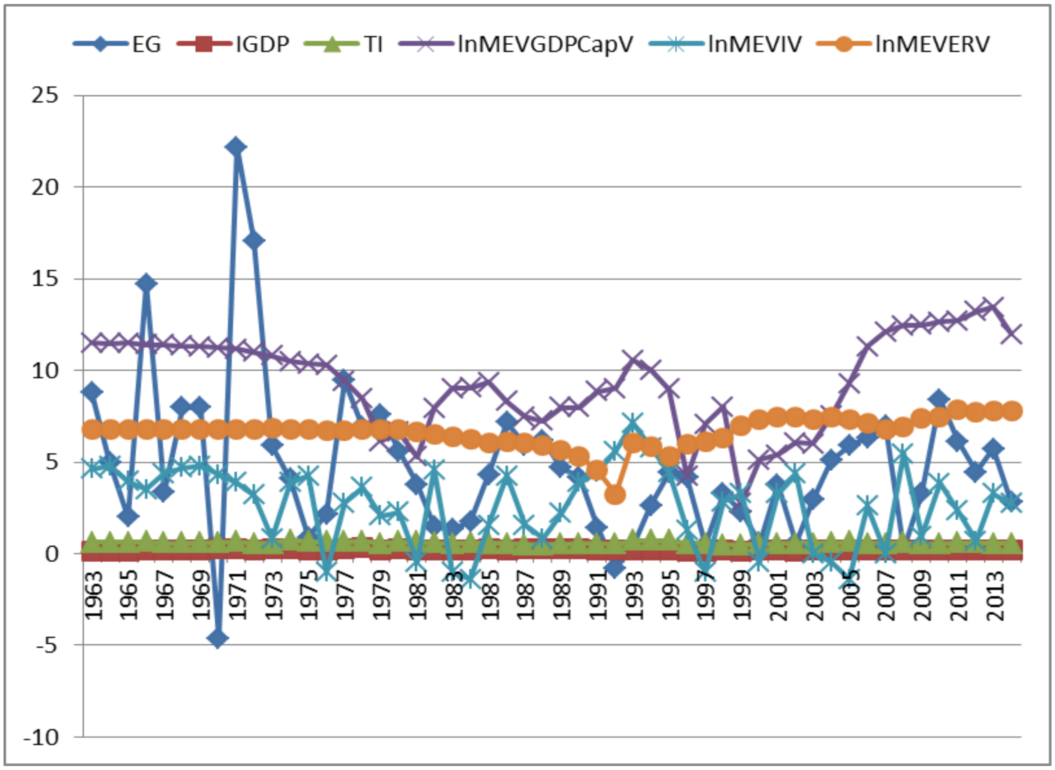


Figure 4.2.2: Trend Analysis on Kenya

Figure 4.2.2 shows that, the economic growth of Kenya exhibited spikes in the early year's upto 1972. Both gross capital flows to GDP and trade integration oscillated about the value 0. The natural log of exchange rate volatility oscillated between 5 to 10, save for a spike in 1992. A look at the country's economic historical background provides some insights into the above pattern of macro-economic performance.

Notably, Kenya's economy has been inconsistent since its independence in 1963. During the initial years of independence, the country achieved high economic growth of 6%, which declined to below 4% in the following decades. In the 1990s, Kenya's GDP also experienced great inconsistency, ranging between negative figures to 4%.

After the millennium, Kenya's economic growth gradually increased, reaching a high of 7% in 2007. Post-election violence in early 2008, coupled with the effects of the global financial crisis on remittance and exports, reduced GDP growth to 1.7% in 2008, but the economy rebounded in 2010-11 by showing growth rates higher than 5%.

Support from the World Bank Group (WBG), International Monetary Fund (IMF) and other development partners has helped the country in achieving significant structural and economic reforms that have contributed to sustained economic growth over the last decade. However, high inflation has been a major challenge, rising to as high as 12%, but fiscal consolidation and tight monetary policy have secured a declining inflation, with efforts being made to stabilize it at single digits. Devolution, which has strengthened accountability and public service delivery at local levels, is rated the biggest gain from the August 2010 constitution. Overall, Kenya has the potential to be one of Africa's great success stories from its growing and youthful population, a dynamic private sector, a new constitution, and its pivotal role in East Africa. Addressing challenges of poverty, inequality, governance, low investment and low firm productivity to achieve rapid, sustained growth rates that will transform the lives of ordinary citizens, will be a major goal for the country (www.worldbank.org).

4.2.3 Descriptive Statistics for Rwanda

The descriptive statistics for Rwanda is presented in Table 4.2.3 below which shows that, the mean economic growth for Rwanda for the period 1963 to 2014 was 4.6 and the average gross capital flow to GDP was 0.15. The ratio of M2 to GDP was on average

15.43 while the mean private bank credit to GDP was 6.36. Rwanda's ratio of exports and imports to GDP was on average 0.33. The economic performance of Rwanda is the second highest in the region despite the relatively low capital flows (financial openness), relatively low financial deepening as well as the level of trade openness.

The mean GDP per capita volatility was 23816.32, 46.88 for inflation volatility and exchange rate volatility was on average 42163.13.The key volatility measure is the exchange rate volatility, which depicts the highest average. The average variation in the rate of inflation is relatively low, implying that inflation rate volatility is well controlled compared to GDP per capita volatility and exchange rate volatility. Using a more refined measure of variability, the coefficient of variation, indicatively, inflation volatility, economic growth and GDP per capita volatility depict the highest variations. GDP per capita measures economic growth while inflation levels influence the direction of economic growth. Therefore, high variations in these variables point to macro-economic instability.

Table 4.2.3: Descriptive Statistics for Rwanda

Variables	Number of Observations	Mean	Standard Deviation	Coefficient of Variation	Minimum	Maximum
Economic growth	52	4.59039	10.6124	2.312	-50.25	35.22
Gross capital flows to GDP	52	0.14992	0.05613	0.374	0.05263	0.28116
Ratio of M2 to GDP	52	15.4277	2.51571	0.163	10.5348	22.4276
Private Bank Credit to GDP	52	6.35519	3.75843	0.591	0.69	12.47
Exports and imports to GDP	52	0.32519	0.08452	0.260	0.2	0.72
GDP Per capita volatility	52	23816.3	34668.4	1.456	9.33914	153939
Inflation volatility	52	46.8783	109.977	2.346	0.0225	592.923
Exchange rate volatility	52	42163.1	39806.6	0.944	327.972	162063

Author: Researcher (2015)

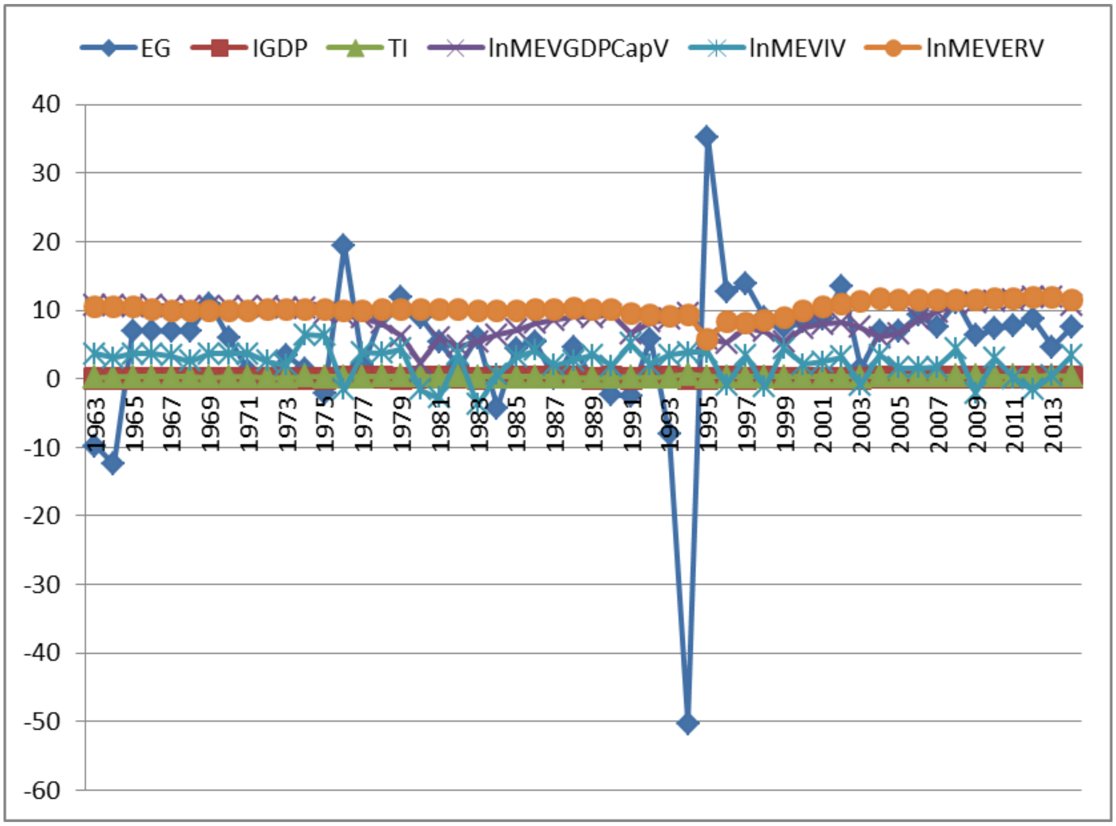


Figure 4.2.3: Trend Analysis on Rwanda

The economic growth for Rwanda experienced lower spike of -50 in the year 1994 and a high spike in the year 1995. Exchange rate volatility oscillated in the value of 10 and had a low spike in 1995. Both gross capital flows to GDP and trade integration oscillated in the value of 0.

It is worth noting that, the per capita GDP had been declining as from 1989, one year before the beginning of the war of 1990, up to 1994 from $360.87 in 1988 to $207.43 in 1994. Since 1995, the economic growth started to recover and currently, though the per capita GDP is still low, Rwanda is among top performing economies in Africa with the growth rate currently above both African and East African average. Several reasons explain the underdevelopment of financial services. The weak culture of savings among the people is due to low level of per capita income in the country. In fact, in 2009 Rwanda was ranked 21st poorest of the least developed countries in the world and 56.9 percent of its population lives on less than US$0.45 equivalent a day, the poverty threshold in Rwanda (IMF, 2009).

The general poverty of the country can be attributed to being a landlocked country, bad governance which has characterized the country since its independence, war and insecurity, lack of natural resources, little skilled human capital, as per year 2005 (less than 1% of the population had a tertiary education) and a low level of investment. The development of the financial sector before the genocide of 1994 was slow. At the time, only 3 commercial banks and 2 specialized banks operated with a total of less than 20 branches in the country, and one microfinance (UBPR) with around 146 branches. The war which affected the banking sector heavily resulted to the closure of the Central bank for four months.

4.2.4: Descriptive Statistics for Tanzania

Table 4.2.4 gives the descriptive statistics for Tanzania in which the mean economic growth for Tanzania for the period 1963 to 2014 was 4.40 and the average gross capital flow to GDP was 0.24. The ratio of M2 to GDP was on average 18.09 while the mean private bank credit to GDP was 5.81. From these results, we can deduce that, Tanzania's economy is more financially integrated than all the other member states of the East African economy, despite of its relatively low economic growth. Its level of financial deepening, as measured by the ratio of M2 to GDP also supports the above position.

This could imply that, the results from the ratio of M2 to GDP are largely attributed to the large size of the economy while the case for the ratio of private credit to GDP could be occasioned by relatively low private credit.

However, more robust findings, would require further probing on these two parameters. In line with the comparatively low economic growth, Tanzania's level of trade integration is low as indicated by the ratio of exports and imports to GDP which stands at an average of 0.37. The mean GDP per capita volatility was 23384.01, 101.28 for inflation volatility and exchange rate volatility was on average 293042.60. These volatility results on Tanzania's economy indicate that, Exchange rate depicts the highest variations while the rate of inflation depicts comparatively low variations. On the whole, the macro-economic environment remains unstable due to low levels of trade and economic development. This position is also supported by the high relative variability values in GDP per capita volatility and exchange rate volatility (coefficient of variation values of 1.53 and 1.07, respectively).

Table 4.2.4: Descriptive Statistics for Tanzania

Variables	Number of Observations	Mean	Standard Deviation Deviation	Coefficient of Variation	Minimum	Maximum
Economic growth	52	4.395	2.09573	0.477	0.07	7.92
Gross capital flows to GDP	52	0.23833	0.13623	0.572	0.00226	0.51026
Ratio of M2 to GDP	52	18.0877	4.62355	0.256	9.1137	25.1224
Private Bank Credit to GDP	52	5.81	4.26195	0.734	0.41	15.79
Exports and imports to GDP	52	0.37212	0.20799	0.559	0.03	0.81
GDP Per capita volatility	52	23384	35871.3	1.534	4.95285	191574
Inflation volatility	52	101.28	94.2236	0.930	0.0036	390.458
Exchange rate volatility	52	293043	313138	1.069	2572.52	1309766

Author: Researcher (2015)

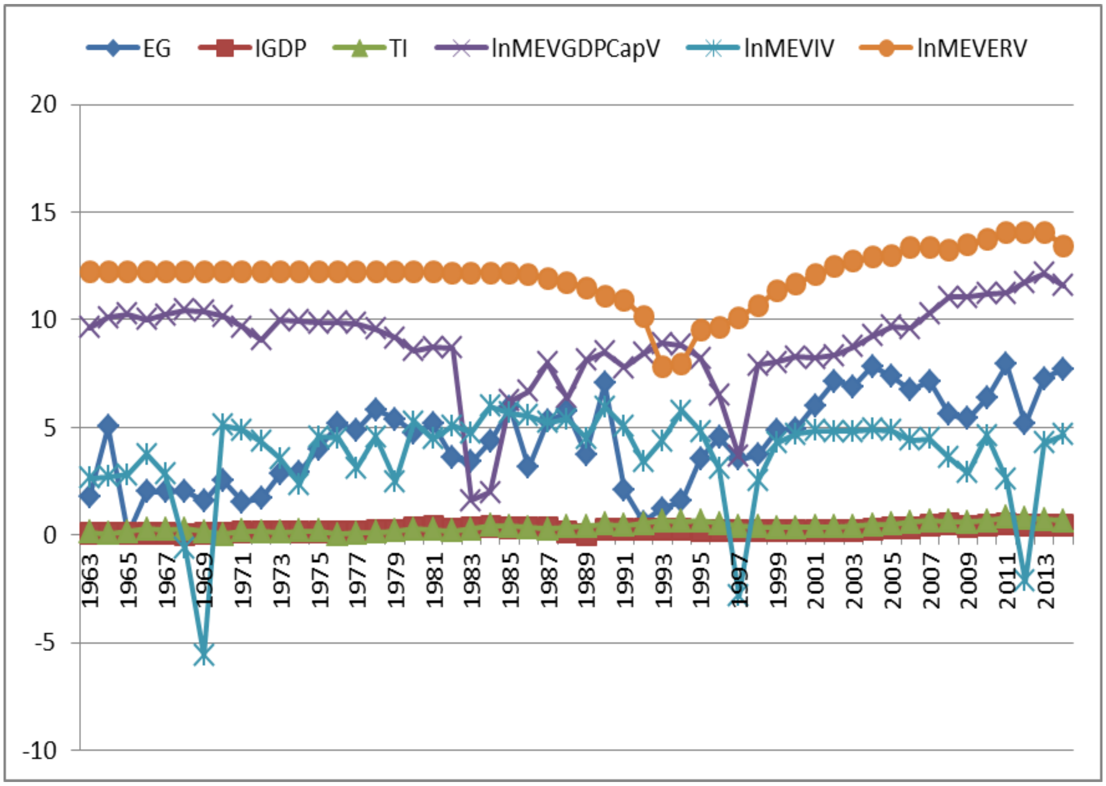


Figure 4.2.4: Trend Analysis on Tanzania

Figure 4.2.4 above illustrates that, the economic growth had a wavy like shape which initially ranged from 0 to 5 from the year 1963 to 1978 then oscillated around the value of 5 but later on, from the year 2001 economic growth in Tanzania experienced a general upward trend. The figure also displays that, gross capital flow to GDP and trade integration was 0. In addition, exchange rate volatility lies in the range of 10 to15, save for the years 1993 and 1994 in which the value was below 10. Inflationary volatility oscillated around the value of 5, with 3 negative spikes in the years 1969, 1997 and 2012. On the other hand, GDP per capita oscillated around the value of 10 with large discrepancies in the years 1983, 1984, and 1997. Attribution analysis on this trend is provided below.

Kaiser (1996) correctly attributes the emergence of the Arusha declaration to the failures of the first five year plan that was adopted by Tanzania just after independence. The plan was not yielding the anticipated results. Rural-urban development differentials increased, local expertise remained inadequate and land and labour resources were underutilized. According to Kaiser, "Given these imbalances, President Julius Nyerere presented an alternative vision in 1967 as outlined in the Arusha Declaration". According to Levin (2001), during the period of Arusha Declaration per capita incomes grew by 0.70 per cent per year. This was led by the public administration sector with a sizeable contribution from agriculture and manufacturing. Exports stagnated due to the policy environment that was hostile for exports. Government had monopoly on marketing of goods and services. Inefficiencies drove down producer prices and there was high effective protection of the import-substituting industrial sector. Trade controls, instead of exchange rate adjustment, were used as a means of adjusting to external shocks. Suppression of private business limited opportunities for entrepreneurship, control of prices, exchange rate, interest rate, imports and exports added to the already hostile business and investment climate.

From the mid-1980s and especially from 1985, another major political decision was made in Tanzania. Following the wind of change across the globe, the country adopted far-reaching reforms in the management of its economy, inter- alia. This epoch therefore, can be referred to as the reform era. These reforms were generally the opposite of the 1967 political decision to embrace socialism. In this epoch, Tanzania's political decision was to embrace the capitalist, market-oriented and private- sector-led economic development and change. The relatively free interplay of the market forces of supply and demand, and correctly so, became the major defining characteristic of the country's economic development and change.

A substantial political decision that negatively impacted Tanzania's economic development in the 1967 to mid-1980s epoch was the 1978/79 war with Uganda. The dictatorial political leadership of Iddi Amin in Uganda resulted into war over border in Kagera region of Tanzania. The cost of waging war can be seen as the economic development opportunity cost. The financial, human and time resources that are devoted to war cannot at the same time be used for economic development. Destruction of infrastructure and properties, time that civilians are unable to work optimally and lives that are lost because of war, impact on economic development immensely.

4.2.5: Descriptive Statistics for Uganda

The mean economic growth for Uganda for the period 1963 to 2014 as illustrated in Table 4.1.5 below was 4.20 and the average gross capital flow to GDP was 0.17. The ratio of M2 to GDP was on average 15.59 while the mean private bank credit to GDP was 4.07. Uganda's ratio of exports and imports to GDP was on average 0.38.

These results indicate that, Uganda has a relatively low level of economic growth, a position that is well supported by its low level of financial deepening as measured by both the ratio of M2 to GDP and the ratio of private credit to GDP. However, the country has been experiencing relatively high level of trade openness and financial openness. The mean GDP per capita volatility was 14730.18, 12.53 for inflation volatility and exchange rate volatility was on average 788579.60. Exchange rate depicts extremely high variations compared to GDP per capita and the rate of inflation. However, based on the coefficient of variation, inflation volatility and GDP volatility depict the highest relative variability (2.38 and 1.43, respectively). This serves as evidence of instability in the macro-economic environment; a situation cutting across all the East African community member states.

Gavin and Hausmann (1996) studying on the sources of macroeconomic volatility in developing countries over the period 1970-1992 found that, there is a significant positive association between the volatility of capital flows and output volatility. These findings are supported by these descriptive statistics as well as the correlation analysis results presented later in this chapter. The consistent results on inflation volatility in all the member states show that, inflation remains a key concern in these economies. Infact, the results are consistent with the prevailing macro-economic conditions where, instability in the general price levels continues to be experienced in these economies.

Table 4.2.5: Descriptive Statistics for Uganda

Variables	Number of Observations	Mean	Standard Deviation	Coefficient of Variation	Minimum	Maximum
Economic growth	52	4.21808	3.93585	0.933	-7.31	11.52
Gross capital flows to GDP	52	0.1722	0.09562	0.555	0.0597	0.40026
Ratio of M2 to GDP	52	15.589	5.62543	0.361	2.55887	26.1282
Private Bank Credit to GDP	52	4.07346	3.63181	0.892	-0.29	13.75
Exports and imports to GDP	52	0.37615	0.11399	0.303	0.17	0.62
GDP Per capita volatility	52	14730.2	21020	1.427	17.2831	103994
Inflation volatility	52	12.5278	29.853	2.383	0.0001	190.164
Exchange rate volatility	52	788580	705675	0.895	2348.37	3255932

Author: Researcher (2015)

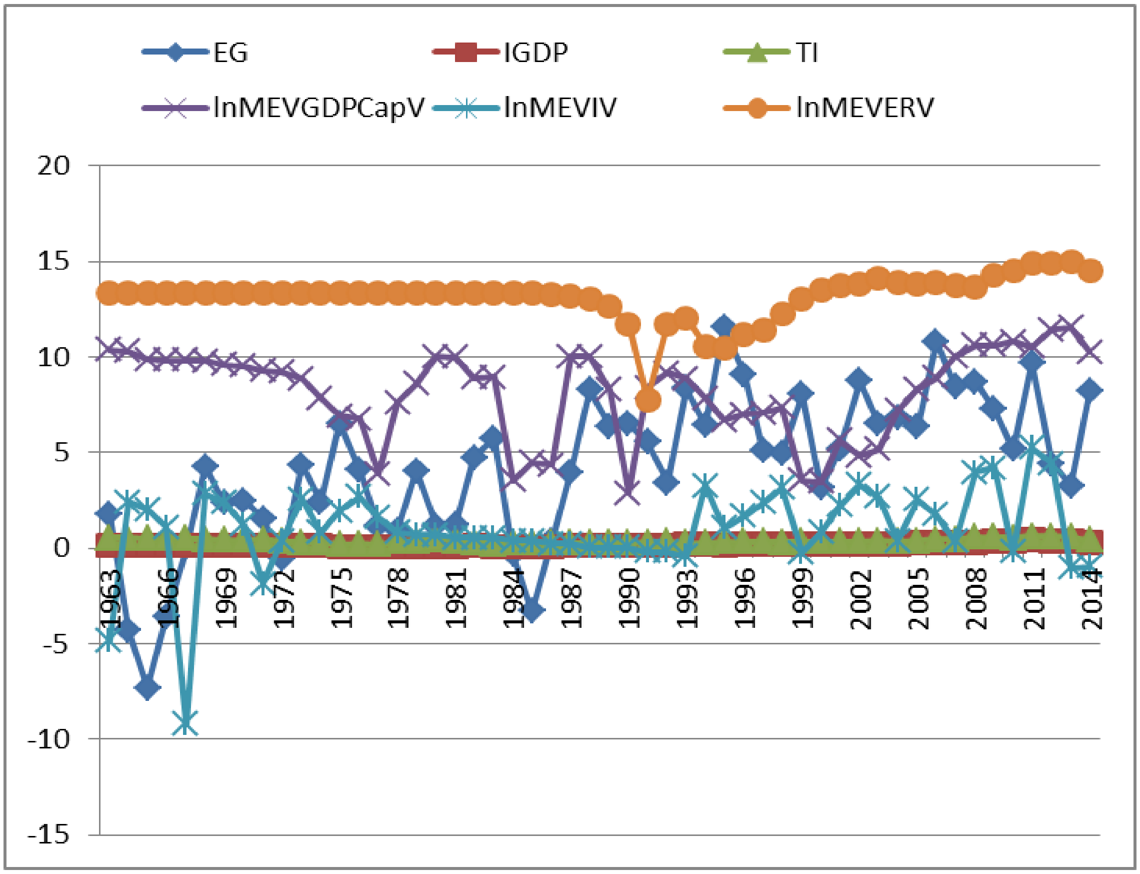


Figure 4.2.5: Trend Analysis on Uganda

Figure 4.2.5 shows that, Uganda's economic growth was spiky for the entire period and exhibited increasing trend. Gross capital flows to GDP and trade integration oscillated around the value of 0. Exchange rate volatility lied in the range of 10 to 15 with an exception of a low spike exhibited in the year 1991.GDP per capita volatility had wavy like pattern which was in the range of 5 to 10, with an exception of low spikes in the year 1977, 1983, 1984, 1985, 1990, 1999 and 2000. The figure also shows that, inflation volatility lied in the range of 0 to 5 with low negative spikes in the years 1963, 1967and 1971.The country's economic overview below extracted from the world bank website, provides some insights into the above trend.

Starting in the late 1980s, the Uganda government pursued a series of impactful liberalization policies. The resultant macroeconomic stability, post-conflict rebound, and investment response to the pro-market reforms generated a sustained period of high growth during 1987-2010. Real gross domestic product (GDP) growth averaged 7.00% per year in the 1990s and the 2000s, making it one of the fastest growing African countries. However, over the past decade, the country witnessed more economic volatility and gross domestic product (GDP) growth slowed to an average of just about 5%. With the population continuing to increase at a rate of 3.00% per annum, per capita income growth has decelerated from a rate of 3.60% recorded in the decades of 1990s and 2002, to about 2.00%. Beyond the risks relating to fiscal management in the face of election related pressures, poor performance in the area of domestic revenue mobilization; and the uncertainty regarding the date of commencement of oil production and the subsequent flow of revenues, Uganda’s growth and development is constrained by the low levels of productivity of both agricultural and non-agricultural sectors; inappropriate urban development; the slow development of infrastructure; and the limited availability of credit (www.worldbank.org).

4.2.6 Comparative Observations on the Descriptive statistics

Burundi has generally experienced slow economic growth compared to the rest of the region. This, has been attributed to low capital flows (to some extent) as indicated by the average value of 0.12 compared to Tanzania at 0.24 and Kenya at 0.21; the biggest economies in the region. The Kenyan economy depicts the best economic performance, on average.

This position is supported by the relatively high capital flows (an average of 20.70% of GDP), the highest level of financial deepening in the region (an average money supply of 31.53 of GDP and 21.00 private sector credit to GDP) as well as the highest level of trade openness as measured by the ratio of imports and exports to GDP. The economic performance of Rwanda was found to be the second highest in the region, after Kenya's economy despite of lower capital flows (financial integration), lower financial deepening as well as the level of trade openness compared to Tanzania and Uganda.

Tanzania's economy on the other hand, is more financially integrated than all the other member states of the East African economy, despite of its lower economic growth, on average (third best after Kenya and Rwanda). However, in line with the comparatively low economic growth, Tanzania trails Kenya and Uganda in terms of the level of trade openness as indicated by the ratio of exports and imports to GDP which stands at an average of 0.37. These results also indicated that, Uganda has the second lowest level of economic growth, a position that is well supported by its low level of financial deepening as measured by both the ratio of M2 to GDP and the ratio of private credit to GDP. However, the same economy has the second highest level of trade openness and the third highest level of financial openness, implying that, the country is much more economically integrated than Rwanda and Burundi. (More details are presented graphically in appendices iii to viii).

Partly, the war between some of the East African countries (Tanzania and Uganda), tribal clashes and political violence contributed to the seasonal dismal performance of the East African member states. Infact, the literature on the impacts of war on economic development is abundant and strongly supports this position. Among these include Ades and Chua (1997) who found that, regional instability and domestic political instability have strong negative effects on a country's economic performance. This takes place through reduced trade within and between unstable regions and countries; increased military and defense expenditure; they also found that government expenditure on education was lower in countries with politically unstable neighbours. Glick and Taylor (2005) studied the effects of war on bilateral trade for almost all countries with available data extending back to 1870. They found large and persistent impacts of wars on trade, and hence on national and global economic development and welfare. Similar findings are documented in Anderton and Carter (2001), who studied the impact of war on trade for 14 major power dyads and 13 non-major power dyads.

4.3 Multicollinearity Test

Before carrying out the correlation analysis, multicollinearity test was conducted to establish the possibility and extent of linear dependence between the study variables. The details are provided below.

The results presented in Table 4.3 below shows that, the mean variance inflation factor (VIF) was estimated at 1.47, which is greater than the critical value of 1. It's called the VIF because it estimates how much the variance of a coefficient is "inflated" because of linear dependence with other predictors. Thus, a VIF of 1.47 tells us that the variance (the square of the standard error) of a particular coefficient is 47% larger than it would be, if that predictor was completely uncorrelated with all the other predictors.

As indicated in Table 4.3, no VIFs were greater than 10. This demonstrates absence of strong multicollinearity. In addition, the variables with high VIFs are private bank credit to GDP and M2/GDP which are control variables, and the variables of interest do not have high VIFs. Hence we can safely ignore multicollinearity. Measures of distribution such as skewness and kurtosis which are usually incorporated in the Jargue Bera statistic for normality test were not computed. The reason for omitting these measures was because the assumption of a normally distributed error term is held in estimation under ordinary least squares (OLS). However, this study utilized the generalized two-stage least square (G2SLS) random-effects instrumental variable method (REIVM).

Table 4.3: Variance Inflation Factor (VIF) Test for Multicollinearity

Variable	**VIF**	**1/VIF**
Private Bank Credit to GDP	2.02	0.4955
M2/GDP	1.79	0.5589
Trade integration	1.66	0.6016
Gross capital flow to GDP	1.58	0.6313
Exchange rate volatility	1.13	0.8852
GDP per capita volatility	1.1	0.9050
Inflation volatility	1.02	0.9776
Mean VIF	**1.47**	

Author: Researcher (2015)

4.4 Correlation Analysis

The researcher proceeded to analyze the correlation between each of the variables to ascertain the direction of association and its statistical significance as presented in table 4.4 below, after the discussion of the results.

4.4.1 Economic Growth and Financial Integration

Gross capital flow to GDP (financial openness) is positively and significantly correlated to economic growth ($r=0.2093$, $p<0.05$). These findings were similar to those established by Edison et al (2002) who concluded that, international financial integration is positively associated with real per capita. Njoroge (2010) arrived at similar findings that, economic integration had a positive and significant impact on economic growth. Blomstrom et al(1994), Quinn (1997), Borenzstein, De Gregorio, and Lee (1998)), Alfaro, Chanda, Kalemli-Ozcan, and Sayek (2003) arrived at similar findings, as well.

4.4.2 Economic Growth and Macro-economic Volatility

Two measures of macroeconomic volatility, namely, GDP per capita volatility ($r= 0.0662$, $p>0.05$) and exchange rate volatility ($r = 0.054$, $p > 0.05$) were positively correlated to economic growth though not statistically significant. However, inflation volatility was negatively correlated to economic growth even though not statistically significant ($r =-0.089$, $p>0.05$). Hence the three measures of macroeconomic volatility had a correlation value which was statistically not different from 0. These results differ from the findings by Hnatkovska and Loayza (2003) who concluded that, macroeconomic volatility and long-run economic growth are negatively related. Rajmund et al (2015), also arrived at similar findings, showing stronger relationship in developing countries than developed countries.

4.4.3 Financial Integration and Financial Deepening

The table shows that, the two measures of financial deepening, namely, ratio of M2 to GDP ($r= 0.3707$, $p < 0.05$) and private bank credit to GDP ($r = 0.3606$, $p <0.05$) are positively and significantly correlated to financial openness. The two measures are used as control variables in this study.

4.4.4 Financial Integration and Trade Integration

Table 4.2 also shows that, the measure of trade integration, namely, total exports and imports to GDP is positively and statistically significantly related to financial openness ($r =0.5960$, $p <0.05$). However, trade integration though positively correlated to economic growth, was not supported by statistical test of significance. This findings support Lane (2000); Heathcote and Perri (2004) assertion that, though not directly linked, it has been proved that, countries which are more open to trade are also more open financially.

4.4.5 Financial Integration and Macro-economic Volatility

The table on pairwise correlation analysis further displays that, all the three measures for macroeconomic volatility were positively correlated to financial openness, although only GDP per capita volatility and exchange rate volatility had correlation values which were statistically different from 0 ($r =0.1975$, $p < 0.05$) and ($r =0.4114$, $p < 0.05$). The results conform to those established by O'Donnell (2001) in non-OECD countries that a higher degree of financial integration is associated with higher output volatility. However, the findings differ from those by O'Donnell (2001) in OECD countries that a higher degree of financial integration is associated with lower output volatility. Similarly, the findings deviate from those by Easterly, Islam and Stiglitz (2001) who found that, a higher level of development of the domestic financial sector is associated with lower volatility. Mendoza (1994), Backus, Kehoe, Kydland (1995) and Baxter and Crucini (1995) findings are also different from the findings of the current study.

4.4.6 Trade Integration and Macro-Economic Volatility

Similar findings were deduced on the correlation between macroeconomic volatility and trade integration, in which GDP per capita volatility and exchange rate volatility were positively and significantly correlated to trade integration ($r = 0.3068$, $p < 0.05$) and ($r = 0.1565$, $p < 0.05$). Similar findings were deduced by Easterly, Islam and Stiglitz (2001) that an increase in the degree of trade openness leads to an increase in the volatility of output, especially in developing countries. This indicates that, the association between macroeconomic volatility and either financial openness or trade integration depends on the macroeconomic volatility measure adopted. These results conform to those by Razin and Rose (1994) who indicate that, the impact of trade integration on volatility is ambiguous in theory.

Table 4.4: Pairwise Correlation coefficients for the Variables

	Economic growth	**Gross capital flows to GDP**	**Ratio of M2 to GDP**	**Private Bank Credit to GDP**	**Exports and imports to GDP**	**GDP Per capita volatility**	**Inflation volatility**	**Exchange rate volatility**
Economic growth	1							
Gross capital flows to GDP	0.2093*	1						
	0.0007							
Ratio of M2 to GDP	0.016	0.3707*	1					
	0.7974	0.0000						
Private Bank Credit to GDP	0.039	0.3606*	0.8333*	1				
	0.5317	0.0000	0.0000					
Exports and imports to GDP	0.0124	0.5960*	0.6487*	0.6224*	1			
	0.8419	0.0000	0.0000	0.0000				
GDP Per capita volatility	0.0662	0.1975*	0.3628*	0.4112*	0.3068*	1		
	0.2877	0.0014	0.0000	0.0000	0.0000			
Inflation volatility	-0.089	0.0903	0.0926	0.0299	0.0987	-0.0275	1	
	0.1523	0.1466	0.1366	0.6317	0.1122	0.6593		
Exchange rate volatility	0.054	0.4114*	-0.0468	-0.0758	0.1565*	0.0268	-0.0874	1
	0.386	0.0000	0.4525	0.2232	0.0115	0.6673	0.1598	

* denotes statistical significance at the 5 percent level

Author: Researcher (2015)

4.5 Unit Root Tests

Before estimating the different models to address the study objectives, panel unit root test was first conducted to establish whether there were any variables in the model that were non-stationary. The Im- Pesaran-shin Test (IPS) panel unit root test was conducted. The IPS estimates the t-test for unit roots in heterogenous panels (Wicks-Lim, 2005). The test allows for individual effects, time trends and common time effects. It is based on the mean of the individual Dickey-Fuller (DF) t-statistics of each unit in the panel, and assumes that all series are non-stationary (have unit roots) under the null hypothesis. Table 4.5 gives the summary of the unit root test based on the IPS Test.

Table 4.5: IPS Panel Unit Root Tests

	***t-bar* Statistic**		
Variable	**Levels**	**First difference**	**Levels with time trend**
Gross capital flows to GDP (Financial openness)	-1.9586	-9.6123*	-2.8170*
M2/GDP (Financial Deepening 1)	-2.4817*	-9.6148*	-3.5410*
Private Bank Credit to GDP (Financial Deepening 2)	-0.6178	-12.3860*	-2.2957*
GDP Per capita volatility	-2.0085	-4.7559*	-2.2944*
Inflation volatility	-4.9621*	-9.5239*	-5.0659 *
Exchange rate volatility	-0.9297	-4.4846*	-1.7075
Trade Integration	-2.9090*	-10.2997*	-3.5819*
Economic growth	-5.2093*	-10.6814*	-5.8813*

* denotes statistical significance at the 5 percent level

Author: Researcher (2015)

In the test results presented in Table 4.5, gross capital flows to GDP was non-stationary in levels. Similarly, the ratio of private bank credit to GDP was also non-stationary at levels. In addition, two measures for macro-economic volatility namely GDP per capita volatility and exchange rate volatility were also non-stationary at levels. However, after including a time trend gross capital flows to GDP, private bank credit to GDP, and GDP per capita volatility attained stationarity, showing that the three variables were trend stationary. Furthermore, all the non-stationary variables became stationary upon conducting the first difference of the variables. Hence, the variable exchange rate volatility was difference stationary.

4.6 Rationalizing the choice of model

The data used in this study is panel data. There are two types of models used in carrying out regression analysis with panel data: fixed effects and random effects models. Fixed effects regression is used to control for omitted variables that differ between the countries but are constant over the time period 1963 to 2014. However, some omitted variables may be constant over the given time period but vary between the countries. Other variables may be fixed between the countries but vary over time. One can include both types of variables which vary between countries and also over time by using random effects model.

Statistically, estimation of a fixed effects model is always a reasonable thing to do in panel data estimation. This is because fixed effects models give consistent results such that, as the sample size increases indefinitely, the estimated parameters converge to their true values. The fixed effects models may, however, not be the most efficient (have minimum variance) model to run. Since, studying the entire population is expensive and time-consuming, consistency ensures that, the sample being surveyed represents reality of what is taking place in the entire population, while efficiency ensures there are minimal variations between observed characteristics under investigation. Random effects will give better P-values (higher chances of finding that various policy options do influence economic growth) as they are a more efficient estimator, so one should run random effects if it is statistically justifiable to do so.

Table 4.6: Hausman Test for fixed effects and random effects models

Economic Growth	**Fixed Effects Model**	**Random Effects Model**	**Difference**
Financial openness	0.3825	-2.3468	2.7292
Trade Integration	-2.0873	-1.1150	-0.9724
GDP per capita volatility	1.07E-06	1.10E-06	-3.39E-08
Chi-Square Statistic	**0.03** **P-Value**	**0.9851**	
Financial openness	56.7677	54.7599	2.0079
Trade Integration	-1.8568	-0.4960	-1.3608
Inflation Volatility	-5.78E-03	-5.74E-03	-4.09E-05
Chi-Square Statistic	**0.73** **P-Value**	**0.8665**	
Financial openness	58.4319	54.6107	3.8211
Trade Integration	-5.1068	-1.7752	-3.3316
Exchange Rate Volatility	2.03E-06	9.97E-07	1.03E-06
Chi-Square Statistic	**2.47** **P-Value**	**0.2913**	

Author: Researcher (2015)

4.6.1 Hausman Test for fixed effects and random effects models

Under the Hausman (1978) test, the null hypothesis is that the coefficients estimated by the efficient random effects estimator are the same as the ones estimated by the consistent fixed effects estimator. The Hausman (1978) test, therefore, checks a more efficient model against a less efficient but consistent model to make sure that, the more efficient model also gives consistent results. A summary of the Hausman (1978) test results are presented in Table 4.6 above.

The test results show that, the Chi-square statistics for the difference were 0.03, 0.73 and 2.47 with corresponding p-values of 0.9851, 0.8665 and 0.2913 respectively. Since the p-values were larger than the critical value of 0.05, hence the null hypothesis that, the differences in the coefficients are not systematic was not rejected. This means that, the preferred model was the random effects model. Hence the empirical results on hypothesis testing presented in chapter five below are based on the random effects model.

4.7 Chapter Summary

On correlation analysis, Gross capital flow to GDP (financial integration) is positively and significantly correlated to economic growth ($r=0.2093$, $p < 0.05$). GDP per capita volatility ($r= 0.0662$, $p > 0.05$) and exchange rate volatility ($r = 0.054$, $p > 0.05$) were positively correlated to economic growth though statistically insignificant. However, inflation volatility was negatively correlated to economic growth even though not statistically significant ($r= -0.089$, $p>0.05$). Financial deepening as measured by the ratio of M2 to GDP ($r= 0.3707$, $p < 0.05$) and private bank credit to GDP ($r = 0.3606$, $p <0.05$) are positively and significantly correlated to financial openness.

The correlation analysis on the association between financial integration and the other variables indicated that, trade integration as measured by total exports and imports to GDP is positively and statistically significantly related to financial openness ($r =0.5960$, $p <0.05$). However, trade integration though positively correlated to economic growth, was not supported by statistical test of significance.

On the association between financial integration and macro-economic volatility, all the three measures for macroeconomic volatility were positively correlated to financial openness, although only GDP per capita volatility and exchange rate volatility had correlation values which were statistically different from 0 ($r =0.1975$, $p < 0.05$) and ($r =0.4114$, $p < 0.05$). These results conformed to those established by O'Donnell (2001) in non-OECD countries that a higher degree of financial integration is associated with higher output volatility. Similar findings were deduced on the correlation between macroeconomic volatility and trade integration, in which GDP per capita volatility and exchange rate volatility were positively and significantly correlated to trade integration (($r =0.3068$, $p < 0.05$) and ($r =0.1565$, $p < 0.05$). The findings are similar to those established by Easterly, Islam and Stiglitz (2001). Hausman Test for fixed effects and random effects models indicated that, the preferred model was the random effects model, which is applied in testing the hypothesis in the next chapter.

CHAPTER FIVE

HYPOTHESES TESTING AND DISCUSSION OF FINDINGS

5.1 Introduction

This study sought to investigate on the influence of macroeconomic volatility and trade integration on the relationship between financial integration and economic growth in the EAC. Section 5.2 provides the discussion of findings from the test of hypothesis while section 5.3 provides comparative analysis between the expected relationships and the actual findings.

5.2 Hypotheses Testing and Discussion of Findings

To achieve the set objectives, the following five hypotheses (accordingly numbered) were tested.

Hypothesis 1: Financial integration has no significant effect on economic growth.

In order to address the first hypothesis of this study, the dependent variable (economic growth) was regressed against gross capital flow to GDP as the explanatory variable. However, instruments for financial deepening, namely, the ratio of M2 to GDP and the ratio of bank credit to the private sector to GDP were included, hence the generalized two-stage least square (G2SLS) random-effects instrumental variable (IV) was used as the regression model as presented in table 5.1.

Table 5.1: Financial Integration and Economic Growth

G2SLS-REMIV			
Economic growth	Coefficient	Z	P-Value
Gross capital flow to GDP	4.40	0.44	0.662
Constant	3.3911**	1.84	0.066
R-squared:	Within	0.0398	
	Between	0.3898	
	Overall	0.0438	
Chi-square statistic	0.19		0.6623
Instrumented:	Gross capital flow to GDP		

Author: Researcher (2015)

A positive coefficient of 4.40 on gross capital flow to GDP was realized with a p-value of 0.662 which was not statistically significant at the 0.05 level. Hence we fail to reject the hypothesis that, financial integration has no significant effect on economic growth. This indicates that, financial integration as measured by gross capital flow to GDP is positively associated with economic growth, though it does not have a statistically significant effect on economic growth. The study findings are similar to those by Edison et al (2002) that, international financial integration does not support the view that promotes economic growth, though international financial integration is positively associated with real per capita.

This model means that, the East African member states can achieve an economic growth rate of 3.3911% in the absence of financial integration and this growth rate can increase by 4.4% for every 1% increase in the level of financial integration. Essentially, the presence of financial integration accelerates economic growth.

The R^2 values indicate that, 3.98% of the variations in economic growth, as measured by GDP per capita, within the countries are explained by financial integration, as measured by the ratio of gross capital flows to GDP, 38.98% of the variations in economic growth between the countries are explained by financial integration while 4.38% of the variations in economic growth of the East African community as an economic bloc (considering panel data) are explained by financial integration. This would mean that, overall, 95.62% of the variations in economic growth of the East African community are explained by other factors, other than financial integration, which are not accounted for, in the model above.

The results imply that, the presence of financial integration in an economy leads to improved economic growth. Further, these findings confirm the theoretical relationship documented in the literature and justify the correlation results achieved in 4.3.1, explaining the positive significant association between financial integration and economic growth. The results are also supported by similar findings on the descriptive statistics for the various East African member states (4.1) which indicated that, Kenya had the highest average economic growth rate as well as the highest level of financial integration.

By implication, countries with low level of financial integration or without financial integration are faced by low levels of economic growth compared to the countries with relatively higher levels of financial integration. An investigation into what determines the effects of financial integration on economic growth reveals that, the composition of capital flows determines the effects of financial integration on economic growth (Reisen and Soto, 2001) and Goldberg, 2004). In particular, these studies conclude that, FDI flows tend to be positively associated with output growth in those countries that have a sufficient level of human capital (Borenzstein, De Gregorio, and Lee, 1998) and well-developed domestic financial markets (Alfaro, Chanda, Kalemli-Ozcan, and Sayek, 2003). The East African financial markets are far from being developed although human capital is reasonably sufficient. This explains why the regional Economic bloc (East African financial markets) has low levels of gross capital. But what determines the composition of capital flows?

The composition of capital flows is influenced by a number of factors, key among them; Macroeconomic performance, Quality of institutions, Investment environment, financial development, infrastructure and resources. The argument is that, a rapidly growing economy is likely to offer higher future earnings and thus higher rates of return coupled with lower risk. Based on the descriptive statistics discussed in chapter four, the East African economic bloc economic performance is average, but remains below the targeted level of 7%, for macro-economic convergence to take place. Theoretical and empirical findings suggest that good institutions help promote capital inflows (Wei and Wu, 2001).

A country that ranks high in terms of law and order is expected to attract more capital flows (Alfaro and others, 2003). The openness of the economy, the degree of exchange rate and inflation volatility, and exchange controls are three key ingredients of the investment environment. A positive relationship between FDI and openness is well established in the literature (Asiedu, 2002; Morisset, 2000). In contrast, the relationship between portfolio flows and trade openness is less clear, and the degree of trade openness may be expected to play a small role. Exchange rate volatility increases the uncertainty of demand for products of export oriented firms and may reduce the profitability of FDI. It is, therefore, expected to have an adverse impact on FDI (Goldberg and Kolstad, 1994; Kamaly, 2002). Its impact on portfolio flows is less clear. Inflation volatility is another important source of uncertainty for foreign investors (Rogoff and Reinhart, 2003) and is expected to have a negative effect on FDI. This explains why the gross capital flows in East Africa is low relative to the Gross domestic product.

Both the quality of the infrastructure and the availability of resources determine the attractiveness of a location. A well-developed infrastructure facilitates communication with parent companies abroad and the information-gathering process for business and reduces distribution costs, thus promoting local and regional trade. On financial development, the deeper a country's financial markets, the more capital flows the country attracts. In particular, well-developed financial markets appear to be a precondition for portfolio inflows (Garibaldi and others, 2002). East African financial markets lack depth, as indicated by the low private sector credit to GDP ratios displayed in the descriptive statistics. This contributes directly to the low gross capital flow to GDP ratios, as well.

The findings above do not support the new economic integration theory and optimum currency area theory, which were used to explain the direct relationship between financial integration and economic growth.

Hypothesis 2: Macro-economic volatility does not have a significant moderating effect on the relationship between financial integration and economic growth.

This involved testing the main effects of the independent variable (gross capital flow to GDP), the moderating variable (each of the three measures of macroeconomic volatility) and the interaction term between gross capital flow to GDP and each of the three measures of macroeconomic volatility on the dependent variable (economic growth). In order to create an interaction term, gross capital flow to GDP and each of the three measures of macroeconomic volatility were multiplied. The creation of a new variable by multiplying the scores of gross capital flow to GDP and each of the three measures of macroeconomic volatility risks creating a multicollinearity problem. To address the multicollinearity problem, which can affect the estimation of the regression coefficients for the main effects, the interactive factors were converted to standardized (Z) scores that have mean zero and standard deviation one. The standardized variables (gross capital flow to GDP and each of the three measures of macroeconomic volatility) were then multiplied to create the interaction variable.

The results of hierarchical multiple regressions predicting economic growth from gross capital flow to GDP, each of the measures of macroeconomic volatility and the interaction between gross capital flow to GDP are reported in models 1a to 1c. In the second step, the interaction term between gross capital flow to GDP and each of the three measures of macroeconomic volatility was entered into the regression equation and tests of the slope was performed as reported in models 2a to 2c. However, the interaction term was not statistically significant (p>0.05) in all the models, indicating that each of the three measures of macroeconomic volatility has no moderation effect on the relationship between gross capital flow to GDP and economic growth. The results are summarized in tables 5.2, 5.3 and 5.4 below.

Table 5.2: Financial Integration, GDP per capita volatility and Economic Growth

G2SLS-random-effects IV regression	**Model 1a**	**Model 2a**
Economic growth	Coefficient (P-Value)	Coefficient (P-Value)
Gross capital flow to GDP	-0.029 (0.998)	-0.045 (0.997)
GDP per capita volatility	0.000 (0.361)	0.000 (0.448)
Normalized (Gross capital flow to GDP)* Normalized (GDP per capita volatility)		0.080 (0.909)
Constant	4.024** (0.051)	4.025* (0.046)
R-squared: Within	0.0016	0.0018
Between	0.467	0.4641
Overall	0.0042	0.0042
Chi-square	1.13 (0.568)	1.14 (0.767)
Instrumented:	Gross capital flow to GDP	

Author: Researcher (2015)

Hnatkovska and Loayza (2003), conclude that macroeconomic volatility and long-run economic growth are negatively related. This negative link is exacerbated in countries that are poor, institutionally underdeveloped, undergoing intermediate stages of financial development, or unable to conduct countercyclical fiscal policies. Lin and Kim (2014) investigated the relationship between output volatility and growth using a simultaneous equation system with a panel of 158 countries. They found a negative relationship and also significant feedback between volatility and economic growth. However, this feedback is doubtful as Jetter (2014) and Baker et al (2011) provided evidence that, volatility tends to affect growth and not vice versa.

Macroeconomic volatility is caused by the interaction of shocks, both domestic and external in origin, with economic institutions and policy regimes that are ill-adapted to the volatile environment with which they must deal. While terms of trade and other external shocks appear to matter, policy is the most important determinant of the volatility of macroeconomic outcomes. We find that, monetary volatility, exchange-rate regimes, and measures of political instability are particularly important determinants of the volatility of real GDP growth and of the real exchange rate. Monetary volatility is, in turn, associated with volatile fiscal deficits and shallow domestic financial markets. This is characteristic of the East African economic bloc.

Table 5.3: Financial Integration, Inflation Volatility and Economic Growth

G2SLS-random-effects IV regression	**Model 1b**	**Model 2b**
Economic growth	Coefficient (P-Value)	Coefficient (P-Value)
Gross capital flow to GDP	5.586 (0.582)	5.955 (0.541)
Inflation volatility	-0.005 (0.123)	-0.005 (0.115)
Normalized (Gross capital flow to GDP)* Normalized (Inflation volatility)		0.108 (0.823)
Constant	3.466 (0.057)	3.395** (0.052)
R-squared: Within	0.0418	0.0427
Between	0.5412	0.5106
Overall	0.0472	0.0481
Chi-square	2.42 (0.298)	2.69 (0.442)
Instrumented:	Gross capital flow to GDP	

Author: Researcher (2015)

Inflation volatility is another important source of uncertainty for foreign investors (Rogoff and Reinhart, 2003) and is expected to have a negative effect on FDI. Because some portfolio flows are short term, the effect of inflation volatility on them may be smaller than on FDI or even negligible. Supply shocks explain about 45 percent (while demand shocks explain about 45 percent) of the inflation fluctuations in the Sub-Saharan region on average, one-third of which reflect shocks to global commodity prices and inflation spillovers from other countries, and the other two-thirds reflect other supply shocks to inflation such as weather-related shortfalls. Shocks to global oil and food prices explain about 7 percent of inflation fluctuations in the region.

In general, global commodity prices contribute more to inflation in economies that have higher oil intensity (defined as a kilogram of oil equivalent per capita). Foreign inflation spillovers are also important in driving inflation with a contribution of 8 percent on average, reflecting imported inflation from other countries. As expected, the importance of foreign inflation spillovers generally increases with higher import.

Table 5.4: Financial Integration, Exchange Rate Volatility and Economic Growth

G2SLS-random-effects IV regression	**Model 1c**	**Model 2c**
Economic growth	Coefficient (P-Value)	Coefficient (P-Value)
Gross capital flow to GDP	4.999 (0.596)	2.468 (0.822)
Exchange rate volatility	0.000 (0.808)	0.000 (0.923)
Normalized (Gross capital flow to GDP)* Normalized (Exchange rate volatility)		0.228 (0.572)
Constant	3.209* (0.036)	3.688* (0.045)
R-squared: Within	0.0364	0.0208
Between	0.2667	0.1730
Overall	0.0388	0.0225
Chi-square	1.05 (0.591)	1.61 (0.658)
Instrumented:	Gross capital flow to GDP	

Author: Researcher (2015)

Political instability, as measured by the incidence of revolutions and coups, is also an important determinant of real exchange-rate volatility. This is not hard to understand: when there is political trouble, money is the first thing to fly across the border. This puts pressure on both the nominal and the real exchange rates. Terms-of-trade changes are also key factors driving exchange rates movements, although the impact varies widely across the region. The rise in food and fuel prices has led to higher import bills and significant balance of payment gaps, triggering fast depreciation and high volatility of currencies in net importing countries such as Kenya, Tanzania and Uganda.

Hau (2002) states that, the theoretical linkage between openness and real exchange rate volatility depends on the magnitude of the monetary and real shocks of each country. This suggests that, analysing the sources of exchange rate volatility at a country level will likely be better for formulation of the correct type of policy response(s). Furthermore, they measure exchange rate volatility using very low frequency data (i.e. yearly data) yet exchange rate volatility will be best measured using either very high frequency data (i.e. intraday or daily data) or low frequency data (i.e. monthly or quarterly data).

The hegemonic stability theory while supporting the optimum currency area and the new economic integration theory, was used to explain the moderating effect of macro-economic volatility on the relationship between financial integration and economic growth. Hegemonic stability theory indicates that, the international system is more likely to remain stable when a single nation-state is the dominant world power, or hegemon (Joshua, 2005). Thus, the fall of an existing hegemon or the state of no hegemon diminishes the stability of the international system. The findings above did not support this theory, given the high macro- economic volatility in the East African region, discussed in chapter four. This points to the state of no hegemon in the East African community.

Hypothesis 3: Trade integration does not have a significant intervening effect on the relationship between financial integration and economic growth.

This involved testing the main effects of the independent variable (gross capital flow to GDP) and the intervening variable (trade integration). This was done in four steps as indicated in tables 5.5 and 5.6 below.

Table 5.5: Financial Integration, Trade Integration and Economic Growth

G2SLS-random-effects IV regression	**Step 1Model 1d**	**Step 2 Model 2d**
	Coefficient (P-Value)	Coefficient (P-Value)
Regressand	Economic growth	Trade integration
Gross capital flow to GDP	4.40 (0.662)	1.07*(0.000)
Trade integration		
Constant	3.3911**(0.066)	0.205 (0.000)
R-squared: Within	0.0398	0.4296
Between	0.3898	0.2559
Overall	0.0438	0.3552
Chi-square	0.04 (0.980)	72.55* (0.000)
Instrumented:	Gross capital flow to GDP	

Author: Researcher (2015)

Table 5.6: Financial Integration, Trade Integration and Economic Growth

G2SLS-random-effects IV regression	**Step 3 Model 3d**	**Step 4 Model 4d**
	Coefficient (P-Value)	Coefficient (P-Value)
Regressand	Economic growth	Economic growth
Gross capital flow to GDP		-12.76 (0.948)
Trade integration	0.477 (0.842)	5.14 (0.942)
Constant	3.99*(0.000)	4.42 (0.511)
R-squared: Within	0.001	0.0816
Between	0.2821	0.0088
Overall	0.0002	0.0624
Chi-square	0.04 (0.842)	0.04 (90.98)
Instrumented:	Gross capital flow to GDP	

Author: Researcher (2015)

The results of hierarchical multiple regression predicting economic growth from gross capital flow to GDP are reported in table 1d. The results indicate that, Gross capital flow to GDP (the independent variable) is not significant. The regression of the intervening variable (trade integration) on Gross capital flow to GDP is reported in step 2 model 2d. The results show that, Gross capital flow to GDP is significant, implying that Gross capital flow to GDP (financial integration) affects trade integration. Model 3d presents the regression of trade integration on economic growth. The findings indicate that, the regressor variable is not significant.

Since, more than one (model 1d and model 3d) of these relationships are not significant, we conclude that, mediation is not possible or likely. However, a confirmation test was done in step 4 model 4d in which economic growth was regressed on both Gross capital flow to GDP and trade integration. None of the regressors was found to be significant. This results confirm the finding in step 1 and step 3, that trade integration has no intervening effect on the relationship between financial integration and economic growth.

An Optimum Currency Area (OCA) is a geographical region in which it would maximize economic efficiency to have the entire region share a single currency. The theory was used to explain the intervening effect of trade integration on the relationship between financial integration and economic growth. Proponents of this theory argue that, potential MUs should exhibit similarity in economic structure characterized by high degree of wage flexibility to allow for the adjustment of asymmetric shocks; a high degree of labour mobility; and a high degree of goods and market integration across States. The size and openness of the economy, degree of commodity diversification and fiscal integration are also important to the formation of a successful MU (Mckinnon, 1963; Kenen, 1969; Flemming (1971).

In 2010 the East African Community (EAC) Common Market became operational and introduced the free movement of workers therefore enabling citizens of EAC to work anywhere within the member countries without discrimination. The free movement of workers was to be implemented gradually for a period of 5 years and become fully operational by 2015. Semboja (2005) indicates that, EAC has a challenge of balancing professional labour mobility bearing the inequilibrium level of education in the member states. However, according to Kasekende, (2009), EAC should design incorporated employment-generating macroeconomic rules that create decent job openings for young women and men, who are the majority of the population, hence overcoming the problem of one nation getting more advantage than the other due to education levels and subsequently allowing smooth professional labour mobility. Onduko (2013) sought to study on regional integration and professional labour mobility in East Africa. She concluded that, the impact of the Common Market on free movement of workers has not yet been felt on the ground because there are many challenges and it is not fully implemented yet. Therefore, free movement of workers is not free at all in East Africa. This means that, the degree of labour mobility is not high, hence contributing to the inefficiency of the economic bloc.

Economic structures of the EAC countries are generally diverse in terms of incomes, industrial structures, and social indicators with similarities in few areas. The agricultural sector accounts for 23 to 35 percent of the economy in all five countries. Coffee and tea are major exports for Burundi, Kenya, Rwanda, and Uganda. While Tanzania exports mostly gold, tobacco, and coffee, Kenya exports horticultural products as well. Kenya, Tanzania, and Uganda have more diversified exports in recent years. Regarding the financial sector, although there is some differentiation, domestic debt markets are largely underdeveloped with low savings rates and limited investor base. Wang (2010) presents preliminary evidence suggesting that EAC members are financially less open when compared with advanced economies. Moreover, within the EAC, Kenya is the most financially open economy, followed by Uganda and Tanzania.

Several challenges remain in the form of non-tariff barriers preventing freer movement of goods and services. Roadblocks, delays at border posts, and inconsistent import and export standards are some examples of the existing restrictions clouding prospects for further trade integration within the EAC. Aware of these problems, EAC countries agreed to work together to strengthen customs administration; pursue trade facilitation through harmonized and simplified customs procedures; enhance revenue management by improving EAC tariff regimes and rules of origin; promote custom and trade partnerships; and enhance market access, trade and competitiveness including harmonization of administrative procedures and regulations.

Hypothesis 4: Financial integration, macroeconomic volatility and trade integration do not have a joint effect on economic growth.

To establish the joint effect of financial integration, macroeconomic volatility and trade integration on economic growth, the G2SLS random-effects instrumental variable regression model was utilized to access these relationships. However, three models were estimated which differed only on the measure for macro-economic volatility.

Table 5.7: Financial integration, GDP per Capita Volatility and Trade Integration on Economic Growth

G2SLS-REMIV			
Economic growth	Coefficient	Z	P-Value
Gross capital flow to GDP	6.54117	0.04	0.966
Trade integration	-2.70469	-0.05	0.961
GDP per capita volatility	5.73e-06	0.89	0.374
Constant	3.9184	0.73	0.468
R-squared:	Within	0.0546	
	Between	0.2671	
	Overall	0.0563	
Chi-square Statistic	1.19		0.7560
Instrumented:	Gross capital flow to GDP		
Instruments:	Trade integration GDP per capita volatility		

Source: Researcher (2015)

The test for the joint effect of the explanatory variables on economic growth in the first model used GDP per capita volatility as a measure of macro-economic volatility as reported in Table 5.7. A chi-square statistic of 1.19 was produced with a corresponding p-value of 0.76 which was statistically not significant at the 0.05 level of significance. Hence, we fail to reject the hypothesis showing that, financial integration, GDP per capita volatility and trade integration do not have a joint effect on economic growth. This shows that, the included explanatory variables do not have a joint effect on economic growth.

The R^2 values indicate that, 5.46% of the variations in economic growth, as measured by GDP per capita, within the countries are explained by the joint effect of financial integration, GDP per capita volatility and trade integration, 26.71% of the variations in economic growth between the countries are explained by the joint effect of financial integration, GDP per capita volatility and trade integration while 5.63% of the variations in economic growth of the East African community as an economic bloc (considering panel data) are explained jointly by financial integration, GDP per capita volatility and trade integration.

Table 5.8 Financial integration, Inflation Volatility and Trade Integration on Economic Growth

G2SLS-REMIV			
Economic growth	Coefficient	Z	P-Value
Gross capital flow to GDP	55.673	0.71	0.480
Trade integration	-20.968	-0.69	0.491
Inflation volatility	-.0054	-1.53	0.126
Constant	2.8454	1.22	0.223
R-squared:	Within	0.0859	
	Between	0.0183	
	Overall	0.0692	
Chi-square Statistic	2.40		0.4938
Instrumented:	Gross capital flow to GDP		
Instruments:	Trade integration inflation volatility		

Author: Researcher (2015)

The second measure for macro-economic volatility was inflation volatility, and the joint effect of the variables produced a chi-square statistic of 2.40 with an associated p-value of 0.49. Thus we fail to reject the hypothesis indicating that, financial integration, trade integration and exchange rate volatility do not have a statistically significant joint effect on economic growth since the p-value exceeded 0.05 levels. Hence all the coefficients of the explanatory variables included in table 5.6 were not significantly different from 0.

The R^2 values indicate that, 8.59% of the variations in economic growth, as measured by GDP per capita, within the countries are explained jointly by financial integration, inflation volatility and trade integration, 1.83% of the variations in economic growth between the countries are explained jointly by financial integration, inflation volatility and trade integration while 6.92% of the variations in economic growth of the East African community as an economic bloc (considering panel data) are explained jointly by financial integration, inflation volatility and trade integration. The above results imply that, financial integration, inflation volatility and trade integration cannot jointly be used to predict (relied upon) the level of economic growth.

Table 5.9: Financial Integration, Exchange Rate Volatility and Trade Integration on Economic Growth

G2SLS-REMIV			
Economic growth	Coefficient	Z	P-Value
Gross capital flow to GDP	34.3466	0.94	0.347
Trade integration	-12.7802	-0.99	0.320
Exchange rate volatility	-1.52e-06	-0.54	0.592
Constant	3.5061*	2.51	0.012
R-squared:	Within	0.0809	
	Between	0.0428	
	Overall	0.0652	
Chi-square Statistic	2.17	P-Value	0.5381
Instrumented:	Gross capital flow to GDP		
Instruments:	Trade integration Exchange rate volatility		

Author: Researcher (2015)

Lastly, in ascertaining the joint effect of financial integration, trade integration and macro-economic volatility on economic growth, exchange rate volatility was included as a measure for macro-economic volatility. This produced a chi-square statistic of 2.17 with a P-value of 0.54 which was not statistically significant at the 0.05 level of significance. Thus we fail to reject the hypothesis, illustrating that financial integration, trade integration and exchange rate volatility do not have a statistically significant joint effect on economic growth.

Hence, based on G2SLS random-effects IV regression models presented in tables 5.5, 5.6 and 5.7, financial integration, trade integration and macro-economic volatility do not have a statistically significant joint effect on economic growth. This being the main research gap for this study, there was no comparable study from the literature reviewed.

The R^2 values indicate that, 8.09% of the variations in economic growth, as measured by GDP per capita, within the countries are explained jointly by financial integration, exchange volatility and trade integration, 4.28% of the variations in economic growth between the countries are explained jointly by financial integration, exchange rate volatility and trade integration while 6.52% of the variations in economic growth of the East African community as an economic bloc (considering panel data) are explained jointly by financial integration, exchange rate volatility and trade integration. The above results imply that, financial integration, exchange rate volatility and trade integration cannot jointly be used to predict (relied upon) the level of economic growth.

According to Brada and Mendez (1988) integration is assumed to raise investment and reduce risks. This can be explained by the fact that, a larger market will raise the expected return on investments and reduce uncertainty by enabling firms to lower their costs as a result of increased economies of scale, and a bigger pool of consumers. This argument, captured under the new economic integration theory, is not supported by the findings of hypothesis four in this study. This implies that, the East African economic bloc is not a large enough market (it has low openness to trade and investment) to enjoy the economies of scale of lowering transaction costs, hence reduce uncertainty. This is explained by the low gross capital flows. The low integration levels can therefore be said to contribute to the high macro-economic volatility.

5.3 Comparison between Expected Relationships and Actual Findings

Based on existing literature, it was expected that financial integration of the East African community will have a positive significant effect on the growth of the economy so is the case for trade integration. The findings do not correctly support this expectation. Additionally, the findings were expected to depict negative significant influence of macro-economic volatility on the relationship between financial integration and economic growth. The lack of influence (no moderating effect) of GDP per capita volatility, inflation volatility and exchange rate volatility on the relationship between financial integration and economic growth from the findings deviates from this expectation.

The researcher interprets this finding as a surprise because of the deviation of the actual results from the expected results. The deviation calls for further probing into the influence of macro-economic volatility on the relationship between financial integration and economic growth, using a different set of measures of macro-economic volatility. Trade integration was expected to have an intervening effect on the relationship between financial integration and economic growth. The findings deviated from this expectation, indicating the absence of intervening effect. Further, the joint effect of financial integration, trade integration and macro-economic volatility on economic growth was expected to be positive and significant. The findings do not support this expectation, since financial integration, trade integration and macro-economic volatility do not have a significant joint effect on economic growth.

The summary below on the hypotheses tests conducted above, indicates that, all the findings support the hypotheses. This is so, because the hypotheses were stated in null form.

Table 5.10: Summary of Hypotheses Results

Objective	Hypotheses	Findings
1	Fail to Reject	Support
2	Fail to Reject	Support
3	Fail to Reject	Support
4	Fail to Reject	Support

Source: Researcher (2015)

CHAPTER SIX

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter presents a summary of findings from correlation analysis and for each research hypothesis, conclusion from these findings, study recommendations and the contributions of the study. The chapter also identifies the limitations of the study and future research directions.

6.2 Summary of Findings

Correlation analysis was conducted between financial integration and economic growth, the various macro-economic volatility measures and economic growth, financial deepening and financial integration, trade integration and financial integration, trade integration and economic growth, macro-economic volatility and financial integration as well as trade integration and macro-economic volatility. Respectively, the established relationships on each of the set objectives were also summarized based on the inferential statistical findings of regression analysis. The details are provided below.

Correlation analysis on the various variables indicated that, Gross capital flow to GDP (financial integration) is positively and significantly correlated to economic growth.

GDP per capita volatility and exchange rate volatility were positively correlated to economic growth though not statistically significant. However, inflation volatility was negatively correlated to economic growth even though not statistically significant. The two measures of financial deepening, namely, ratio of M2 to GDP and private bank credit to GDP are positively and significantly correlated to financial integration.

Total exports and imports to GDP is positively and statistically significantly related to financial integration. All the three measures for macroeconomic volatility were positively correlated to financial openness, although only GDP per capita volatility and exchange rate volatility had correlation values which were statistically different from 0 and ($r = 0.4114$, $p < 0.05$). GDP per capita volatility and exchange rate volatility were positively and significantly correlated to trade integration.

In determining the relationship between financial integration and economic growth, hypothesis one was tested. The results of testing the hypothesis indicate that, financial integration as measured by gross capital flow to GDP is positively associated with economic growth, though it does not have a significant effect on economic growth. The results imply that, the presence of financial integration in an economy leads to improved economic growth. Therefore, the East African community member states should put more efforts on increasing the capital flows between the member states. This can be achieved by tapping in more investments (capital investments by the governments, foreign direct investments, investments in startup businesses, mutual fund flows with a focus on increasing the net cash additions, the traditional asset classes of cash, stocks and bonds) and trade flows.

In determining the moderating effect of Macro-economic volatility on the relationship between financial integration and economic growth, the researcher tested hypothesis two. Three indicators of macroeconomic volatility were separately applied in testing this hypothesis. The results show that, the interaction term was not statistically significant in all the models, indicating that each of the three measures of macroeconomic volatility has no moderation effect on the relationship between gross capital flow to GDP and economic growth. The implication of these findings is that, macro-economic volatility does not play a role in determining the degree/strength of the relationship between financial integration and economic growth.

Hypothesis three was tested to establish the intervening effect of trade integration on the relationship between financial integration and economic growth. The results of testing this hypothesis indicated that, the mediation term was not statistically significant in the model. This means that, trade integration has no intervening effect on the relationship between gross capital flow to GDP and economic growth. Therefore, the relationship between financial integration and economic growth is not explained by the presence of trade integration.

Hypothesis four was tested to establish the joint effect of financial integration, macroeconomic volatility and trade integration on economic growth. Three measures of macro-economic volatility were applied in testing this hypothesis, namely, GDP per capita volatility, inflation volatility and exchange rate volatility. Using GDP per capita volatility as a measure of macro-economic volatility, the results showed that, financial integration, macroeconomic volatility and trade integration do not have a joint effect on economic growth. The results implied that, financial integration, GDP per capita volatility and trade integration cannot jointly be used to predict (relied upon) the level of economic growth.

Based on exchange rate volatility as a measure of macro-economic volatility, the results indicated that, financial integration, trade integration and exchange rate volatility do not have a statistically significant joint effect on economic growth. The results implied that, financial integration, exchange rate volatility and trade integration cannot jointly be used to predict (relied upon) the level of economic growth. Using inflation volatility as a measure of macro-economic volatility, the results illustrated that financial integration, trade integration and inflation volatility do not have a statistically significant joint effect on economic growth. The above results imply that, financial integration, inflation volatility and trade integration cannot jointly be used to predict (relied upon) the level of economic growth.

6.3 Conclusion of the Study

This study set out to determine the influence of macro-economic volatility and trade integration on the relationship between financial integration and economic growth. The failure to reject hypothesis one indicates that, financial integration as measured by gross capital flow to GDP is positively associated with economic growth, though it does not have a significant effect on economic growth. This leads to the conclusion that, countries with low levels of gross capital flows are associated with low levels of economic growth compared to the countries with relatively higher levels of gross capital flows. This indicates that, increased economic growth is associated to increased/presence of financial integration. This means that, countries experiencing an increase in gross capital flows are likely to experience increase in gross domestic productivity.

On the first scenario of hypothesis two, looking at the effect of GDP per capita volatility on economic growth, we fail to reject the hypothesis, indicating that, GDP per capita volatility has no significant influence on the relationship between financial integration and economic growth. We could therefore conclude that, when GDP per capita declines or increases from a given level to a new level, the relationship between financial integration and economic growth remains the same. In other words, GDP per capita volatility does not have a moderating effect on the relationship between financial integration and economic growth. On the second scenario, looking at the influence of exchange rate volatility on the relationship between financial integration and economic growth, we also fail to reject the hypothesis, indicating that, exchange rate volatility has no significant effect on the relationship between financial integration and economic growth. On the third scenario, we also fail to reject the null hypothesis that, inflation volatility does not have a statistically significant effect on the relationship between financial integration and economic growth. The study concludes that, inflation volatility does not have an effect on the relationship between financial integration and economic growth. Overall, the presence of macro-economic volatility in the EAC economic bloc does not strengthen, weaken or reverse the relationship between financial integration and economic growth.

The failure to reject hypothesis three indicates that, trade integration does not have an intervening effect on the relationship between financial integration and economic growth. We conclude that, trade flows do not impact on the relationship between capital flows and economic growth. Therefore, the presence of trade flows does not explain the relationship between capital flows and economic growth.

Three scenarios on hypothesis four in line with the three indicators of macro-economic volatility used in this study, were presented. On the first scenario, exploring the joint effect of financial integration, GDP per capita volatility and trade integration on economic growth, the results showed that, financial integration, GDP per capita volatility and trade integration do not have a joint effect on economic growth. On the second scenario, the results showed that financial integration, exchange rate volatility and trade integration do not have a joint effect on economic growth. On the third scenario, the results showed that, financial integration, inflation volatility and trade integration do not have a joint effect on economic growth. From all the three scenarios above, the study concludes that, jointly, financial integration, macro-economic volatility and trade integration have no effect on economic growth.

From the above specific conclusions, it can be generalized that, macro-economic volatility and trade integration have no influence on the relationship between financial integration and economic growth. However, at an individual level, there exists co-movement between economic growth and each of the explanatory variables; financial integration, macro-economic volatility and trade integration.

6.4 Recommendations of the study

The findings of this study are useful to the central banks of the respective East African community member states as well as investors. The positive association between financial integration and economic growth serves to benefit the member states through their respective central banks which are mandated to manage the monetary policy. The control of money supply as measured by M2 should be enhanced by adopting expansionary monetary policy measures in an effort to increase its ratio to GDP. In trying to expand money supply, the central banks could consider lowering the respective countries' reserve ratios, so that the commercial banks have a wider deposit base which enhances the creation of credit money.

They could also consider lowering the discount window which supports increased lending capacity. More importantly, it is advisable for the banking sector to consider increasing lending to the private sector. An effective way to achieve this would be for the respective central banks to put limits on public borrowing from the domestic financial markets (discourage aggressive selling of government securities). By extension, they can consider putting measures in place to enhance government revenue collection, to meet the budgetary needs. The respective governments could also consider exploring the various sources of money supply and try to enhance them. Key sources of money supply would be individual and corporate savings. Therefore, the East African governments should continue to encourage both individuals and corporates to save more. Innovative products for savings that are all-inclusive (accommodate all classes of East African citizens) should be introduced across the East African region to encourage the savings effort.

Since the rise in food and fuel prices which has led to higher import bills and significant balance of payment gaps is said to contribute to high volatility of currencies in net importing countries such as Kenya, Tanzania and Uganda, we recommend that, the respective governments work on a monetary policy that aims to attain a single digit level of inflation rate (low inflation targeting), in the spirit of macro-economic convergence.

The diversity of the economic structures of the EAC countries in terms of incomes, industrial structures and social indicators has been blamed for the slow progress in achieving the monetary union as indicated in the discussion of the findings of hypothesis three. It is therefore necessary for the respective member states to work towards making their economic structures as similar as possible. This will help accelerate the pace of integration, particularly, becoming a monetary union.

The findings of hypothesis one reveal that, the quality of institutions, development of the financial markets, exchange rate volatility and inflation volatility are some of the key determinants of the composition of capital flows. Since the finance sector development which is largely viewed through the level of financial markets development, remains key to economic growth, it is important for the member states to take more initiatives for developing the financial markets, whose depth remains low, both in terms of product portfolio and investor base. One of the initiatives is to remove the limit on foreign investor ownership of listed firms and lower the transaction costs, especially the brokerage fee on stock transactions. More incentives, in addition to the existing tax incentives should be introduced to encourage more listings across the different sectors of the economy. This is useful in widening the securities basket and hence enhance the room for diversification of the risk of investing in stocks, as one of the traditional asset classes. One of the measures of the quality of institutions is political stability which remains elusive, going by the existing history. There is therefore the need to continue implementing more political reforms, as part of the effort to improve the political environment and ultimately stabilize it.

6.5 Contributions of the Study

The findings from this study contribute to the body of knowledge in the area of financial integration, macro-economic volatility, trade integration and economic performance. This section highlights the study findings contribution to knowledge.

The results of this study add to existing knowledge in the area of financial integration, macro-economic volatility, trade integration and economic performance. The first major contribution is the understanding of the association between the various variables on which the study is based. On the primary relationship between financial integration and economic growth, Gross capital flow to GDP (financial integration) depicted positive and significant correlation to economic growth. This confirms that, an increase in gross capital flows is accompanied by increase in economic growth.

GDP per capita volatility and exchange rate volatility were positively correlated to economic growth though not statistically significant. Inflation volatility was negatively correlated to economic growth even though not statistically significant. The two measures of financial deepening, namely, ratio of M2 to GDP and private bank credit to GDP are positively and significantly correlated to financial integration. This means that, financial deepening contributes positively to financial integration which further contributes to accelerating economic growth. This relationship confirms the economic theory that, money supply controls economic growth.

6.6 Limitations of the Study

There are various challenges that were encountered in the conduct of this study, as a result of the nature of the study, method of analysis, type of data, context as well as time frame. The study was quantitative in nature, narrowing the researcher to focus on only measures that are quantifiable yet a qualitative study or a combination of both would have provided a wider array of variables to be studied, making the research more robust and less biased. A similar challenge was posed by the type of data used. The study applied secondary data only, limiting the degree of the accuracy of the study findings to the accuracy of the data. This explains why reliability and validity tests were not carried out but the researcher used credible sources such as World Bank and IMF to collect the data, in an effort to ensure that, the findings are reasonably reliable.

This study was limited to the East African community as the context, a region that is too small on the global map or even continent wise. Therefore, the findings are basically applicable to the region and can only be relevant on the global map as a foundation for similar but more extensive studies. A bigger context of the study and use of primary data through interviews or questionnaires which captures more information and attributes of different variables would have only been achievable with more financial resources and investing more time on the research.

The consideration of the period 1963-2014, is faced with the limitation of missing data points, as a result of economic stagnation occasioned by war in some of the member states, although this limitation was taken care of by using balanced panel data. The study was also faced by the limitation of using gross capital flows and trade flows from the formal economy only, leaving out the capital flows from the informal economy, especially the trade flows through the porous border of Somalia into Kenya. The trade flows from the porous borders could be significant enough to impact on the economy and so are the findings of this study.

6.7 Suggestions for further research

The conduct of this study has generated some research gaps which can be filled by further studies in the future. First, the context of this study was the East African community over the period 1963-2014, as a continuous duration. Conducting a comparative study between the old and the new EAC may be necessary in establishing whether the inclusion of Rwanda and Burundi, has had any positive impact (catalyzed) on the level of financial integration and economic growth or even reduced macro-economic volatility. Future research could focus on the African union as an economic bloc which has a bigger mandate than the East African community. Africa as an economic bloc is much more significant on the global economy than the East African community, which is a small segment of the continent.

Therefore, focus on enhancing economic integration and economic growth of Africa as an economic bloc is likely to lead to more synergistic benefits to individual countries than the benefits arising from regional integration. A comparative study on the various economic blocs such as ECOWAS and SADC currently existing in Africa is a worthwhile consideration, as well. Such a study is likely to provide useful insights to international investors on which African regions would be top priority areas as investment destinations, based on the established inter-relationships between the four variables analyzed in the current study.

The current study used defacto measures of financial integration and more specifically, gross capital flows. Future studies can apply different indicators of financial integration as well as macro-economic variables and possibly consider using de jure measures of financial integration. Additionally, the use of qualitative data is recommended for purposes of comparing the findings.

Future research could consider measuring the level of capital flows from the informal economy and combine it with the capital flows from the formal economy to arrive at the accurate aggregate value of gross capitals in the economy. The use of such an aggregate value has the likelihood of altering the findings of the current study.

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APPENDICES

Appendix I: Raw Data

Country	Code	year	Economic growth: the rate of change of real GDP	GDP, billions of U.S. dollars	Inflation: %	Capital investment/GDP	Capital investment, billion USD	Exchange rate: local currency units per U.S. dollar	Exports of goods and services, billion USD	Imports of goods and services, billion USD	Total Export and Imports	(Exports and Imports)/GDP	Imports/GDP	Exports/GDP	Foreign Direct Investment, percent of GDP	Foreign Direct Investment, billion USD	Current account balance as percent of GDP	Bank credit to the private sector/GDP	Real interest rate	M2/GDP
Burundi	BI	1963	4.14	0.23		6.02	0.01	50	0.02	0.03	0.05	0.22	14.29	7.52						
Burundi	BI	1964	6.27	0.26		5.37	0.01	50	0.04	0.03	0.07	0.27	12.08	14.09						10.27804379
Burundi	BI	1965	3.97	0.16		5.77	0.01	84.38	0.02	0.02	0.04	0.25	12.53	10.35						10.33901843
Burundi	BI	1966	4.61	0.17	4.4	6.77	0.01	87.5	0.02	0.02	0.04	0.24	12.99	10.78				2.47		9.47058661
Burundi	BI	1967	13.82	0.18	-1.1	6.85	0.01	87.5	0.02	0.02	0.04	0.22	11.89	10.8				2.66		10.49355811
Burundi	BI	1968	-0.3	0.18	6.1	8.19	0.02	87.5	0.02	0.02	0.04	0.22	13.37	10.3				3.11		10.53212726
Burundi	BI	1969	-1.46	0.19	4	8.29	0.02	87.5	0.02	0.02	0.04	0.21	12.09	9.66				2.73		10.54857898
Burundi	BI	1970	21.33	0.24	-0.2	4.53	0.01	87.5	0.03	0.03	0.06	0.25	11.62	10.69				2.9		10.49761996
Burundi	BI	1971	2.75	0.25	3.9	7.61	0.02	87.5	0.02	0.04	0.06	0.24	14.17	8.44				3.75		12.34965218
Burundi	BI	1972	-6.4	0.25	3.8	3.18	0.01	87.5	0.03	0.04	0.07	0.28	15.07	11.73				4.42		12.39986293
Burundi	BI	1973	6.89	0.3	6	5.31	0.02	80.03	0.03	0.04	0.07	0.23	13.33	11.02				4.36		12.86301432
Burundi	BI	1974	-0.73	0.35	15.7	4.05	0.01	78.75	0.03	0.05	0.08	0.23	15.53	9.75				6.48		13.59421836
Burundi	BI	1975	0.7	0.42	15.7	7.58	0.03	78.75	0.03	0.08	0.11	0.26	19	8.28				5.34		10.71979054
Burundi	BI	1976	7.94	0.45	6.9	9.09	0.04	86.25	0.06	0.07	0.13	0.29	16.65	13.73				3.11		13.93746962
Burundi	BI	1977	11.47	0.55	6.8	11.2	0.06	90	0.1	0.09	0.19	0.35	17.29	17.6				2.98		13.8867897
Burundi	BI	1978	-0.94	0.61	23.9	14.04	0.09	90	0.07	0.12	0.19	0.31	20.23	11.71				4.13	-0.45	16.06855753
Burundi	BI	1979	1.66	0.78	36.5	14.92	0.12	90	0.11	0.18	0.29	0.37	22.72	14.16				6.35	-11.2	13.54169773
Burundi	BI	1980	0.99	0.92	2.5	13.89	0.13	90	0.08	0.21	0.29	0.32	23.29	8.81				6.13	-3.77	11.91320127
Burundi	BI	1981	12.16	0.97	12.2	17.01	0.16	90	0.09	0.21	0.3	0.31	22.04	9.14				8.17	19.23	14.72684494
Burundi	BI	1982	-1.05	1.01	5.9	14.46	0.15	90	0.1	0.27	0.37	0.37	26.91	10.21				8.56	5.99	13.36670688
Burundi	BI	1983	3.72	1.08	8.2	22.83	0.25	92.95	0.1	0.27	0.37	0.34	24.75	9.05				7.19	5.23	15.72135349
Burundi	BI	1984	0.16	0.99	14.3	18.37	0.18	119.71	0.11	0.23	0.34	0.34	23.55	11.5				5.04	-4.45	13.78671586
Burundi	BI	1985	11.78	1.15	3.8	13.86	0.16	120.69	0.13	0.24	0.37	0.32	20.79	11.03	0.05	0		3.25	6.6	14.30337702

Burundi	BI	1986	3.25	1.2	1.7	11.64	0.14	114.17	0.14	0.27	0.41	0.34	22.32	11.72	0.13	0		3.83	16.98	14.48859702
Burundi	BI	1987	5.5	1.13	7.1	22.61	0.26	123.56	0.11	0.29	0.4	0.35	25.74	9.74	0.12	0		4.26	15.96	14.45952905
Burundi	BI	1988	5.03	1.08	4.5	15.04	0.16	140.4	0.14	0.28	0.42	0.39	25.95	12.59	0.11	0		4.9	8.22	15.39186913
Burundi	BI	1989	1.35	1.11	11.7	16.46	0.18	158.67	0.11	0.26	0.37	0.33	22.94	9.75	0.05	0		6.07	-2.4	15.73663455
Burundi	BI	1990	3.5	1.13	7	14.54	0.16	171.26	0.09	0.31	0.4	0.35	27.78	7.87	0.11	0		7.26	6	15.77853083
Burundi	BI	1991	5	1.17	9	14.41	0.17	181.51	0.12	0.33	0.45	0.38	28.51	9.92	0.08	0		9.46	8.35	17.03560203
Burundi	BI	1992	1.01	1.08	1.8	10.64	0.12	208.3	0.09	0.32	0.41	0.38	29.48	8.75	0.06	0		10.05	7.83	16.90753577
Burundi	BI	1993	-6.24	0.94	9.7	11.54	0.11	242.78	0.09	0.25	0.34	0.36	27.16	9.38	0.05	0		11.61	5.59	17.73312871
Burundi	BI	1994	-3.83	0.93	14.9	6.97	0.06	252.66	0.1	0.26	0.36	0.39	28.48	10.27	0	0		12.16	7.09	23.00520667
Burundi	BI	1995	-7.92	1	19.3	6.36	0.06	249.76	0.13	0.27	0.4	0.40	27.28	12.93	0.2	0		13.14	-0.73	19.80361436
Burundi	BI	1996	-8	0.87	26.4	8.21	0.07	302.75	0.05	0.14	0.19	0.22	15.75	5.82	0	0		12.54		22.33230711
Burundi	BI	1997	-1.59	0.97	31.1	6.1	0.06	352.35	0.1	0.14	0.24	0.25	14.44	9.84	0	0		11.15		18.5863769
Burundi	BI	1998	4.75	0.89	12.5	6.77	0.06	447.77	0.07	0.17	0.24	0.27	19.44	8	0.22	0		11.67		15.78588206
Burundi	BI	1999	-1.01	0.81	3.4	5.88	0.05	563.56	0.06	0.13	0.19	0.23	15.96	7.58	0.03	0		12.73	0.25	20.47373737
Burundi	BI	2000	-0.86	0.87	24.3	2.78	0.02	720.67	0.06	0.14	0.2	0.23	16.23	6.32	1.34	0.01		17.28	-16.68	17.17285506
Burundi	BI	2001	2.06	0.88	9.2	4.47	0.04	830.35	0.05	0.14	0.19	0.22	15.78	5.18	0	0		20.79	2.73	17.02891234
Burundi	BI	2002	4.45	0.83	-1.4	3.95	0.03	930.75	0.04	0.14	0.18	0.22	16.99	4.69	0	0		22.67	18.25	21.0579009
Burundi	BI	2003	-1.22	0.78	10.8	7.87	0.06	1082.62	0.05	0.16	0.21	0.27	20.99	6.38	0	0		25.26	5.61	23.77602397
Burundi	BI	2004	4.83	0.92	7.9	10.35	0.09	1100.9	0.06	0.23	0.29	0.32	24.62	6.95	0	0		22.28	4.51	22.13563235
Burundi	BI	2005	0.9	1.12	13.5	22.37	0.25	1081.58	0.09	0.37	0.46	0.41	33.44	8.2	0.05	0	-0.51	14.92	-0.35	22.95559914
Burundi	BI	2006	5.38	1.27	2.8	21.96	0.28	1028.68	0.09	0.6	0.69	0.54	46.87	7.28	0	0	-10.49	14.67	13.83	26.07757654
Burundi	BI	2007	4.79	1.36	8.3	23.61	0.32	1081.87	0.1	0.46	0.56	0.41	34.22	7.26	0.04	0	-8.21	14.28	9.3	24.33969055
Burundi	BI	2008	5.05	1.61	24.1	26.66	0.43	1185.69	0.15	0.61	0.76	0.47	37.93	9.49	0.24	0	-16.09	12.97	-6.02	24.85191271
Burundi	BI	2009	3.47	1.74	11	23.25	0.4	1230.18	0.12	0.75	0.87	0.50	43.12	6.8	0.02	0	-9.26	13.07	5.38	25.9177299
Burundi	BI	2010	3.79	2.03	6.4	30.52	0.62	1230.75	0.18	0.79	0.97	0.48	39.18	8.92	0.04	0	-14.85	14.33	0.1	26.98395308
Burundi	BI	2011	4.19	2.36	9.7	27.59	0.65	1261.07	0.22	0.89	1.11	0.47	37.67	9.35	0.14	0	-12.04	16.81	-0.93	23.91285072
Burundi	BI	2012	4.02	2.47	18	28.37	0.7	1442.51	0.22	0.93	1.15	0.47	37.47	8.95	0.02	0	-10.32		-0.95	22.98170475
Burundi	BI	2013	4.59	2.71	8		0.78	1555.09					34.25	7.4	0.25	0.01	-9.33		1.49	21.760029
Burundi	BI	2014			4.4															21.54294028

Kenya	KE	1963	8.78	0.93	0.7	12.94		7.14	0.3	0.27	0.57	0.61	28.96	32.03				12.49		4.442095472
Kenya	KE	1964	4.96	1	-0.1	13.06	0.13	7.14	0.33	0.29	0.62	0.62	29.21	33.39				12.91		4.289319898
Kenya	KE	1965	2.01	1	3.6	14.39	0.14	7.14	0.31	0.31	0.62	0.62	30.7	31.4				13.91		5.373177714
Kenya	KE	1966	14.73	1.16	5	18.61	0.22	7.14	0.38	0.36	0.74	0.64	30.87	32.41				12.47		22.6616948
Kenya	KE	1967	3.36	1.23	1.8	20.17	0.25	7.14	0.35	0.36	0.71	0.58	29.37	28.46				13.4		23.69377556
Kenya	KE	1968	7.98	1.35	0.4	20.05	0.27	7.14	0.4	0.4	0.8	0.59	29.3	29.4				13.12		23.96962675
Kenya	KE	1969	7.96	1.46	-0.2	19.37	0.28	7.14	0.43	0.41	0.84	0.58	28.09	29.53				12.23		26.37601997
Kenya	KE	1970	-4.66	1.6	2.2	24.4	0.39	7.14	0.48	0.49	0.97	0.61	30.66	29.83	0.86	0.01		13.34		30.60655537
Kenya	KE	1971	22.17	1.78	3.8	23.92	0.43	7.14	0.51	0.63	1.14	0.64	35.19	28.64	0.42	0.01		15.26	20.07	29.67440249
Kenya	KE	1972	17.08	2.11	5.8	22.32	0.47	7.14	0.56	0.61	1.17	0.55	28.73	26.59	0.3	0.01		17.09	7.7	28.53554345
Kenya	KE	1973	5.9	2.5	9.3	25.81	0.65	7.02	0.69	0.72	1.41	0.56	28.67	27.39	0.69	0.02		17.76	-1.09	30.49111921
Kenya	KE	1974	4.07	2.97	17.8	25.76	0.77	7.13	1	1.22	2.22	0.75	40.9	33.68	0.79	0.02		18.87	-5.64	25.71028566
Kenya	KE	1975	0.88	3.26	19.1	18.14	0.59	7.34	0.97	1.12	2.09	0.64	34.51	29.82	0.53	0.02		19.51	-1.64	27.39466867
Kenya	KE	1976	2.15	3.47	11.4	20.24	0.7	8.37	1.13	1.1	2.23	0.64	31.76	32.45	1.33	0.05		17.9	-7.49	28.18175564
Kenya	KE	1977	9.45	4.49	14.8	23.72	1.07	8.28	1.57	1.42	2.99	0.67	31.59	34.96	1.26	0.06		17.65	-5.9	32.79568794
Kenya	KE	1978	6.91	5.3	16.9	29.79	1.58	7.73	1.53	2.05	3.58	0.68	38.69	28.94	0.65	0.03		21.86	6.71	34.52913311
Kenya	KE	1979	7.62	6.23	8	18.13	1.13	7.48	1.61	1.97	3.58	0.57	31.61	25.75	1.35	0.08		23.28	4.13	34.35479787
Kenya	KE	1980	5.59	7.27	13.9	24.51	1.78	7.42	2.14	2.61	4.75	0.65	35.9	29.52	1.09	0.08		24.3	0.94	29.93140308
Kenya	KE	1981	3.77	6.85	11.6	22.91	1.57	9.05	2.09	2.32	4.41	0.64	33.82	30.46	0.21	0.01		23.31	1.41	29.47020124
Kenya	KE	1982	1.51	6.43	20.7	21.86	1.41	10.92	1.71	2.03	3.74	0.58	31.56	26.66	0.2	0.01		23.65	2.61	30.42046868
Kenya	KE	1983	1.31	5.98	11.4	20.93	1.25	13.31	1.55	1.69	3.24	0.54	28.21	25.95	0.4	0.02		22.54	3.57	28.17588909
Kenya	KE	1984	1.76	6.19	10.3	19.81	1.23	14.41	1.66	1.98	3.64	0.59	32.05	26.75	0.17	0.01		22.36	3.84	28.34209223
Kenya	KE	1985	4.3	6.14	13	25.32	1.55	16.43	1.55	1.85	3.4	0.55	30.15	25.3	0.47	0.03		18.51	5.26	26.6818501
Kenya	KE	1986	7.18	7.24	2.5	21.77	1.58	16.23	1.87	2.16	4.03	0.56	29.89	25.85	0.45	0.03		17.61	4.86	30.38808039
Kenya	KE	1987	5.94	7.97	8.6	24.29	1.94	16.45	1.7	2.1	3.8	0.48	26.4	21.31	0.49	0.04		17.82	8.16	30.24395414
Kenya	KE	1988	6.2	8.36	12.3	25.45	2.13	17.75	1.87	2.31	4.18	0.50	27.6	22.37	0	0		17.3	8.03	28.90107064
Kenya	KE	1989	4.69	8.28	13.8	24.86	2.06	20.57	1.91	2.5	4.41	0.53	30.12	23.03	0.75	0.06		17.79	6.82	28.39890589
Kenya	KE	1990	4.19	8.57	17.8	24.16	2.07	22.91	2.2	2.69	4.89	0.57	31.33	25.69	0.67	0.06		17.79	7.33	29.57701587
Kenya	KE	1991	1.44	8.15	20.1	20.97	1.71	27.51	2.2	2.33	4.53	0.56	28.56	27.04	0.23	0.02		18.33	5.75	30.98192861
Kenya	KE	1992	-0.8	8.21	27.3	16.92	1.39	32.22	2.16	2.19	4.35	0.53	26.67	26.26	0.08	0.01		20.22	1.83	36.5177964
Kenya	KE	1993	0.35	5.75	46	17.61	1.01	58	2.24	1.95	4.19	0.73	33.95	38.9	2.53	0.15		19.46	3.41	37.06523215

Kenya	KE	1994	2.63	7.15	28.8	19.29	1.38	56.05	2.65	2.45	5.1	0.71	34.23	37.04	0.1	0.01		18.66	16.43	38.01600914
Kenya	KE	1995	4.41	9.05	1.6	21.82	1.97	51.43	2.95	3.54	6.49	0.72	39.15	32.59	0.47	0.04		21.42	15.8	42.23226878
Kenya	KE	1996	4.15	12.05	8.9	15	1.81	57.11	3.04	3.87	6.91	0.57	32.11	25.2	0.9	0.11		19.56	-5.78	35.79169111
Kenya	KE	1997	0.47	13.12	11.4	15.14	1.99	58.73	2.98	4.11	7.09	0.54	31.37	22.69	0.47	0.06		21.97	16.88	38.42265326
Kenya	KE	1998	3.29	14.09	6.7	16.69	2.35	60.37	2.84	4.05	6.89	0.49	28.73	20.17	0.19	0.03		23.44	21.1	35.8071838
Kenya	KE	1999	2.31	12.9	5.7	15.52	2	70.33	2.69	3.53	6.22	0.48	27.36	20.83	0.4	0.05		25.17	17.45	35.77079783
Kenya	KE	2000	0.6	12.71	10	17.41	2.21	76.18	2.74	4.03	6.77	0.53	31.72	21.59	0.87	0.11		25.82	15.33	35.16472735
Kenya	KE	2001	3.78	12.99	5.7	18.79	2.44	78.56	2.98	4.29	7.27	0.56	33.02	22.93	0.04	0.01		24.88	17.81	35.24074413
Kenya	KE	2002	0.55	13.15	2	15.14	1.99	78.75	3.27	3.98	7.25	0.55	30.27	24.9	0.21	0.03		25.23	17.36	38.15891037
Kenya	KE	2003	2.93	14.9	9.8	16.48	2.46	75.94	3.59	4.48	8.07	0.54	30.05	24.09	0.55	0.08		24.99	9.77	39.02316422
Kenya	KE	2004	5.1	16.1	11.6	16.96	2.73	79.17	4.28	5.29	9.57	0.59	32.87	26.61	0.29	0.05		25.19	5.05	39.32702744
Kenya	KE	2005	5.91	18.74	10.3	17.65	3.31	75.55	5.34	6.74	12.08	0.64	35.97	28.51	0.11	0.02	-1.35	25.56	7.61	38.90671465
Kenya	KE	2006	6.33	25.83	14.5	18.49	4.81	72.1	6.1	8.51	14.61	0.57	32.25	22.98	0.2	0.05	-1.98	25.34	5.43	34.60156879
Kenya	KE	2007	6.99	31.96	9.8	19.12	6.54	67.32	7.29	10.27	17.56	0.55	31.98	21.92	2.28	0.73	-3.23	24.98	7.31	36.06481968
Kenya	KE	2008	0.23	35.9	26.2	19.24	7.04	69.18	8.41	12.72	21.13	0.59	34.9	22.67	0.27	0.1	-5.52	27.95	0.71	36.10549914
Kenya	KE	2009	3.31	37.02	9.2	19.84	7.16	77.35	7.39	11.46	18.85	0.51	30.83	20.03	0.31	0.12	-4.56	28.39	4.62	36.45871185
Kenya	KE	2010	8.41	40	4	19.63	8.34	79.23	8.95	12.9	21.85	0.55	33.57	20.66	0.45	0.18	-5.92	30.58	11.86	40.30964232
Kenya	KE	2011	6.12	41.95	14	20.76	9.11	88.81	9.79	15.47	25.26	0.60	38.82	21.63	0.8	0.34	-9.13	33.58	1.33	40.85457279
Kenya	KE	2012	4.45	50.33	9.4	20.3	10.86	84.53	11.11	18.11	29.22	0.58	35.46	19.85	0.51	0.26	-8.45		12.08	40.86428649
Kenya	KE	2013	5.74	55.24	5.7		11.01	86.12					33.17	17.73	0.93	0.51			10.06	41.5343899
Kenya	KE	2014			6.9															42.92716256
Tanzania	TZ	1963						7.14												
Tanzania	TZ	1964						7.14												
Tanzania	TZ	1965						7.14												
Tanzania	TZ	1966			9.8			7.14												
Tanzania	TZ	1967			12.2			7.14												
Tanzania	TZ	1968			15.6			7.14												
Tanzania	TZ	1969			16.4			7.14												
Tanzania	TZ	1970			3.5			7.14								0				
Tanzania	TZ	1971			4.8			7.14								0.01				
Tanzania	TZ	1972			7.6			7.14								0.01				

Tanzania	TZ	1973			10.4			7.02								0.01				
Tanzania	TZ	1974			19.6			7.13								0				
Tanzania	TZ	1975			26.1			7.37								0				
Tanzania	TZ	1976			6.9			8.38								0.01				
Tanzania	TZ	1977			11.6			8.29								0				
Tanzania	TZ	1978			6.6			7.71								0.01				
Tanzania	TZ	1979			12.9			8.22								0.01				
Tanzania	TZ	1980			30.2			8.2								0				
Tanzania	TZ	1981			25.7			8.28								0.02				
Tanzania	TZ	1982			28.9			9.28								0.02				
Tanzania	TZ	1983			27.1			11.14								0				
Tanzania	TZ	1984			36.1			15.29								-0.01				
Tanzania	TZ	1985			33.3			17.47								0.01				
Tanzania	TZ	1986			32.4			32.7								-0.01				
Tanzania	TZ	1987			29.9			64.26								0				
Tanzania	TZ	1988		5.1	31.2			99.29							0.07	0		0.46		17.42687045
Tanzania	TZ	1989	3.76	4.42	25.8			143.38							0.13	0.01		2.41	8.62	18.38970572
Tanzania	TZ	1990	7.05	4.26	35.8	26.11	1.11	195.06	0.54	1.6	2.14	0.50	37.45	12.62	0	0		4.12		19.9032001
Tanzania	TZ	1991	2.07	4.96	28.7	26.34	1.31	219.16	0.51	1.67	2.18	0.44	33.64	10.26	0	0		4.18		19.79836837
Tanzania	TZ	1992	0.58	4.6	21.8	27.23	1.25	297.71	0.57	1.81	2.38	0.52	39.35	12.44	0.26	0.01		3.63		22.07205532
Tanzania	TZ	1993	1.21	4.26	25.3	25.13	1.07	405.27	0.77	2.03	2.8	0.66	47.71	17.98	0.48	0.02		5.03	5.25	24.39543307
Tanzania	TZ	1994	1.57	4.51	34.1	24.65	1.11	509.63	0.93	1.97	2.9	0.64	43.62	20.61	1.11	0.05		5.52	5.97	24.78371911
Tanzania	TZ	1995	3.57	5.26	27.4	19.79	1.04	574.76	1.27	2.18	3.45	0.66	41.51	24.07	2.28	0.12		7.31	12.59	25.08872703
Tanzania	TZ	1996	4.54	6.5	21	16.64	1.08	579.98	1.3	2.08	3.38	0.52	31.94	19.94	2.31	0.15		4.43	12.28	21.80398244
Tanzania	TZ	1997	3.53	7.68	16.1	14.9	1.14	612.12	1.25	1.97	3.22	0.42	25.69	16.22	2.05	0.16		3.09	4.71	19.71036635
Tanzania	TZ	1998	3.71	9.35	12.8	20.11	1.88	664.67	1.16	2.34	3.5	0.37	25.02	12.4	1.84	0.17		3.35	-3.49	16.53367566
Tanzania	TZ	1999	4.84	9.7	7.9	17.54	1.7	744.76	1.22	2.22	3.44	0.35	22.85	12.53	5.33	0.52		3.81	9.9	16.85731929
Tanzania	TZ	2000	4.93	10.19	5.9	16.82	1.71	800.41	1.36	2.05	3.41	0.33	20.13	13.36	4.55	0.46		3.95	13.02	17.14368643
Tanzania	TZ	2001	6	10.38	5.1	17.45	1.81	876.41	1.77	2.21	3.98	0.38	21.28	17.01	3.74	0.39		4.34	14.01	20.61594389
Tanzania	TZ	2002	7.16	10.81	5.3	17.19	1.86	966.58	1.9	2.14	4.04	0.37	19.84	17.58	3.67	0.4		5.17	8.68	22.55319549

Tanzania	TZ	2003	6.89	11.66	5.3	19.17	2.23	1038.42	2.16	2.66	4.82	0.41	22.81	18.56	3.12	0.36		6.27	5.59	22.95219431
Tanzania	TZ	2004	7.83	12.83	4.7	22.57	2.89	1089.33	2.52	3.34	5.86	0.46	26.07	19.65	1.77	0.23		7.41	6.65	22.57281151
Tanzania	TZ	2005	7.37	14.14	5	25.06	3.54	1128.93	2.94	4.2	7.14	0.50	29.73	20.82	6.62	0.94	-7.73	8.44	8.29	22.24016596
Tanzania	TZ	2006	6.74	14.33	7.3	27.63	3.96	1251.9	3.23	5.12	8.35	0.58	35.7	22.56	2.81	0.4	-7.69	10.31	9.85	22.16653409
Tanzania	TZ	2007	7.15	16.83	7	29.64	7.06	1245.04	4.08	6.92	11	0.65	31.68	18.92	2.7	0.58	-7.97	12.41	6.51	23.24799496
Tanzania	TZ	2008	5.59	20.72	10.3	29.79	8.69	1196.31	5.21	8.03	13.24	0.64	30.91	18.72	5.07	1.38	-9.45	13.96	4.42	22.76451353
Tanzania	TZ	2009	5.4	21.37	12.1	28.97	7.19	1320.31	4.96	7.51	12.47	0.58	26.26	17.36	3.33	0.95	-6.33	14.64	7.13	23.27294616
Tanzania	TZ	2010	6.35	22.92	6.2	32.03	8.33	1409.27	6.38	8.84	15.22	0.66	29.31	18.86	5.95	1.84	-6.34	14.6	7.12	25.1224089
Tanzania	TZ	2011	7.92	23.87	12.7	36.67	10.95	1572.12	7.41	11.99	19.4	0.81	36.3	20.91	3.69	1.23	-11.98	15.79	5.29	24.67908468
Tanzania	TZ	2012	5.15	28.25	16	39.39	11.07	1583	8.35	13.36	21.71	0.77	33.18	21.33	4.65	1.8	-9.73		3.63	23.86870588
Tanzania	TZ	2013	7.28	33.23	7.9	38.1	12.91	1600.44	9.38	14.54	23.92	0.72	31.56	17.93	4.29	1.87	-10.78		4.18	22.70054371
Tanzania	TZ	2014			6.1															23.430974
Uganda	UG	1963		0.52		12.81	0.07	0.07	0.15	0.12	0.27	0.52	23.88	28.29						2.558869224
Uganda	UG	1964		0.59		12.09	0.07	0.07	0.18	0.14	0.32	0.54	23.1	29.9						3.238664674
Uganda	UG	1965		0.88		11.24	0.1	0.07	0.23	0.22	0.45	0.51	24.36	25.58						3.355492244
Uganda	UG	1966		0.93		11.5	0.11	0.07	0.24	0.23	0.47	0.51	25.33	25.57						15.27987897
Uganda	UG	1967		0.97		13.46	0.13	0.07	0.24	0.24	0.48	0.49	24.39	25.3						15.09046172
Uganda	UG	1968		1.04		13.09	0.14	0.07	0.25	0.23	0.48	0.46	22.62	23.94						16.88398111
Uganda	UG	1969		1.17		14.02	0.16	0.07	0.25	0.24	0.49	0.42	20.34	21.53						16.72576974
Uganda	UG	1970		1.26		14	0.18	0.07	0.29	0.25	0.54	0.43	20.12	23.35	0.33	0				18.55396243
Uganda	UG	1971		1.42		16.1	0.23	0.07	0.28	0.34	0.62	0.44	23.96	19.82	-0.08	0				16.29951595
Uganda	UG	1972		1.49		11.64	0.17	0.07	0.29	0.25	0.54	0.36	16.78	19.39	-0.8	-0.01				19.96525822
Uganda	UG	1973		1.7		8.72	0.15	0.07	0.28	0.22	0.5	0.29	13.15	16.55	0.31	0.01				23.63359658
Uganda	UG	1974		2.1		11.62	0.24	0.07	0.31	0.32	0.63	0.30	15.05	14.72	0.08	0				26.12824345
Uganda	UG	1975		2.36		8.05	0.19	0.07	0.2	0.26	0.46	0.19	10.92	8.65	0.09	0				21.9438689
Uganda	UG	1976		2.45		6.25	0.15	0.08	0.28	0.24	0.52	0.21	9.61	11.39	0.08	0				25.27356679
Uganda	UG	1977		2.94		6.05	0.18	0.08	0.27	0.23	0.5	0.17	7.8	9.15	0.03	0				14.79226763
Uganda	UG	1978		2.42		8.28	0.2	0.08	0.33	0.46	0.79	0.33	18.86	13.65	0.08	0				16.65325333
Uganda	UG	1979		2.14		6.58	0.14	0.07	0.42	0.38	0.8	0.37	17.53	19.4	0.09	0				15.92641507
Uganda	UG	1980		1.24		6.15	0.08	0.07	0.24	0.32	0.56	0.45	26.03	19.44	0.32	0				14.76020601

Uganda	UG	1981		1.34		5.61	0.08	0.5	0.22	0.3	0.52	0.39	22.06	16.08						12.77282584
Uganda	UG	1982		2.18		9.09	0.2	0.94	0.18	0.38	0.56	0.26	17.52	8.38	0.09	0		2.99		8.745671642
Uganda	UG	1983	5.74	2.24		7.41	0.17	1.54	0.19	0.31	0.5	0.22	13.64	8.66				2.66	-20.4	7.935545306
Uganda	UG	1984	-0.34	3.62		8.14	0.29	3.6	0.46	0.52	0.98	0.27	14.33	12.69				2.21	-2.68	13.39518957
Uganda	UG	1985	-3.31	3.52		8.73	0.31	6.72	0.48	0.53	1.01	0.29	15.01	13.74	-0.11	0		1.7	-43.72	14.29908577
Uganda	UG	1986	0.39	3.92		8.45	0.33	14	0.5	0.6	1.1	0.28	15.24	12.81				1.62	-43.81	16.47338149
Uganda	UG	1987	3.96	6.27		9.72	0.61	42.84	0.52	1.13	1.65	0.26	18.04	8.25				1.21	-52.07	14.28920996
Uganda	UG	1988	8.27	6.51		10.79	0.7	106.14	0.49	1.16	1.65	0.25	17.78	7.57	0.07	0		1.38	-53.44	9.906899747
Uganda	UG	1989	6.36	5.28		11.14	0.59	223.09	0.42	0.95	1.37	0.26	18.09	7.95	-0.03	0		1.74	-35.02	7.287786923
Uganda	UG	1990	6.47	4.3		12.7	0.55	428.85	0.31	0.83	1.14	0.27	19.37	7.24	-0.14	-0.01		2.56	-3.96	7.596571172
Uganda	UG	1991	5.55	3.32		15.17	0.5	734.01	0.25	0.73	0.98	0.30	21.94	7.46	0.03	0		2.72	6.66	8.661363203
Uganda	UG	1992	3.42	2.86		15.94	0.46	1133.83	0.25	0.69	0.94	0.33	24.29	8.76	0.1	0		2.09		9.611768728
Uganda	UG	1993	8.33	3.22		15.25	0.49	1195.02	0.23	0.68	0.91	0.28	21.18	7.06	1.7	0.05		3.38		10.71948764
Uganda	UG	1994	6.4	3.99	10	14.68	0.59	979.45	0.35	0.76	1.11	0.28	19.1	8.74	2.21	0.09		3.57		12.80452563
Uganda	UG	1995	11.52	5.76	6.6	12.41	0.71	968.92	0.68	1.2	1.88	0.33	20.83	11.79	2.11	0.12		3.71	9.86	11.9610184
Uganda	UG	1996	9.07	6.04	7.2	20.17	1.22	1046.08	0.72	1.42	2.14	0.35	23.42	11.96	2	0.12		4.41	15.03	12.51546653
Uganda	UG	1997	5.1	6.27	8.2	18.18	1.14	1083.01	0.84	1.3	2.14	0.34	20.8	13.36	2.79	0.18		4.51	17.73	13.79347928
Uganda	UG	1998	4.91	6.58	0.1	16.45	1.08	1240.31	0.63	1.34	1.97	0.30	20.4	9.64	3.19	0.21		4.62	11.1	14.85890426
Uganda	UG	1999	8.05	6	5.8	19.55	1.17	1454.83	0.73	1.43	2.16	0.36	23.77	12.25	2.34	0.14		5.23	21.69	15.63352015
Uganda	UG	2000	3.14	6.19	3.4	19.48	1.21	1644.48	0.66	1.37	2.03	0.33	22.1	10.65	2.59	0.16		5.27	10.62	16.11553619
Uganda	UG	2001	5.18	5.84	1.9	19.3	1.13	1755.66	0.67	1.39	2.06	0.35	23.81	11.52	2.59	0.15		5.94	17.33	16.09144257
Uganda	UG	2002	8.73	6.18	-0.3	20.22	1.25	1797.55	0.69	1.55	2.24	0.36	25.06	11.21	2.99	0.18		6.87	23	19.03208837
Uganda	UG	2003	6.47	6.34	8.7	20.98	1.33	1963.72	0.72	1.6	2.32	0.37	25.2	11.39	3.19	0.2		7.38	10.33	19.55395843
Uganda	UG	2004	6.81	7.94	3.7	20.15	1.6	1810.3	1.01	1.81	2.82	0.36	22.76	12.7	3.72	0.3		7.05	4.34	17.22847856
Uganda	UG	2005	6.33	9.01	8.4	22.36	2.02	1780.67	1.28	2.24	3.52	0.39	24.81	14.18	4.21	0.38	-0.14	7.11	21.77	19.32293893
Uganda	UG	2006	10.78	9.94	7.3	21.13	2.1	1831.45	1.52	2.82	4.34	0.44	28.36	15.28	6.48	0.64	-3.66	7.89	15.91	19.91414804
Uganda	UG	2007	8.41	12.29	6.1	22.08	2.71	1723.49	2.06	3.69	5.75	0.47	30.05	16.73	6.45	0.79	-5.04	8.37	10.98	20.87545298
Uganda	UG	2008	8.71	14.24	12.1	22.98	3.27	1720.44	3.46	4.55	8.01	0.56	31.98	24.28	5.12	0.73	-8.92	9.77	13.24	23.61767662
Uganda	UG	2009	7.25	14.82	13	21.95	4.57	2030.49	3.58	5.08	8.66	0.58	29.89	19.81	4.95	0.84	-6.43	11.08	5.58	19.70129951

Uganda	UG	2010	5.17	16.03	4	23.46	5.04	2177.56	3.28	5.35	8.63	0.54	28.48	17.46	2.89	0.54	-9.02	12.01	9.7	22.92385884
Uganda	UG	2011	9.67	15.49	18.7	25.01	5.31	2522.75	3.33	6.19	9.52	0.61	33.54	18.44	4.79	0.89	-11.29	13.75	16.02	22.41076002
Uganda	UG	2012	4.41	20.04	14	24.57	6.69	2504.56	4.65	7.78	12.43	0.62	32.92	19.91	5.08	1.21	-7.03		1.76	20.4023911
Uganda	UG	2013	3.27	21.49	5.5	24.54	7.29	2586.89	4.93	7.16	12.09	0.56	30.5	20.24	4.83	1.19	-8.09		17.76	20.76618229
Uganda	UG	2014			4.3															22.34651774
Rwanda	RW	1963	-9.82	0.13		7.81	0.01	50	0.01	0.02	0.03	0.23	12.66	5.94						
Rwanda	RW	1964	-12.46	0.13		8.31	0.01	50	0.02	0.02	0.04	0.31	12.62	12						15.73846226
Rwanda	RW	1965	7.01	0.15		9.81	0.01	50	0.02	0.03	0.05	0.33	16.94	12.1						17.79435723
Rwanda	RW	1966	7.01	0.12		9.66	0.01	87.5	0.01	0.02	0.03	0.25	20	11.28				0.73		13.14152103
Rwanda	RW	1967	6.92	0.16	1.5	7.31	0.01	100	0.02	0.02	0.04	0.25	15.41	10.51				0.96		10.77650919
Rwanda	RW	1968	7.01	0.17	3.2	8.19	0.01	100	0.02	0.03	0.05	0.29	15.14	8.74				0.86		10.5348421
Rwanda	RW	1969	11.01	0.19	0.5	6.62	0.01	100	0.01	0.03	0.04	0.21	14.36	7.68				0.83		11.23317215
Rwanda	RW	1970	6	0.22	0.5	7.05	0.02	100	0.03	0.03	0.06	0.27	15.23	11.51	0.03	0		1.1		11.67985416
Rwanda	RW	1971	1.21	0.22	0.5	9.13	0.02	99.71	0.02	0.04	0.06	0.27	16.87	10.21	0.76	0		1.53		13.1412508
Rwanda	RW	1972	0.26	0.25	3.1	9.56	0.02	92.11	0.02	0.04	0.06	0.24	16.26	8.28	0.2	0		1.42		13.09559518
Rwanda	RW	1973	3.44	0.29	9.4	9.43	0.03	83.92	0.03	0.04	0.07	0.24	13.44	11.6	0.69	0		1.54		16.51188592
Rwanda	RW	1974	1.41	0.31	31.1	10.46	0.03	92.98	0.04	0.07	0.11	0.35	21.34	12.17	0.71	0		2.55		18.65515941
Rwanda	RW	1975	-2.11	0.57	30.2	13.74	0.08	92.28	0.05	0.1	0.15	0.26	17.7	9.17	0.52	0		3.28		11.36516941
Rwanda	RW	1976	19.5	0.64	7.2	13.82	0.09	97.01	0.09	0.12	0.21	0.33	19.4	14.58	0.88	0.01		2.76		13.00549579
Rwanda	RW	1977	1.99	0.75	13.7	15.06	0.11	95.94	0.11	0.13	0.24	0.32	17.66	14.27	0.64	0		3.75		14.15384694
Rwanda	RW	1978	9.15	0.91	13.3	16.61	0.15	89.49	0.13	0.22	0.35	0.38	23.8	14.78	0.54	0		5.04	8.52	13.794693
Rwanda	RW	1979	11.87	1.11	15.7	12.03	0.13	86.69	0.23	0.25	0.48	0.43	22.75	21.05	1.21	0.01		4.47	6.58	14.64656332
Rwanda	RW	1980	8.95	1.25	7.2	16.14	0.2	86.06	0.18	0.33	0.51	0.41	26.38	14.44	1.41	0.02		4.32	10.12	14.09954631
Rwanda	RW	1981	5.44	1.41	6.5	13.3	0.19	87.16	0.14	0.31	0.45	0.32	21.75	9.83	1.36	0.02		5.12	5.37	12.99551544
Rwanda	RW	1982	1.81	1.41	12.6	17.78	0.25	93.06	0.16	0.34	0.5	0.35	24.15	11.55	1.47	0.02		5.68	8.22	12.33555796
Rwanda	RW	1983	5.98	1.48	6.6	13.53	0.2	96.09	0.17	0.31	0.48	0.32	20.76	11.58	0.74	0.01		5.53	10.79	12.69690317
Rwanda	RW	1984	-4.24	1.59	5.4	15.81	0.25	100.23	0.2	0.31	0.51	0.32	19.66	12.63	0.95	0.02		5.72	-2.87	12.49511314
Rwanda	RW	1985	4.4	1.72	1.8	17.31	0.3	101.24	0.18	0.34	0.52	0.30	19.89	10.78	0.85	0.01		6.71	8.9	13.41840255
Rwanda	RW	1986	5.47	1.94	-1.1	15.87	0.31	87.59	0.24	0.39	0.63	0.32	20.15	12.58	0.9	0.02		7.68	22.61	15.54881808
Rwanda	RW	1987	-0.02	2.16	4.1	15.66	0.34	79.46	0.16	0.41	0.57	0.26	19.14	7.45	0.82	0.02		7.81	12.25	17.04306668

Rwanda	RW	1988	4.5	2.4	3	14.49	0.35	76.45	0.16	0.42	0.58	0.24	17.6	6.62	0.88	0.02		8.52	9.56	17.12947112
Rwanda	RW	1989	-0.04	2.41	1	13.43	0.32	80.15	0.15	0.42	0.57	0.24	17.29	6.14	0.64	0.02		8.96	6.37	15.59565468
Rwanda	RW	1990	-2.4	2.55	4.2	14.65	0.37	83.7	0.14	0.36	0.5	0.20	14.07	5.61	0.3	0.01		7.38	-0.26	14.87096059
Rwanda	RW	1991	-2.51	1.91	19.6	14.02	0.27	125.16	0.14	0.35	0.49	0.26	18.06	7.32	0.24	0		5.74	3.5	14.00244046
Rwanda	RW	1992	5.87	2.03	9.6	15.63	0.32	133.94	0.11	0.37	0.48	0.24	18.26	5.57	0.11	0		4.9	8.75	13.86146139
Rwanda	RW	1993	-8.11	1.97	12.4	16.75	0.33	144.24	0.1	0.4	0.5	0.25	20.5	5.18	0.3	0.01		5.85	0.99	13.58128778
Rwanda	RW	1994	-50.25	0.75		9.98	0.08	140.7	0.05	0.49	0.54	0.72	64.79	6.3	0	0				22.42756313
Rwanda	RW	1995	35.22	1.29		13.41	0.17	262.18	0.07	0.33	0.4	0.31	25.82	5.15	0.17	0				18.58994254
Rwanda	RW	1996	12.75	1.38	7.4	14.37	0.2	306.82	0.08	0.36	0.44	0.32	26.2	6.03	0.16	0		6.67	6.87	16.14489069
Rwanda	RW	1997	13.85	1.85	12	13.81	0.26	301.53	0.14	0.48	0.62	0.34	25.67	7.8	0.14	0		5.34	0.52	15.82880159
Rwanda	RW	1998	8.86	1.99	6.2	14.81	0.29	312.31	0.11	0.46	0.57	0.29	23.21	5.59	0.36	0.01		8	14.58	14.72460914
Rwanda	RW	1999	7.58	1.82	-2.4	13.15	0.24	333.94	0.11	0.45	0.56	0.31	24.53	6.22	0.09	0		9.34	28.66	16.2617346
Rwanda	RW	2000	8.32	1.73	3.9	13.38	0.23	389.7	0.11	0.43	0.54	0.31	24.88	6.32	0.48	0.01		9.5	13.77	16.88096351
Rwanda	RW	2001	8.67	1.67	3.3	13.74	0.23	442.99	0.14	0.41	0.55	0.33	24.28	8.48	0.28	0		9.77	16.16	17.14090998
Rwanda	RW	2002	13.51	1.68	2	13.48	0.23	475.37	0.12	0.4	0.52	0.31	23.71	7.04	0.16	0		9.85	22.89	17.9325533
Rwanda	RW	2003	1.45	1.85	7.4	13.85	0.26	537.65	0.16	0.43	0.59	0.32	23.55	8.45	0.25	0		8.93	-4.59	16.6278932
Rwanda	RW	2004	6.95	2.09	12.3	15.03	0.31	577.45	0.23	0.52	0.75	0.36	24.76	11.12	0.37	0.01		9.4	2.48	17.78534341
Rwanda	RW	2005	6.91	2.58	9	15.78	0.41	557.82	0.29	0.65	0.94	0.36	25.21	11.46	0.31	0.01	-2.53	10.18	6.03	17.57479024
Rwanda	RW	2006	9.24	3.11	8.9	16.03	0.52	551.71	0.34	0.79	1.13	0.36	25.29	11.07	0.99	0.03	-4.47		5.72	
Rwanda	RW	2007	7.61	3.78	9.1	18.54	0.71	546.96	0.42	0.94	1.36	0.36	24.94	11.14	2.18	0.08	-2.26		5.74	
Rwanda	RW	2008	11.16	4.8	15.4	23.94	1.16	546.85	0.68	1.39	2.07	0.43	28.82	14.37	2.15	0.1	-5.05		2.79	
Rwanda	RW	2009	6.27	5.31	6.4	23.24	1.25	568.28	0.53	1.51	2.04	0.38	28.17	10.18	2.24	0.12	-7.13		6.51	
Rwanda	RW	2010	7.31	5.7	2.3	22.71	1.32	583.13	0.57	1.67	2.24	0.39	29.13	10.17	0.74	0.04	-7.26		11.88	
Rwanda	RW	2011	7.85	6.41	5.7	22.85	1.51	600.31	0.87	1.9	2.77	0.43	29.62	13.86	1.66	0.11	-7.45			
Rwanda	RW	2012	8.79	7.22	6.3	24.4	1.87	614.3	0.96	2.09	3.05	0.42	31.27	12.87	2.21	0.16	-11.37			
Rwanda	RW	2013	4.68	7.52	8	24.4	2	646.64	1.26	2.32	3.58	0.48	30.98	14.41	1.47	0.11	-7.47			
Rwanda	RW	2014			1.3															

Author: Researcher (2015)

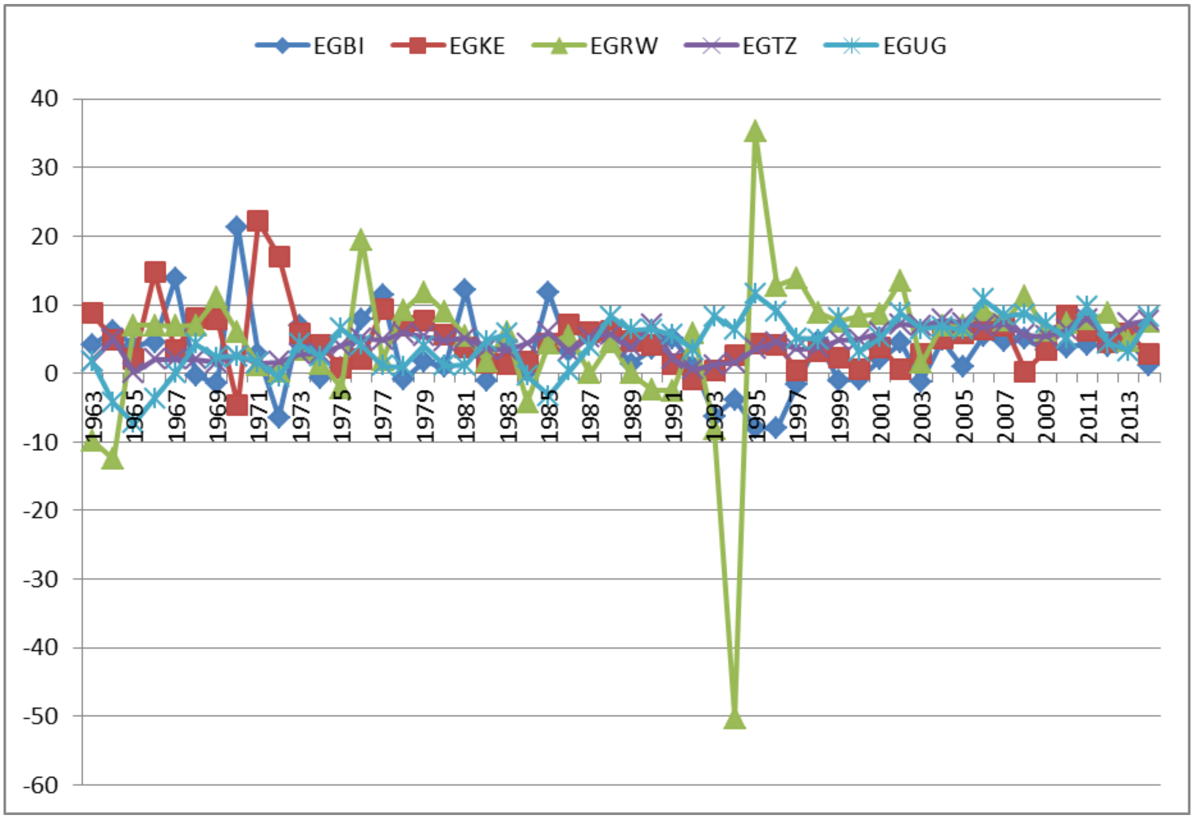
Appendix II: Research Philosophies

Aspect	Positivism	Constructivism/ Interpretivism	Advocacy Participatory	Pragmatism
Beliefs	Causes determine effects or outcomes It is reductionistic in intent to reduce ideas into small, discrete set of ideas to test such as the variable that constitute hypotheses and research questions Developed knowledge is based on careful observation of and measurement of the objective reality that exist in the world. There are laws or theories that govern the world and these need to be tested or verified and refined to understand the world.	Individuals seek understanding of the world in which they work and live. Individuals develop subjective meanings of their experiences – meanings directed toward certain objects or things. These meanings are varied and multiple, leading the researcher to look for the complexity of views rather than narrowing meanings into a few categories or ideas. The goal of research is to rely as much as possible on participants' views of the situation being studied. The researcher addresses the process of interaction among individuals.	Inquiry needs to be intertwined with politics and a political agenda. Specific issues are addressed that speak to important issues of the day. The inquirer proceed collaboratively so as not to further marginalize the participants as a result of the inquiry. Theoretical perspectives may be integrated with the philosophical assumptions that construct a picture of the issues being examined to the people to be studies, and the changes that are needed.	Knowledge claims arise out of actions, situations, and consequences rather than antecedent conditions. Instead of methods being important, the problem is most important and researchers use all approaches to understand the problem.
Key Assumptions	Knowledge is conjectural (anti-foundational) absolute truth can never be found. Research is the process of making claims and then refining or	Meanings are constructed by human beings as they engage with the world they are interpreting. Humans engage with their world and make sense of it based on their	Study is recursive or dialectical and is focused on bringing about change in practices. It is focused on helping	It is not committed to any one system of philosophy and reality. Individual researchers have a freedom of choice. They are

Aspect	Positivism	Constructivism/ Interpretivism	Advocacy Participatory	Pragmatism
	abandoning some of them for other claims strongly warranted. Data, evidence, and rational considerations shape knowledge. Research seeks to develop relevant true statements, ones that can serve to explain the situation that describes the causal relationships of interest. Being objective is an essential aspect of competent inquiry and researchers must examine methods and conclusions for bias e.g. standards of validity and reliability are important in quantitative research	historical and social perspective. The basic generation of meaning is always social, arising in and out of interaction with a human community.	individuals free themselves from constraints found in the media, in language and in work procedures. It is emancipator in that it helps unshackle people from constraints of irrational and unjust structures that limit self-development and self-determination. It is practical and collaborative because it is inquiry completed “with” other rather than “on” or “to” others. It engages the participants as active collaborators in the inquiries.	free to choose the methods, techniques, and procedures of research that best meet their needs and purposes. Pragmatists do not see the world as an absolute unity. Truth is what works at the time: it is not based in a strict dualism between the mind and reality completely independent of the mind. Researchers look at what and how to research based on its intended consequences. Research always occurs in social, historical, political and other contexts.

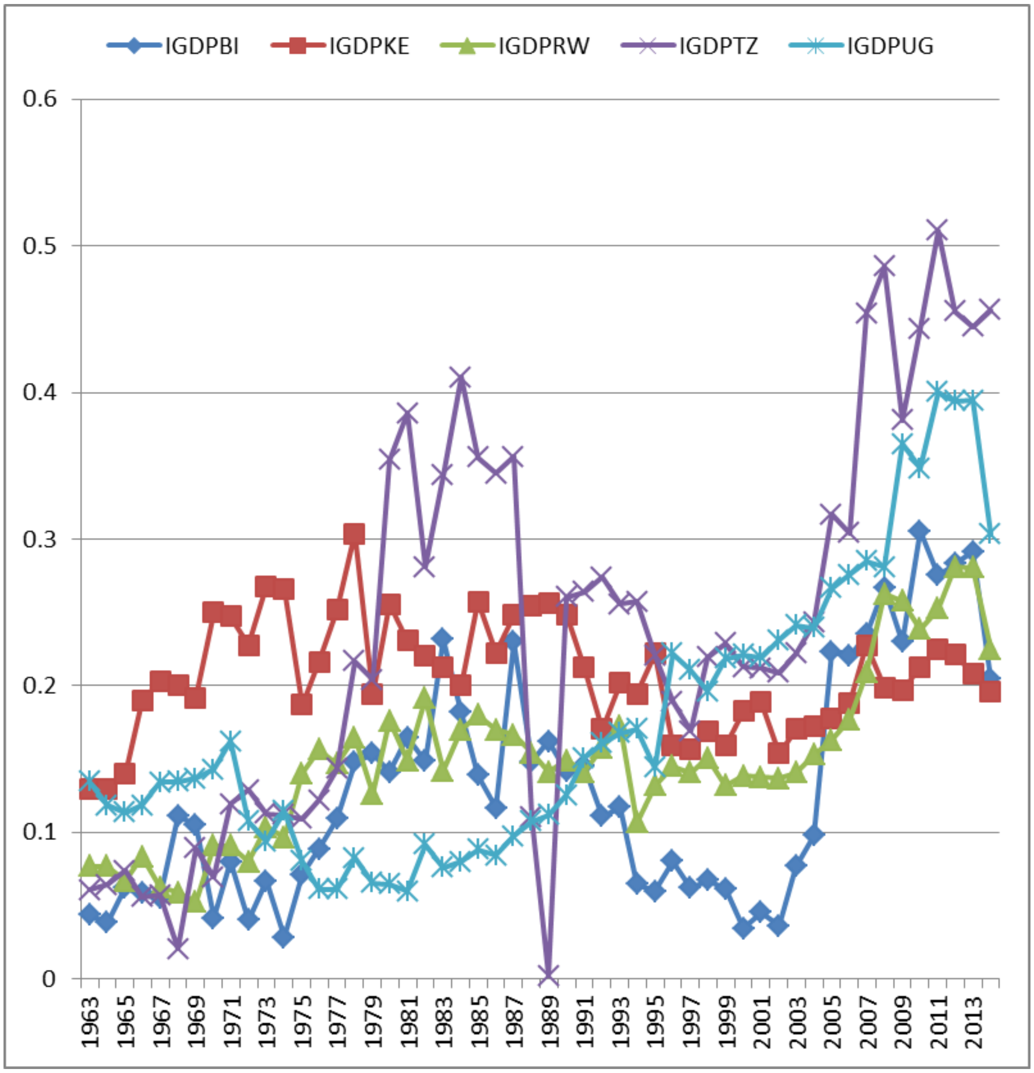
Adapted from Creswell (2007)

Appendix III: Economic Growth for the Five East African Countries



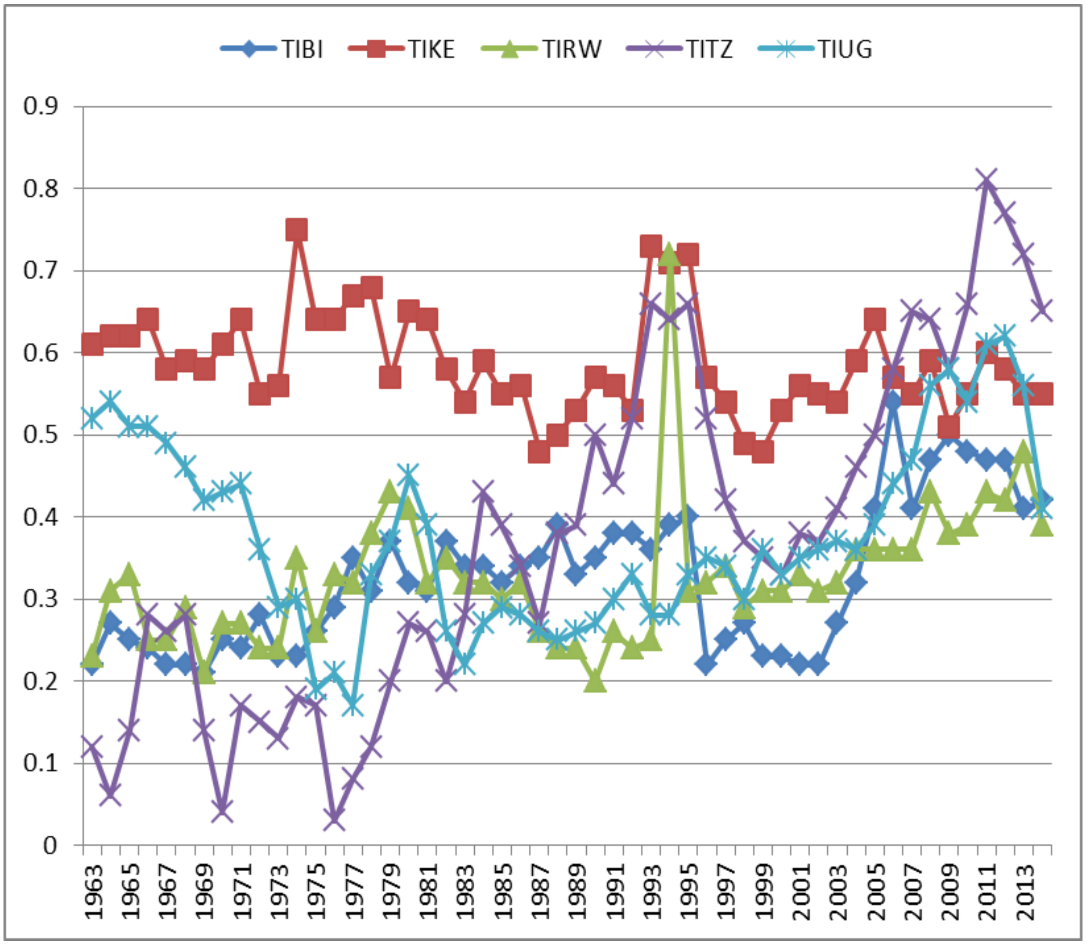
Author: Researcher (2015)

Appendix IV: Gross Capital Flow for the Five East African Countries



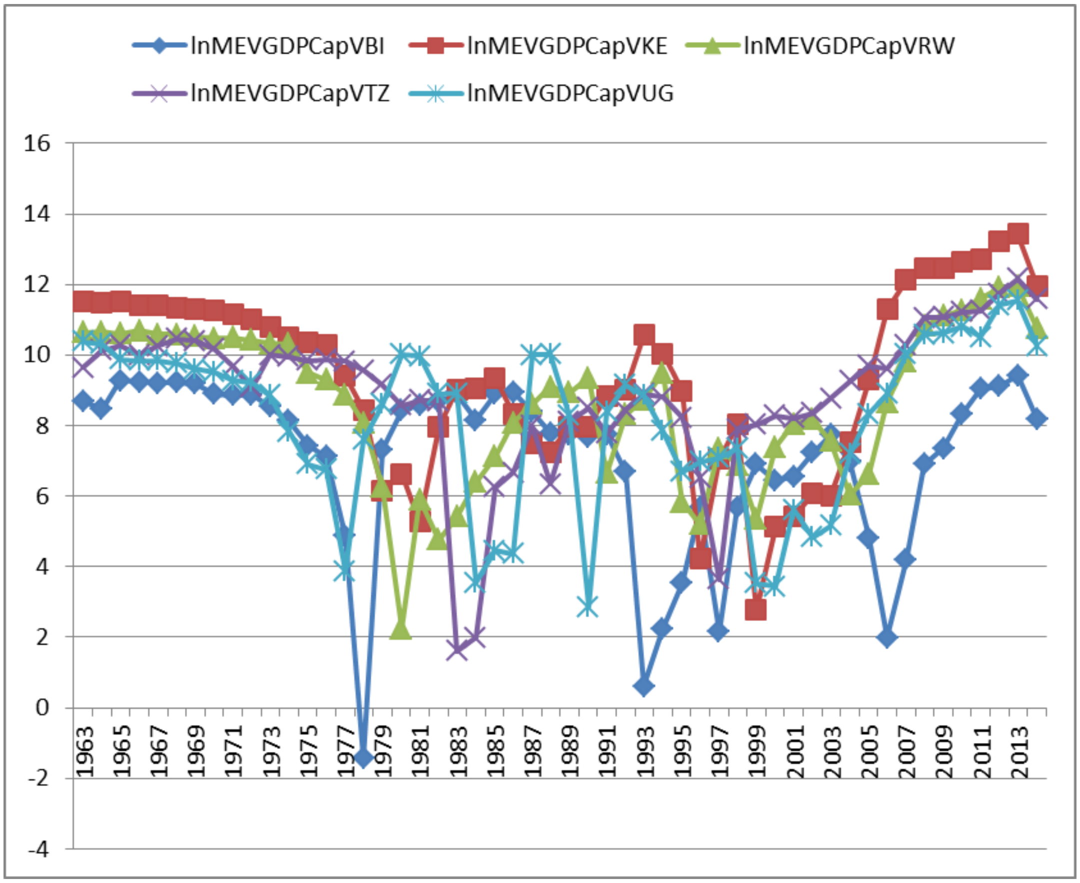
Author: Researcher (2015)

Appendix V: Trade Integration for the Five East African Countries



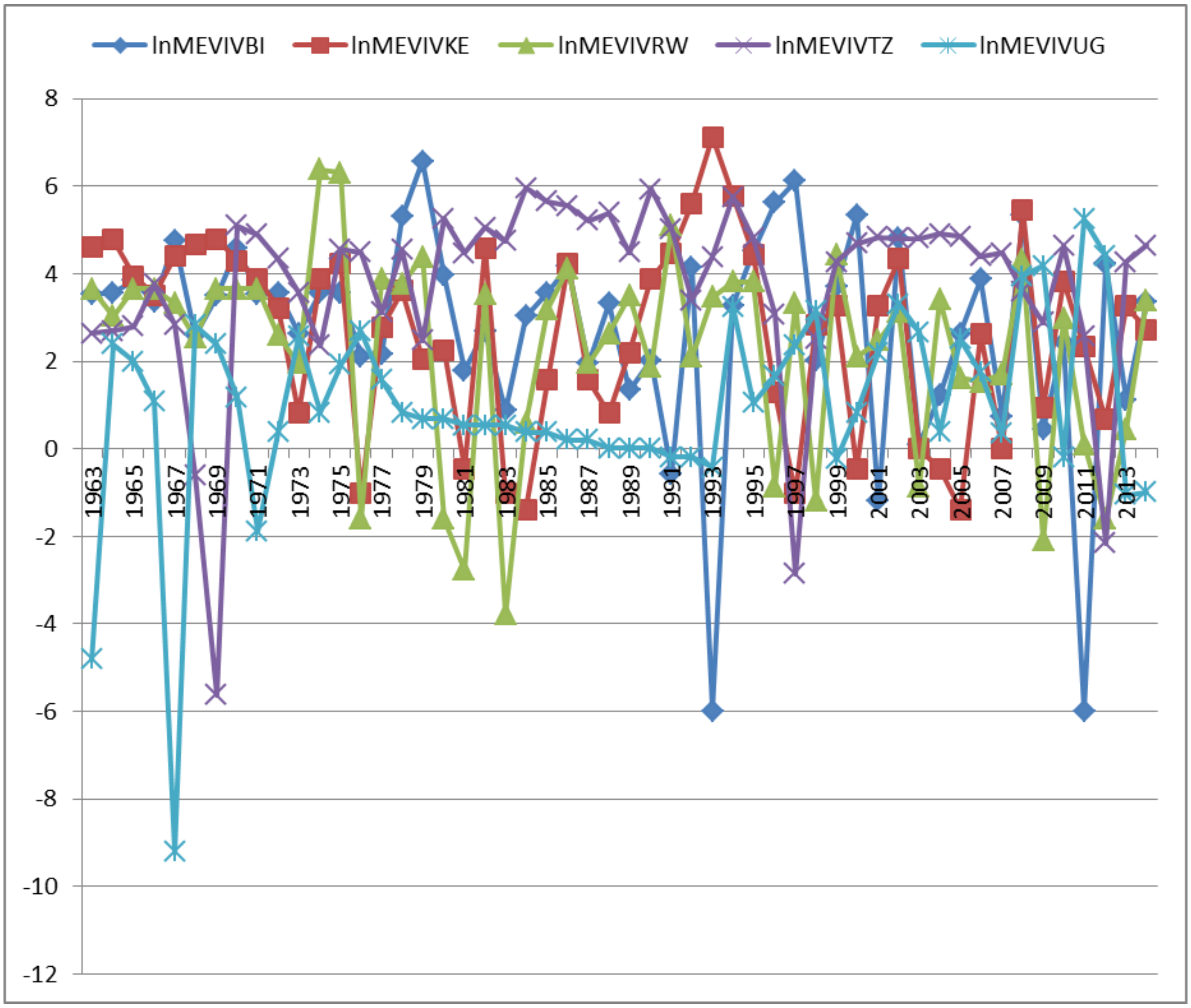
Author: Researcher (2015)

Appendix VI: GDP per Capita Volatility for the Five East African Countries



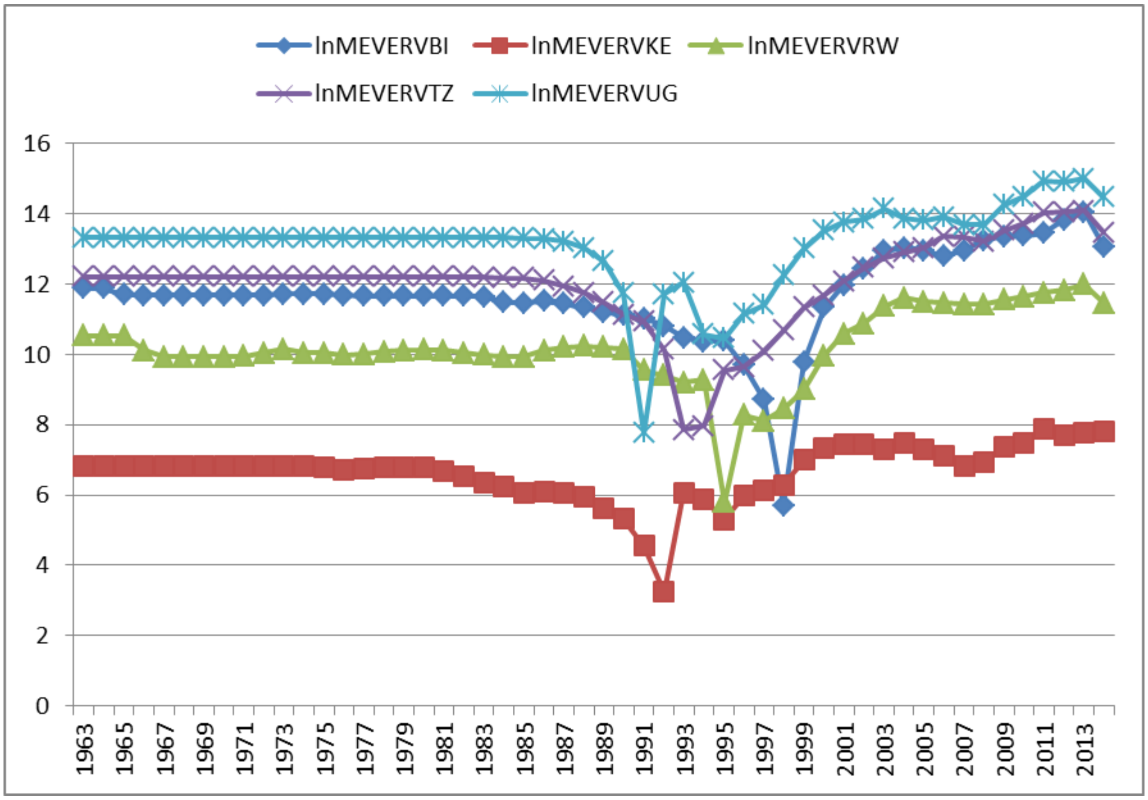
Author: Researcher (2015)

Appendix VII: Inflation Volatility for the Five East African Countries



Author: Researcher (2015)

Appendix VIII: Exchange Rate Volatility for the Five East African Countries



Author: Researcher (2015)