

**EFFECTS OF INSTITUTIONAL REFORMS ON FINANCIAL SECTOR  
DEVELOPMENT IN SELECTED EAST AFRICA COMMUNITY MEMBER  
STATES**

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**A RESEARCH PROJECT SUBMITTED TO DEPARTMENT OF APPLIED  
ECONOMICS IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE AWARD OF MASTER OF ECONOMICS (FINANCE) DEGREE OF  
KENYATTA UNIVERSITY**

**JUNE, 2019**

## DECLARATION

This research project is my original work and has not been presented in any other university for any other award.

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## **DEDICATION**

I dedicate this work to my wife Esther and children Derrick and Precious for their support and understanding during my studies.

## **ACKNOWLEDGEMENTS**

In the first place I express gratitude toward God to give me the celestial enablement to be in Kenyatta University to pursue my Master of Economics. Also I thank every one of the teachers of the School of Economics for viably taking us through the course and particularly my director Prof. Nelson H.W. Wawire. I genuinely express gratitude toward Dr. Onono for adequately taking us through the research methods course. Additionally I thank Jacinta Njagi for her support and encouragement, ultimately let me thank every one of my cohorts in the School of Economics for good and testing minutes we have experienced together. They were a source of motivation.

Thank you

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## **ABBREVIATIONS AND ACRONYMS**

ASCAs	Accumulating Savings and Credit Associations
ATMs	Automatic Teller Machines
CARE	Cooperative for Assistance and Relief Everywhere
CBK	Central Bank of Kenya
CRBs	Credit Reference Bureaus
DEA	Data Envelopment Analysis
DTMs	Deposit- Taking Microfinance
FD	Financial Development
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GMM	Generalized Method of Moments
HDI	Human Development Index
ICT	Information Communication Technology
IGAD	Intergovernmental Authority for Development
IMF	Interactional Monetary Fund
MFI	Microfinance Institutions
OECD	Organization of Economic Cooperation and Development
SACCOs	Savings and Credit Cooperative societies
SADC	Southern African Development Community
SSA	Sub-Saharan Africa
WEF	World Economic Forum

## OPERATIONAL DEFINITION OF TERMS

- A bank:** It is a foundation permitted by the government to receive deposits, pay interest, clear cheques, make loans, act, to go about as a middle person in financial transactions, and give other financial services to its clients.
- Access to financial information:** Refer to policies influencing the degree, availability and nature of credit data accessible through either open or private credit registries.
- Corruption:** This is the abuse of entrusted power for personal gain. It includes bribery, embezzlement and fraud.
- Financial Sector development:** Is characterized as increment in the level of financial services in a nation reflected by an extensive variety of items for speculators for their investment funds and hazard administration, and for borrowers for their credit needs and hazard administration
- GDP per capita:** Is the average income per person in a country calculated by dividing GDP by the population.
- Gross domestic product:** Is the fiscal estimation of all the completed products and enterprises created inside a nation's outskirts in a particular year.

<b>Institution:</b>	Refers to a company or an organization that deals with money or with managing the distribution of money, goods and services in an economy.
<b>Institutional reforms:</b>	This is the process of reviewing and restructuring institutions so that they respect human rights, preserves the rule of law, become accountable to their constituents and responsive to the needs of clients
<b>Regulatory quality:</b>	This is the process of reviewing and restructuring institutions so that they respect human rights, preserves the rule of law, become accountable to their constituents and responsive to the needs of clients
<b>Money supply, M1:</b>	It includes all physical notes and coins and funds held in easily accessible deposit accounts.

## ABSTRACT

In the East African region many institutional reforms has been undertaken to foster financial sector development. However, the contribution of these reforms to financial sector development in this region remains unimpressive compared to other developing economies in Africa. This study seeks to investigate the effects of institutional reforms on financial sector development in Kenya, Uganda and Tanzania. The objectives of the study were to: determine the effect of regulatory quality reforms on financial sector development in Kenya, Uganda and Tanzania; determine the effect of reforms in accessing information on financial sector development in Kenya Uganda and Tanzania; and establish the effect of reforms in reducing corruption on the financial sector development in Kenya, Uganda and Tanzania. Secondary panel data were collected from electronic secondary sources such as World Bank, International Monetary Fund, Central Banks, previous surveys, financial reports and regulatory authorities' data bases in the respective countries for the periods spanning from 1987 to 2016. An exploratory study design involving econometric analytic techniques was used to analyze the data collected. In this study, panel data model was used to analyze panel data and estimate the effects of institutional reforms on financial development in Kenya, Uganda and Tanzania. The study found that regulatory quality and access to information have a significant effect on financial sector development in Kenya, Uganda and Tanzania. In addition the study found out that corruption had a negative and significant effect on financial sector development in Kenya, Uganda and Tanzania. The study concluded that regulatory quality and access to information are important aspects in financial sector development. However corruption slows down the development of the financial sector. In addition, institutions play a key role in financial sector development. The study recommends that suitable institutional changes ought to be started so as to enhance transparency and responsibility of open establishments, common administration, upholds strict controls and prudential guide for business exercises.

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background

#### 1.1.1 Financial Sector Development

Financial sector plays a key role in promoting economic growth and development. Currently, nations are in their interest to balance out the institutional condition in order to encourage strong business trust in the financial segment (Manasseh, Asogwa, & Attama, 2014). To foster financial reforms, institutional development such as infrastructural development, control of corruption, regulatory quality and access to reliable financial information cannot be overstressed as a catalyst for financial sector development not only in East Africa but also worldwide (Rao, Abida, Rabia & Aisha, 2010).

Improvement of money related markets and foundations are useful in lessening poverty because they promote long-term economic growth. An established financial sector results to accessibility of financial services and also adds to economic growth (McDonald & Schumacher, 2007).

Past studies indicate that although Africa is one of the continent that is so abundant with natural resources (diamonds, sugar, salt, gold, iron, cobalt, uranium, copper, bauxite, silver, petroleum and cocoa beans) after Middle East, most countries that that have poor human development are from Africa. According to World Bank ranking, 24 nations out of 25 that have poor human development are from Africa. This trend can be reversed by creating environment for good financial sector development and growth.

Demetriades and Fielding (2009) argued that corruption, poor institutional quality and ignorance on corruption make up the key challenges for financial development in many of the East African countries. Although institutional reforms play a key role for financial sector development, there is need for management to take into account changes and dynamics in institutional environment which affects the influence of the segment to economic growth and development (Republic of Kenya, 2008).

Financial institutions have created cutting edge products and have advanced a broad variety of services with the aim of becoming more competitive. Financial sectors in developed countries are said to be developed thus are efficient in facilitating resource mobilization which enhance economic growth while most of the third world and developing countries, have less efficient and under developed financial sectors that have lower levels of banking intermediation (Kar, Nazlıoğlu & Ağır, 2011).

The current study focused on financial sector development in three East African countries which included Kenya, Uganda and Tanzania. Other African Countries are have a poorly developed financial sector and thus were not considered in this study. The financial segment in Kenya is comparably well developed and sound with the fundamental features of a well-functional monetary system having been set up, including the formation of the primary credit-reference authority in 2010. Rapid growth in credit has been witnessed in present years yet the financial sector has still failed to achieve its maximum capacity in supporting the assignment of monetary assets over the economy (CBK, 2015). On the other hand, Ugandan financial sector is moderately well developed, comprising of a scope of formal, semiformal and casual sectors. The banking system gives off an impression of being sound, yet the items it offers are short term (Okurut, Schoombee & Berg, 2005). The level of financial



Advancement in Tanzania has likewise improved though gradually. Using a huge measure of financial development, it gives the idea that financial development has enhanced after some time yet improvement of business sectors has slacked (Okurut, Schoombee & Berg, 2005). Among organizations, there has been outstanding change in financial access, especially for families. The extension of mobile money and banking is a key driver of this positive improvement (IMF, 2016).

Financial sector development in developing countries and emerging markets is part of the private sector development strategy to stimulate economic growth and reduce poverty. The current study used M1 (money supply), M2 (money supply) and Domestic credit to private sector by banks (% of GDP) to measure financial sector development.

### **1.1.2 Institutional Reforms**

Institutional reform is the way toward reviewing and restructuring state establishments with the goal that they regard human rights, safeguard the rule of law, and are responsible to their constituents. By consolidating a transitional equity component, change endeavors can both give responsibility to single culprits and cripple the structures that enabled abuses to happen (Sabel & Simon, 2004). Institutional reform can incorporate numerous equity related measures, for example, vetting, structural reform, oversight, changing lawful structures, demilitarization, grounding, and reintegration and training.

Many countries in Sub-Saharan Africa undertook many institutional reforms to improve the financial sector. In general, the reforms included reforming the judiciary for upholding the rule of law, taming corruption, liberalization of interest rates and

removing managerial allocation of credits, establishing the evolution from direct to indirect monetary policy application, restructuring institutions and their regulations such as banks to reestablish their solvency, developing financial markets, cultivating infrastructure including bank supervision, introduction of Automated Teller Machines, adoption of proper accounting and auditing practices (Barth, Caprio & Levine, 2013).

Developing sound institutions that cultivate financial development is not simple, since organizations set aside opportunity to advance and adjust to local conditions. What is more, institutional changes may decrease political power and cut into business benefits, particularly in poorer economies. Mishkin (2009) indicated that changing the allocation of power to copy the political will be expected to advance institutional change. Mishkin (2009) called attention to that by opening up of a nation's monetary reforms and item markets to different countries. Additionally, new correspondence advancements and deregulation in world markets tend to drive institutional changes in the economy, and specifically in creating administrations. The nature of institutions thus is probably going to influence monetary improvement through the skill of the segment to effectively waterway assets to beneficial speculations and business exercises.

### **1.1.3 Institutional Reforms and Financial Sector Development in East Africa**

Institutional reforms which affect financial sector might take diverse structures starting with one nation then onto the next. Many developing countries especially those in sub-Saharan Africa executed financial sector reforms as part of a wider market place oriented economic reforms (McDonald & Schumacher, 2007). Institutional reforms have different constituents, which can be used to address

financial sector inefficiencies of different countries at different times, such as: interest rate liberalization, new entry regulations, introduction of electronic banking systems, prudential reforms on lending and regulation, infrastructural improvement, restructuring of management among others (Barth, Caprio & Levine 2013).

Financial sector reforms have benefited many countries in support of positivism on reforms on regulating financial sector operations in various areas. Reforms can lead to availability of specialized financial intermediation institutions and also attract funds from savers of surplus funds. Financial intermediation helps to motivate savers of funds to supply capital and banks having a positive and significant impact on cultivating competitiveness and performance of the sector (Sunil & Bisheng, 2007). At the same time institutional reforms are likely to minimize the destruction of the local budgetary markets and subsequently prompt enhanced allocative proficiency and speedier yield development in the financial sector. However, reforms are considered to be harmful if there are no pre-requisite conditions to support the reforms. Therefore Success or failure of reforms programmes depends on many contextual factors in the industry environment (Ioannidou & Penas, 2010).

Kenya has been reported to have improved outcomes on financial sector as result of various reforms than the rest of the countries in Africa. At independence Kenya was characterized by the triumph of the first generation of reforms which entailed implementation of structural adjustment programs initiated by the international financial institutions. There were attempts towards adopting liberalization policy, a significant segment of which was a move from import-substitution to trade advancement technique and evacuation of import controls (Were, Ngugi, Makau, Wambua, & Oyugi, 2005). There were also pressure from International Monetary

Fund (IMF) and World Bank to implement reforms as a part of the pre- condition for donor funding. By the end of 1983, there were minimal achievements and policy reversals had been witnessed. Efforts to improve balance of payment position had minimal achievements. The fixed exchange rate regime was not conducive for export promotion while the export compensation schemes was flawed as it left loopholes that could be easily exploited thus defeating the purpose of reform.

In addition, in terms of physical infrastructure whilst Kenya has few bank branches relative to its population, the growth in ATMs, in agency banking and mobile payments suggests it is doing relatively well due to formulation of laws and policies which promote financial development. The safety and soundness of financial service providers is improving with much wider prudential regulation, but much more is required to build core capacity across a large range of different institutional players (Putin, 2011). Further, Credit Reference Bureaus (CRBs) have been set up. These CRBs, launched in July 2010, and are being used by many institutions Through the CRBs, banks are able to know the credit history of loan applicants and make informed decisions on probability of loan repayments by the customers. Despite undertaking the market oriented reforms, results show marginal gains in with economic growth and investments (Central Bank of Kenya, 2010).

Institutional reforms in Tanzania goes way back to 1961 when the government adopted various reforms as the original of against destitution activity. In spite of the change in the lists of the national economy, neediness and disparity created and expanded nearby these advancements. By 1967, the nation was advancing along an improvement way in which the advantages of the strategy were only felt by a small

privileged group. There was a call for a radical policy shift to *ujamaa* under the principles of *ujamaa Na kujitegemea* (Socialism and Self-Reliance). The endeavors to destitution lightening through fair access to social need fizzled (Fieldhouse, 1986). By the mid-1980s the social – monetary changes started, trailed by political changes in the mid-1990s, under the market situated financial liberization change activity usually known as basic modification program (SAP), supported by the World Bank and IMF. These changes included: advancement of loan fees; end of authoritative credit assignment; reinforcing the legal framework, fortifying the Bank of Tanzania part in managing and overseeing money related establishments; rebuilding of state-possessed monetary foundations, permitting the passage of nearby and outside private banks into the market, change of client benefits and guaranteeing budgetary manageability, uprightness and supportability (Kabete, 2008). The changes have prompted an expansion in the number and scope of banks and other monetary foundations which have profited new and more productive money related administrations in the budgetary market.

However, these positive advancements have not achieved a relating increment in access to financial services by most of Tanzanians who are mostly low wage workers who live in the rural zones. The changes secured different zones that went for the survey of the auxiliary, association techniques, operational game plans and arrangement issues identified with monetary framework. These changes additionally improved the quality and proficiency of credit allocation and also helped banks to expand their infrastructure, for example, branch systems and extent of activities and streamlining the banking industry (Putnis, 2011).

In Uganda, the problem of the banking sector was accredited to the financial strategies huted after by the progressive governments between the mid-1960s and the late 1980s, joined with extreme monetary crisis, common clashes and intense political shakiness which influenced Uganda in this period. Since 1991 the government had started executing money related division changes with the goal of reviewing these shortcomings. The changes incorporate the progression of financial markets, rebuilding distressed banks and strengthening prudential regulation (Kiiza, & Kibikyo, 2006).

Likewise with money related change programs somewhere else in Africa, it has a few interrelated targets including fortifying methods of fiscal control, boosting deposits, stimulating competition in monetary markets, upgrading the effectiveness with which financial services are given and money related assets allotted, upgrading guideline of law, rebuilding ruined banks, enhancing prudential direction and supervision and advancing the expansion of monetary markets (Mette, 2011).

Transforming monetary markets to make an effective, focused and solvent banking industry in Uganda has not been a simple undertaking. The institutional texture of the business was extremely harmed during the 1980s because of confused budgetary arrangements and the impacts of common war and financial decay (Kiiza, Asiimwe & Kibikyo, 2006). Financial repression prompted vast negative profits for budgetary resources and an extremely steep decrease in the monetary profundity of the economy. The administration ventured into a close monopolistic position in saving money markets while the built up outside banks saved to focus on a limited segment of the market.

Bank of Uganda Act (2000) states that the elements of the Bank of Uganda might be to figure and execute fiscal strategy coordinated to monetary destinations of accomplishing and keeping up financial strength (Economic Policy and Research Center, 2013). As indicated by Cooperative for Assistance and Relief Everywhere (CARE) International in Uganda (2012), the reforms in Uganda have made progress in terms of several of their objectives but major problems crucial to the success of the reforms have yet to be overcome.

Despite the comprehensive reviews and studies on of links between financial sector development and economic growth, there are limited studies in Kenya and regionally which have comprehensively assessed the aim of institutional reforms on financial sector development in the region. This aspect has been inadequately researched which presents a missed opportunity for financial sector development. Emergence of new institutional financial reforms with far reaching effect such as capping of interest rates in Kenya, regional integration and increasing corruption rates across the region continues to face myriad of challenges as well as opportunities which affects both financial and economic development of a country. Each of the East Africa community countries especially Kenya, Uganda and Tanzania has experienced many similar reforms in the financial sector which has a regional effect both economically and financially. Therefore, the region provides a suitable opportunity for examining the effect and extent to which the institutional reforms have affected financial sector development in the region.

## **1.2 Statement of the problem**

In the East Africa region, there have been many institutional reforms that have been undertaken to foster financial sector development. These reforms are closely linked to economic growth of the countries. Reforms include improved regulatory framework, access to financial information, control of corruption, maintenance of rule of law and promotion of investor's protection (Yartey, Charles & Amo, 2010).

However, despite the many institutional reforms carried out, the East Africa's frontier market economy is not yet at the same level as other emerging financial sectors in other developing nations such as South Africa and Ethiopia. Subsequently, the financial sector's contribution to real GDP growth rate in Kenya, Uganda and Tanzania remains unimpressive. For instance, in Kenya, despite her advanced frontier market economy, the contribution of the financial sector to the real GDP has dropped from 6.5 percent in 2006 to 6.2 percent in 2015 (Republic of Kenya, 2014). In addition, two measures of the depth and coverage of financial systems that is the ratio of M2 to GDP and private credit to GDP remains far below that of other developing nations in Africa (Republic of Kenya, 2014). This means that institutional reforms have not made significant contribution to the financial sector development (Odhiambo, 2011).

Further, despite of many studies on economic and financial development in the region (Yartey, Charles & Amo, 2010; Manasseh, Asogwa, & Attama, 2014; Demetriades & Fielding 2009), evidence of effect of institutional reforms on financial sector development is both insufficient and inconclusive. Therefore, this study seeks to



investigate the effects of institutional reforms on financial sector development in Kenya, Uganda and Tanzania and make suggestions for improvement.

### **1.3 Research Questions**

The study was guided by the following research questions:

- i) What is the effect of reforms in regulatory quality on financial sector development in selected East Africa community member states?
- ii) What effect do reforms in accessing reliable information have on financial sector development in selected East Africa community member states?
- iii) What is the effect of reforms intended to reduce corruption on financial sector development in selected East Africa community member states?

### **1.4 Objectives of the study**

The general objective of the study was to investigate the effect of institutional reforms on financial sector development in selected East Africa community member states.

The specific objectives of study were to:

- i) Examine the effects of reforms in regulatory quality on financial sector development in selected East Africa community member states;
- ii) Determine effect of reforms in accessing reliable information on financial sector development in selected East Africa community member states;
- iii) Establish the effect of reforms intended to reduce corruption on financial sector development in selected East Africa community member states.

## **1.5 Significance of the Study**

First, the study plays a critical role in informing institutional priorities and plans which help improve the financial segment and its impact to economic development in the region. In addition, the study aims at bridging existing information gap on institutional factors affecting financial sector development. For instance, review found that although a substantial number of studies on financial sector development are done in the East Africa region, majority of them focus on the nexus between financial sector development and economic growth with little focus on the effect of the reforms on financial sector development.

This study is of significance to financial sector stakeholders such as managers, directors and other stakeholders as it helps them to not only understand but also articulate how institutional reforms affect their growth and development priorities. To the financial sector regulators, the study helps in figuring strategies that advance financial segment improvement and guarantee proceeded development of financial segment in East Africa district and even past. The discoveries are additionally imperative to speculators when settling on their investment decisions on key factor and issues to consider when construct investment portfolios within the banking industry. The study also adds to the existing literature on the study subject. It assists researchers who want to carry out further studies financial sector development and related disciplines.

## **1.6 Scope of the Study**

The study sought to determine the effects of institutional reforms on financial sector development in East Africa (Tanzania, Uganda and Kenya) and collected data on financial sector development indicators in the three countries. East Africa community share similar institutional reforms in many aspect of financial and economic sector development which has enabled some Kenyan banks such as Kenya Commercial Bank, Co-operative and Equity bank to operate in the region. In addition, East Africa countries are fast-tracking regional integration supported by adoption of appropriate economic and financial development reforms.

## **1.7 Organization of the Study**

Chapter one highlighted the background of the study, the problems statement; it also introduced the objectives guiding the study. In addition it brought a justification to the study followed by the study scope. In chapter two there was a discussion of literature whereas chapter three brought about the methodology of the study. Chapter four highlighted the results of the study while chapter five gave the rundown of findings, conclusions and recommendations.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter sets out by first reviewing existing theoretical literature and then analyzing the empirical literature on institutional reforms and how they affect financial sector development. Finally, a summary and critique of the literature reviewed is given.

#### **2.2 Theoretical Literature**

The requirement for practical institutions as the significant determinants of development in each part of the economy has been an issue of talk in the worldwide world. Hypothetical and experimental examinations accentuate the need to give careful consideration to institutional changes for its essential part in financial sector development (Anayiotos & Toroyan, 2009). The parts of monetary improvement in financial development have drawn the consideration of numerous researchers around the world.

##### **2.2.1 McKinnon-Shaw Model**

McKinnon (1973) and Shaw (1973), analyzed the benefits of financial repression, at least reducing its impact on the domestic financial system within developing countries. Their analyses concluded that alleviating financial restrictions in such countries can exert a positive effect on growth rates as interest rates rise toward their competitive market equilibrium. According to this tradition, artificial ceilings on interest rates reduce savings, capital accumulation, and discourage the efficient

allocation of resources. Additionally, McKinnon (1973) pointed out that Financial Repression can lead to dualism in which firms that have access to subsidized funding will tend to choose relatively capital-intensive technologies; whereas those not favored by policy will only be able to implement high-yield projects with short maturity.

Another effect of Financial Repression, to which the McKinnon (1973) made only scant reference, stemmed from the implicit “credit rationing” effect which results from the Feast and Famine consequences of excessive government intervention in money and credit markets in developing countries. Given that real interest rates are prevented from adjusting to clear the market, other “non-market” forms of clearing have to take their place. These can include various forms of “queuing” arrangements to “ration” the available credit such as auctions, quantitative restrictions, as well as different types of “bidding” systems which themselves may be open to nepotism or even outright corrupt practices. In essence, these manifestations of financial repression mean that not only is the quantity of savings low, or at the very least irregular; it also means that the level of activity which does occur is of poor quality. This is really what the term Financial Repression entails. If the real interest rate is not allowed to clear the money and credit markets, both the overall level as well as the quality of savings and investment will be repressed. The quantity and the quality effects compound each other. In a Feast and Famine environment, the typical borrower may borrow too much (too little) and this very tendency will reinforce the Feast and Famine problem itself.

In relation to this study McKinnon and Shaw assumed that liberalization, which would be associated with higher real interest rates as controls on these are lifted

would stimulate saving. The underlying assumption is, of course, that saving is responsive to interest rates. The higher saving rates would finance a higher level of investment, leading to higher growth.

This theory is deemed relevant to this study since it explain growth-inducing effects of financial liberalization. The theory argues that the financial sector could raise the volume of savings as well as the quantity and quality of investment.

### **2.2.2 Asymmetric Information**

The theory of asymmetric information was developed in the 1970s and 1980s by George Akerlof, Michael Spence and Joseph Stiglitz as a plausible explanation for common phenomena that mainstream general equilibrium economics couldn't explain. In simple terms, the theory proposes that an imbalance of information between buyers and sellers can lead to inefficient outcomes in certain markets. Akerlof (1970) stated that car buyers see different information than sellers, giving sellers an incentive to sell goods of less than average market quality. He used the colloquial term "lemons" to refer to bad cars and it espouses a belief that buyers cannot effectively tell lemons apart from good cars. Thus, sellers of good cars cannot get better than average market prices. This argument is similar to the since-challenged Gresham's law in money circulation, where poor quality drives out bad.

Spence (1973) models employees as uncertain investments for firms; the employer is unsure of productive capabilities when hiring. The model then compares this situation to a lottery. Spence (1973) identifies information asymmetries between employers and employees, leading to scenarios where low-paying jobs create a persistent equilibrium trap that discourages the bidding up of wages in certain markets. It's with Stiglitz,

though, that information asymmetry has reached mainstream acclaim. .Through Stiglitz's work, asymmetric information was placed into contained general equilibrium models to describe negative externalities that price out the bottom of markets. For instance, the uncertain health insurance premium needed for high-risk individuals causes all premiums to rise, forcing low-risk individuals away from their preferred insurance policies.

According to the development hypothesis theory, lack of a developed financial infrastructure restricts financial sector development hence economic growth. Thus, the focus of policy at each point in time should be to ensure that the financial system operates efficiently such that the real sector will receive the necessary support. The acceptance of the hypothesis theory made economic theorists to conclude that a measure of intervention is important and in fact necessary for meaningful growth. Various policies should thus be put in place to encourage and promote the activities of financial institutions in this regard (Nzotta & Emeka, 2009).

### **2.2.3 Financial Repression Theory**

The implication of this study is that financial development would contribute most significant to economic growth, if monetary authorities did not interfere in the operations of financial institutions and the financial infrastructure generally. The studies by Mckinnon observed that financial repression is correlated with sluggish growth in developing countries. Such economies are typically characterized by high and volatile inflation and distorted interest and exchange rate structures, low savings and investments and low level of financial intermediation, as interest rates do not reflect the cost of capital.

Other schools of thought believed that financial development follow economic growth while others refuted the ideology. According to the demand following hypothesis economy expands as its demand for certain financial instruments increases which in turn lead to financial development (Gelb, 1989). Conversely, law and finance theory in it view, argued profusely that institution is a forerunner to financial development, especially those protecting private property right of investors in explaining international differences in financial development. This law holds that in countries where legal systems enforce private property rights, support private contracts, and protect the legal right of investors, savers/lenders tends to be more eager to finance firms, which reciprocate the promotion of financial development (Thorsten and Levine, 2005).

Specifically, legal theories highlighted two inter-related mechanism through which legal origin influences financial development; political mechanism and protection of private contracts rights (Hayek & Friedrich, 1960). The political mechanism argued that legal traditions differ in terms of the importance they attach to private property rights of the State and the protection of private contracts rights that forms the basis of financial development. However, Merryman (1985) added that legal traditions differ in their ability to evolve with changing conditions and legal traditions that adapt efficiently to minimize the gap between the contracts needs of the economy and the legal system's capabilities will foster financial development more effectively than rigid legal systems.



#### **2.2.4 Financial Development Theory**

This hypothesis was first put forth by Schumpeter (1911) and later supported by the works of Shaw (1973), McKinnon (1973), Gupta (1984), Fry (1988), Jovanovich and Greenwood (1990) and Smith and Bencivenga (1991). The theory posits that a strong developed sector of finance facilitates vital services that reduce transaction, information and monitoring costs and enhance the effectiveness of intermediation. As such it identifies and funds good business projects, mobilizes savings, enables trading and risks diversification, promotes exchange of services and goods, monitors the performance of managers. All these services results in effective allotment of resources; lead to a quick increase of human and physical capital; and enable faster technological innovation. This eventually brings the outcome into faster and long-term economic growth (Schumpeter, 1911).

Besides, intermediation of finance is a practice that entails surplus component deposit finances with institutions of finance that loan to deficit component. Bisignano in (1992) recognized the intermediaries of finance may be differentiated in four categories. Firstly, the major category of deposits or liabilities is precise for a predetermined sum that is not associated to a portfolio performance. Secondly, deposits are characteristically considered to be temporal compared to the assets. Thirdly, a high quantity of its liabilities is liquid that can be withdrawn as demanded; fourthly, assets and liabilities for the most part are not convertible. The vital influence of intermediaries is a stability and stable movement of finances from surplus then to deficit components.

According to Wensveen and Scholtens (2003) the function of the intermediary of finance was fundamentally more specific to commodities of finance. Every time an

intermediary realized they could sell them at prices which will cover all the cost associated with their production which are both opportunity costs and direct costs. Market imperfections created the existence of financial intermediaries. Hence, in a situation of a perfect market, where there is no information or transaction, there would be no existence of financial intermediaries. Differences of information between sellers and buyers dominated numerous markets. Bias information is noticeable in financial markets. Typically, borrowers are aware of their industriousness, collateral and moral integrity well enough than the lenders. Pyle and Leland (1977) found out that entrepreneurs are informed of private information regarding their viable projects they need to finance. Information transfer among participants in the market is vital factor for ventures of better quality to be well financed however the moral hazard poses a bottle neck to its flow.

These theories are related to the study in question because it shows one of the possible elucidations of how growth in the financial sector affects financial sector development.

### **2.3 Empirical Literature**

Miletkov and Babajide (2008) conducted a study on legal institutions, democracy and financial sector development. The study used descriptive research design. The study found a connection between the nature of lawful organizations and financial sector development while discoveries demonstrate no relationship. The study concluded that that adjustment in the nature of lawful organization doesn't foresee changes in the level of money related advancement. The study focused on legal institutions, democracy and financial sector development thus presenting a conceptual gap.

Anayiotos and Toroyan (2009) conducted a study on institutional factors and financial sector development: evidence from Sub-Saharan Africa. The study used descriptive research design. The study found that profundity of credit data has the most grounded effect on the non-performing advance, while political soundness influences access to financial services the most. In view of these discoveries, they presumed that organizing institutional change upgrade financial sector improvement for one nation and nation gatherings. This infers nations willing to diminish non-performing advance with the assistance of institutional changes ought to think about setting up credit registries, increment straightforwardness and measure of shared data.

Angelopoulos, Economides and Vassilatos (2010) conducted a study how institutions matter for economic fluctuations in Mexico. The study used descriptive research design. The study found that data revelation assumes a vital part in deciding financial advancement. For example, nations where companies distribute moderately thorough and precise financial statements have preferable created financial intermediaries over nations where distributed data on organizations is less dependable. Such data gives the premise to settling on choice seeing monetary issue. The study was conducted in Mexico thus presenting a scope gap. The current was conducted in Kenya.

Gries and Meierrieksy (2010) examined part of institutional quality on budgetary advancement in 19 Sub-Saharan Africa nations utilizing a period crossing from 1984 to 2007. The study showed that a few factors related with high institutional quality apply a positive causal effect on monetary improvement. The study used desktop research design and concluded that enhancements in institutional quality, for example,

access to dependable data, administrative quality and political security can help advance monetary improvement through money related improvement.

Sanusi (2011) conducted a study on banking reforms and economic development in Nigeria. The study used panel data analysis. The study found that the principle factors of financial development are connected to money related markers, macroeconomic execution and foundations quality which uncover the significance of institutional factors on financial sector improvement. The study was conducted in Nigeria while the current study was conducted in Kenya.

Hami (2017) conducted a study on the effect of inflation on financial development indicators in Iran (2000–2015). The study used panel data to do the analysis. The results showed that inflation has a negative significant effect on financial depth and also positive significant effect on the ratio of total deposits in banking system to nominal GDP in Iran during the observation period. The study focused on inflation as the only factor that affects financial sector development.

#### **2.4 Summary of Literature Review**

The study reviewed empirical studies on the role of institutional reforms and its effects on financial sector development. Reviews have shown that institutional factor plays a significant role in enhancing financial sector development, and there exists a close linkage between financial sector development and growth of the economy (Anayiotos et al 2009; Mc Donald et al.; Ioannidou et al.). Studies done worldwide conclude that prioritizing institutional reforms enhances financial sector development and this constitute a key pillar in economic development plans for the East Africa

region whose members like Kenya, Uganda and Tanzania aims at transforming them into middle-income countries (Sanusi 2011; Thorsten et al.2005).

However, despite of many studies exploring the nexus between financial sector and economic growth (Darrat 1999, Choe & Moosa, 1999), there are few studies published to explore the link between institutional reforms and financial sector in the region. Most of the studies focus on the link between financial sector development and or reforms and economic growth. As a result, the role of institutional reforms or factors is not adequately studied and explored in the region. This illustrates a lost or missed opportunity for delving on key issues of concern from an institutional perspective which derive the financial sector. This may explain the unimpressive results of current financial sector reform contribution to the economic growth in the region. Therefore, the study identified this gap as a key study area which will be important in deriving policies and interventions for financial sector development and successful implementation of financial sector reforms.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Introduction**

This chapter detailed the research methodology used in this study. The sections discussed the research design, study variables, theoretical model and model specification, validity and reliability, data collection process, data analysis and ethical consideration of the study.

#### **3.2 Research Design**

The study employed econometric study techniques which uses panel data for analysis. The study design used was a non-experimental analytic study design. An explanatory approach was useful in explaining how the institutional reforms affect financial sector development and carefully test causal research objective of the study.

#### **3.3. Theoretical Framework**

##### **3.3.1 Financial Development Theory**

Financial development theory was developed by McKinnon and Shaw (1973). The theoretical framework helped to explain growth-inducing effects of financial liberalization in contrast to financial repression. They argued that the financial sector could raise the volume of savings as well as the quantity and quality of investment.

The conventional view of this theory postulates that financial development causes the economy to grow. In a world with frictionless information, transaction, and costs of monitoring, financial intermediaries are not needed. If information, transaction, and

monitoring costs are necessarily high, no exchange takes place between agents of economics. The desire to decrease the related costs and enable exchanges led to the financial markets emergence and institutions markets that make up sector of finance.

From this theory, financial information was a function of access to information. Market imperfections created the existence of financial development. Hence, in a situation of a perfect market, where there is no information or transaction, there would be no existence of financial development.

### **3.4 Model Specification**

This model was an extension of McKinnon and Shaw (1973) model. McKinnon and Shaw (1973) only addressed access to information as the only factor that affect financial sector development. The current study focused on more factors which included regulatory quality, corruption, inflation, GDP per capita and trade openness.

$$Y_{it} = B_0 + B_1X_{1it} + B_2X_{2it} + B_3X_{3it} + B_4X_{4it} + B_5M_{it} + B_6X_{it} + e$$

Y = Financial sector development

X<sub>1</sub> = Regulatory quality

X<sub>2</sub> = Access to information

X<sub>3</sub> = Corruption

X<sub>4</sub> = Inflation

X<sub>5</sub> = GDP per capita

X<sub>6</sub> = Trade openness

t = time

### 3.5 Description and Measurement of Variables

Table 3.1 summarizes the type, definition and measurement of study variables used in the study. In addition, definition of control variables was included

**Table 3.1: Definition of Variables**

Variable	Description and Measurement	Data Source
<b>a) Dependent Variable(s)</b>		
M <sub>2</sub> Money Supply	A measure of total cash supply that incorporates M1 and long haul cash stores. Estimated by quarterly normal of cash supply	<ul style="list-style-type: none"> <li>National Banks Websites</li> </ul>
M <sub>1</sub> Money supply	Also known as narrow money, it includes all physical notes and coins and funds held in easily accessible deposit accounts	<ul style="list-style-type: none"> <li>World Bank</li> <li>IMF</li> </ul>
Bank credit to the private sector	It measures the role of bank as a credit intermediation by channeling savings to investors. It is a measure of the capacity of the managing an account framework to give back drove development. Proportion of credit from store taking monetary foundations to the private division to GDP, communicated as a rate.	<ul style="list-style-type: none"> <li>National Banks Websites</li> </ul>
<b>b) Independent Variables</b>		
Variable	Description and Measurement	Source of Data
Regulatory quality	Refer to the capacity of the legislature to detail and actualize sound arrangements and directions that allow and advance private segment improvement. Administrative quality measures occurrences of unpleasant arrangements, for example, value controls and its scale is given by the universal nation chance guide and estimated by the world bank	<ul style="list-style-type: none"> <li>World Bank, Publications</li> <li>Surveys</li> <li>National Banks</li> </ul>
Corruption	Corruption is measured on a 0 to 6 scale with the lowest value indicating very high risk and the highest value indicating very low risk and is measured by the world bank.	
Access to information	The profundity of credit data file measures rules influencing the degree, openness and nature of credit data accessible through either open or private credit registries. The variable equivalents one if either an open registry or a private department works in the nation, zero generally, and is built as at January for consistently from 1978 to 2003.	
<b>c) Control Variables</b>		
GDP per Capita (RGDP)	GDP per capita is a measure of normal wage per individual in a nation. It is a measure of the aggregate yield of a nation that takes the (GDP) and partitions it by the quantity of individuals in the nation	<ul style="list-style-type: none"> <li>National Banks,</li> <li>World Bank</li> <li>IMF</li> </ul>
Inflation (INFL)	Inflation expectation is estimated at time t-1 yearly percent change of the GDP deflator at advertise costs for every nation where the MFI is situated for every year.	
Trade Openness (TO)	This refers to the sum of exports and imports divided by GDP	



### 3.6 Study Area Profile

The study was conducted in 3 East Africa countries namely: Tanzania, Uganda and Kenya. The study was conducted to assess the financial sector development in the region. (See map of Study area in Appendix II). Table 3.2 below shows key financial sector growth and development in the East Africa region compared to sub-Saharan Africa.

**Table 3.2 Key Economic Indicators in the Region.**

Country	2003-2005	2006-2008	2009-2011	2012-2015
<b>Broad Money (M2)</b>				
Ethiopia	40.6	48.7	47.7	43.8
Kenya	28.6	40.5	40.2	33.3
Uganda	---	10	14	15
<b>Banks Deposit Liabilities</b>				
Ethiopia	19.1	26.2	36.9	38.7
Kenya	22	32.8	33.9	34
Uganda	---	---	14.1	14.7
<b>Private Sector Credit</b>				
Ethiopia	43.3	49.3	53.5	55.3
Kenya	33.7	38.9	39.9	36.7
Uganda	---	---	10	7

**Source:** Computed from International Monetary Fund (2014)

According to the financial sector development indicators in Table 3.2 for some of the countries in the Eastern Africa region, broad money to GDP ratio is higher for Kenya as compared to other countries in the region. The indicators signify the monetization level of the economies as they are mostly urbanized economies. A lower ratio is observed in the case of Uganda. Bank deposit liability to GDP ratio is larger in

the economies of Kenya and a lower level of the sector's development is associated, in this case, with Uganda in relative terms.

### **3.7 Target Population**

The target population constituted the financial sectors in Kenya, Uganda and Tanzania. The financial institution sector data included the commercial, micro-finance banks and other finance institutions operating in each of the country. Data was accessed from the national regulatory institutions, data-bases and other regional and international data-bases for development indicators; such as Central bank, Commercial banks and International monetary fund (IMF).

### **3.8 Data Type and Source**

This study was based on panel data collected from financial sectors in Kenya, Uganda and Tanzania covering the period 1987 to 2016. The choice of the period to be factored in the panel data collection was based on the realization that the period marked an era of development of financial institutions and financial market in the region.

In this study, countries which would not have sufficient observations for the study variables and those which would be considered outliers based on social-economic challenges such as prolonged civil war was exempted from the study. Data for the study variables were collected from World Bank, Central (National) Banks, International Monetary Fund (IMF) data bases, past surveys/publications and financial regulatory authority data bases/websites in each of the three countries.

### **3.9 Data Refinement**

Data collected was cleaned, sorted and collated after which it was entered into the computer using STATA software for analysis. This was useful as a quality check to ensure that only relevant and accurate data was used in the study.

### **3.10 Data Collection**

The study collected secondary data. The researcher used a document review guide to extract and compile the required secondary data for analysis from the Central Bank of Kenya Reports.

### **3.11 Panel Data Properties**

It was essential to ensure non-violations of the assumptions of the classical linear regression model (CLRM) before attempting to run the result. Consequently, the normality, autocorrelation, heteroscedasticity, and panel unit root tests were conducted to ensure proper specification of regression equation

#### **3.11.1 Normality Tests**

The normality assumption ( $u_t \sim N(0, \sigma^2)$ ) is required in order to conduct single or joint hypothesis tests about the model parameters (Brooks, 2008). It can be hard to establish if the data is normally distributed by just looking at the scatter plot and hence Bera and Jarque (1981) tests of normality was performed.

#### **3.11.2 Autocorrelation**

Since the data involves both cross section and time-series, it raises the suspicion of the existence of serial correlation. The presence of serial correlation indicates that the variables in the model violate the assumptions of the regression (Anderson *et al.*,

2007). To cater for serial correlation, the Wooldridge test for autocorrelation was employed. Serial correlation is a common problem experienced in panel data analysis and has to be accounted for in order to achieve the correct model specification. According to Wooldridge (2005), failure to identify and account for serial correlation in the idiosyncratic error term in a panel model would result into biased standard errors and inefficient parameter estimates. The null hypothesis of this test is that the data has no serial correlation. If the serial correlation is detected in the panel data, then the Feasible Generalized Least Squares (FGLS) estimation will be adopted.

### **3.11.3 Heteroscedasticity**

Since the data for this research was a cross-section of countries, this raises concerns about the existence of heteroscedasticity. The CLRM assumes that the error term is homoskedastic, that is, it has constant variance. If the error variance is not constant, then there is heteroscedasticity in the data. Running a regression model without accounting for heteroscedasticity would lead to unbiased parameter estimates. To test for heteroscedasticity, the Breusch-Pagan/Godfrey test was used.

### **3.11.4 Panel Unit Root Test**

The study used panel data regression. Panel data regression was chosen for a number of reasons. Firstly, panel data allows for the control of individual heterogeneity, making it possible to exclude biases deriving from the existence of individual effects (Hsiao, 2003). Secondly, panel data yields more informative data, more variability and less collinearity among variables than is characteristic of cross-section or time-series data, more degree of freedom and more efficiency (Baltagi et al, 2005). Thirdly, panel data can be used to obtain consistent estimators in the presence of omitted

variables (Wooldridge, 2005). Panel data sets are also able to recognize and estimate the effects that cannot be merely detected in pure cross-sections or pure time-series data (Baltagi, 2005).

Since the study focused on only three countries (Kenya, Uganda and Tanzania) using cross-section data alone gave a small sample but incorporating the time series of 30 years, the sample expanded to 90 observations. The resultant large sample made it possible for the study to satisfy asymptotic requirements (Gujarati, 2003).

### **3.12 Hausman Test**

When performing panel data analysis, one has to determine whether to run a fixed effects model or a random effects model (Baltagi, 2005). Whereas the fixed effect model assumes firm specific intercepts and captures effects of those variables which are specific to each firm and constant over time, the random effect model assumes that there is a single common intercept and it varies from firm to firm in a random manner (Baltagi, 2005). Thus, for estimating the models, first it is important to determine whether there exists a correlation between the independent variables. If the correlation exists then a fixed effect model will give consistent results otherwise random effect model will be an efficient estimators and it is estimated by generalized least square. To determine which of these two models is appropriate, coefficients are estimated by both fixed and random effects. Hausman's specification tests were used to determine whether fixed or random effect should be used. If the null hypothesis that is  $E(\mu_i / x_{it}) = 0$  is accepted, then random effect was an efficient estimator otherwise in case of rejection of null hypothesis, fixed effect estimation will give better or efficient estimation of betas. If Hausman test rejects the null hypothesis,

therefore decision is taken to use fixed effect model. STATA was used to estimate the above models. The current study used fixed effect.

### **3.13 Data Analysis**

The specific objective one, was to examine the effects of reforms in regulatory quality on financial sector development in selected East Africa community member states. This objective was achieved use of inferential statistics. A regression model was used to determine whether reforms in regulatory quality had an effect on financial sector development in selected East Africa community member states.

The specific objective two, was to examine the effects of reforms in access to information on financial sector development in selected East Africa community member states. This objective was achieved by use of inferential statistics. A regression model was used to determine whether reforms in access to information had an effect on financial sector development in selected East Africa community member states.

The specific objective three, was to examine the effects of corruption on financial sector development in selected East Africa community member states. This objective was achieved by use of descriptive and inferential statistics. Descriptive statistics on corruption index were analyzed using means, standard deviation, minimum and maximum. A regression model was used to determine whether corruption had an effect on financial sector development in selected East Africa community member states.

The extraneous variables which were trade openness, inflation and GDP were also achieved by use of descriptive and inferential statistics. Descriptive statistics on GDP

per capita (current LCU), Exports of goods and services (% of GDP) and consumer price index were analyzed using means, standard deviation, minimum and maximum. A regression model was used to determine whether trade openness, inflation and GDP had an effect on financial sector development in selected East Africa community member states.

## CHAPTER FOUR

### EMPIRICAL FINDINGS

#### 4.1 Introduction

This chapter presents empirical outcomes which include; descriptive statistics, unit root tests, error correction regression models, relevant econometric tests and key findings from the investigations.

#### 4.2 Descriptive Statistics for Variables

Descriptive for GDP per capita, trade openness, inflation, domestic credit to private sector and broad money in Kenya, Uganda and Tanzania were computed.

**Table 4.1: Descriptive statistics for Kenya, Uganda and Tanzania**

Variable	Obs	Mean	Std.dev	Min	Max
Domestic credit to private sector by banks	90	12.187	6.130	2.782	25.850
GDP Per capita	90	511023	555099	6204.052	1994375
Trade Openness	90	18.486	6.080	7.063	38.904
Inflation	90	70.878	45.629	3.794	166.622

The results in Table 4.1 revealed that the mean domestic credit to private sector in Kenya, Uganda and Tanzania was 12.187. The minimum reported domestic credit to private sector was 2.782 while the maximum was 25.850. The domestic credit to private sector was spread within a standard deviation of 6.130 and this implies that there was a wide spread of reported domestic credit to private sector from the mean domestic credit to private sector.

Results further revealed that mean GDP per capita in Kenya, Uganda and Tanzania was 511023. The minimum reported GDP per capita was 6204.052 while the maximum was 1994375. The GDP per capita was spread within a standard deviation



of 555099 and this implies that there was a wide spread of reported GDP per capita in Kenya, Uganda and Tanzania from the mean GDP per capita.

Further, the mean trade openness in Kenya, Uganda and Tanzania was 18.486. The minimum reported trade openness was 7.063 while the maximum was 38.904. The trade openness was spread within a standard deviation of 6.080 and this implies that there was a wide spread of reported trade openness from the mean trade openness.

The mean for inflation in Kenya Uganda and Tanzania was 70.878. The minimum reported inflation was 3.794 while the maximum was 166.62. The inflation was spread within a standard deviation of 45.629 and this implies that there was a wide spread of reported inflation in Kenya from the mean inflation. Trend analysis results were presented in Appendix III.

#### **4.3 Diagnostic Test**

Before making any conclusions from the estimation results, a series of diagnostic results were carried out to ascertain the statistical soundness of the models and whether they could be used for forecasting.

### 4.3.1 Normality Test Results

The study used Bera and Jarque (1981) tests to test for normality

**Table 4.2: Normality Test**

	<b>X1</b>	<b>X2</b>	<b>X3</b>	<b>X4</b>	<b>X5</b>	<b>X6</b>	<b>Y</b>	
Skewness	0.134	0.599	2.686	0.452		1.109	0.375	0.102
Kurtosis	1.018	1.484	8.261	4.163		3.070	2.156	1.821
Jarque- Bera	15.00 1	14.00 4	211.9 92	8.138		18.463	4.781	5.370
Probabilit y	0.001	0.001	0.000	0.017		0.000	0.092	0.068
	42.00	97.90	65.00	1663.7		6379.05	1096.8	
Sum	0	0	0	35	45992027.000	3	70	
Sum Sq.	22.40	180.9	424.0	3290.1	2740000000000	185296.	3345.4	
Dev.	0	97	56	61		0.000	500	17

Where;

Y = Financial sector development

X<sub>1</sub> = Regulatory quality

X<sub>2</sub> = Access to information

X<sub>3</sub> = Corruption

X<sub>4</sub> = Inflation

X<sub>5</sub> = GDP per capita

X<sub>6</sub> = Trade openness

The results showed that the jarque – bera value of 15.001 and p – value of 0.001 demonstrated that the data for regulatory quality was not normally distributed. The also indicated that the jarque – bera value of 14.004 and p – value of 0.001 demonstrated that the data for access to information was not normally distributed. The

findings also stated that that the jarque – bera value of 211.992 and p – value of 0.001 demonstrated that the data for corruption was not normally distributed.

In addition, the results showed that the jarque – bera value of 8.138 and p – value of 0.017 demonstrated that the data for inflation was not normally distributed. In addition, the jarque – bera value of 18.463 and p – value of 0.000 demonstrated that the data for GDP per capita was not normally distributed. The results also revealed that the jarque – bera value of 18.463 and p – value of 0.000 demonstrated that the data for GDP per capita was normally distributed. The results further showed that the jarque – bera value of 4.781 and p – value of 0.092 demonstrated that the data for financial sector development was normally distributed.

From the findings, all the independent variables were not normally distributed but the dependent variable was normally distributed. Since the dependent variable was normally distributed, the data was assumed to be normally distributed.

#### **4.3.2 Heteroskedasticity Test Results**

The error process may be Homoskedastic within cross-sectional units, but its variance may differ across units: a condition known as group wise Heteroscedasticity. The hettest command calculates Breuch Pagan for group wise Heteroscedasticity in the residuals. The null hypothesis specifies that  $\sigma^2_i = \sigma^2$  for  $i = 1 \dots Ng$ , where Ng is the number of cross-sectional units.

**Table 4.3: Heteroskedasticity Results**

---

**Modified Wald test for group wise heteroskedasticity  
in fixed effect regression model**

---

H0:  $\sigma(i)^2 = \sigma^2$  for all i

chi2 (3) = 51.93

Prob>chi2 = 0.0000

**0.0999**

---

The results in Table 4.3 indicate that the null hypothesis of Homoskedastic error terms is not rejected as supported by a p-value of 0.0632.

### 4.3.3 Autocorrelation Test Results

Because serial correlation in models biases the standard errors and causes the results to be less efficient, the study adopted the Breusch-Godfrey test for autocorrelation which identifies serial correlation in the idiosyncratic error term in a model.

**Table 4.4: Test of Autocorrelation**

---

**Wooldridge test for autocorrelation in panel data**

**H0: no first-order autocorrelation**

---

$$F(1, 2) = 5.883$$

$$\text{Prob} > F = 0.1363$$

---

From the Table 4.4 the null hypothesis of no serial correlation is not rejected given that the p-value is insignificant (p-value = 0.1363).

### 4.4 Hausman Test Results

In order to determine whether the fixed or random effects model is appropriate Hausman test was used. The Hausman test fundamentally tested whether the unique errors ( $ui$ ) are correlated with the regressors.

The results in table 4.5 illustrate the results of the Hausman test.

**Table 4.5: Hausman Results**

	(b) fixed	(B) random	(b-B) sqrt(diag(V_b- V_B)) Difference S.E.
Domestic credit to private sector by banks	1.26E-06	-3.29E-06	4.55E-06
GDP per Capita	0.259894	0.61952	-0.35963
Trade Openness	0.019494	0.024928	-0.00543
Inflation	1.05281	0.388374	0.664436
regulatory quality	0.336403	0.533782	-0.19738
access to information	0.63145	0.863758	-0.23231
chi2(2) = 144.55, p = 0.000			

A resultant p value of 0.000 was smaller than the conventional p value of 0.05 leading to the rejection of the null hypothesis that the unique errors ( $ui$ ) are not correlated with the regressors and thus the fixed effects model is more appropriate.

In conclusion, the diagnostic tests indicated that the data was normally distributed, had no heteroskedasticity and no presence of serial correlation. This allowed the researcher to proceed with regression.

#### 4.5 Regression Results

Table 4.6 shows the regression model results for the study.

**Table 4.6: Regression Model**

	$\beta$	t	p>t	[95%Conf. Interval]	
Regulatory quality	1.772	2.190	0.031	0.162	3.382
Access to information	0.460	3.940	0.000	0.227	0.692
Corruption index	0.579	2.120	0.037	0.036	1.121
GDP per Capita	0.011	1.870	0.065	0.000	0.000
Trade openness	0.189	3.220	0.002	0.072	0.306
Inflation	-0.019	-2.160	0.034	-0.036	-0.001
_cons	7.276	5.510	0.000	4.647	9.904
p=0.0000					
F = 43.98					
Rsquared=0.718					

The model R- squared was 0.718. This implies that the goodness of fit of the model explains only 71.8% of the variation in financial sector development in Kenya. The overall model was significant as illustrated by an F- statistic of 43.98 (significance = 0.000). This shows that the regulatory quality, access to information and corruption influence financial sector development in Kenya, Uganda and Tanzania.

#### **4.5.1 Effect of reforms in regulatory quality on financial sector development**

The first objective of the study was to examine the effects of reforms in regulatory quality on financial sector development in selected East Africa community member states. The results showed that the coefficient for regulatory quality was positive and significant at 5 percent level. This means that regulatory quality influences financial sector development in Kenya, Uganda and Tanzania. A unit increase in reforms in regulatory quality would lead to an improvement in financial sector development. This further implies that introduction of regulatory quality reforms such as price controls would lead to improvement in financial sector development. These findings are supported by that of Angelopoulos, Economides and Vassilatos (2010) who argue that financial sector development is compelled by institutional changes or change in the institutional condition, for example, administrative quality.

#### **4.5.2 Effect of reforms in Access to Information on financial sector development**

The second objective of the study was to examine the effects of access to information on financial sector development in selected East Africa community member states. The results revealed that the coefficient for access to information was positive and significant at 5 percent level. This means that access to information influences financial sector development in Kenya, Uganda and Tanzania. In addition, a unit

increase in access to information would lead to an improvement in financial sector development. In addition, improvement in scope, accessibility and quality of credit information available through either public or private credit registries would boost the financial sector development. These findings are supported by those of Anayiotos and Toroyan (2009) who found that institutional factors such as reliable information and political stability have a positive and significant effect on financial sector development.

#### **4.5.3 Effect of Reforms Intended to Reduce Corruption on Financial Sector Development**

The third objective of the study was to examine the effects of reforms to reduce corruption on financial sector development in selected East Africa community member states. The results showed that the coefficient for corruption coefficient was negative and significant at 5 percent level. This means that corruption influences financial sector development in Kenya, Uganda and Tanzania. In addition, suitable institutional changes that reduce corruption and enhance transparency and responsibility of open establishments, common administration, upholds strict controls and prudential guide for business exercises leads to improvement in financial sector development. These findings are supported by those of Angelopoulos *et al.* (2010) who found that control of corruption had a significant effect on financial sector development.

Extraneous variables which included GDP, inflation and trade openness were also introduced in the regression model. Their results were as follows;

The coefficient for GDP Per Capita was positive and insignificant at 5 percent level. This means that GDP per capita positively affects financial sector development in Kenya, Uganda and Tanzania. These findings agree with that of Sofia and Ghulam (2011) who found that GDP Per Capita positively affect financial sector development.

The coefficient of trade openness was positive and significant at 5 percent level. This means that trade openness influences financial sector development in Kenya, Uganda and Tanzania. This implies that a unit increase in trade openness would lead to an improvement in financial sector development. In order to be financially developed, East African countries should be very open to trade. These findings were supported by those of Le, Kim and Lee (2016) who found that trade openness affects positively financial sector development for subpanel of developed economies.

The results further revealed that the coefficient for inflation was negative and significant at 5 percent level. This means that inflation adversely affects financial sector development in Kenya, Uganda and Tanzania. This implies that a unit decrease in trade openness would lead to an improvement in financial sector development. Guaranteeing low premiums and inflation rates pull in more speculators into the market and thus advancing the private sector improvement. These findings were consistent with those of Hami (2017) who found a negative relationship between inflation and financial development indicators.



## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND POLICY IMPLICATIONS**

#### **5.1 Introduction**

This chapter contains the summary of the study, conclusions and policy implications. In addition the chapter contains areas of further research.

#### **5.2 Summary**

In the East Africa region, there are many institutional reforms that have been undertaken to foster financial sector development. These reforms are closely linked to economic growth of the countries. Reforms include improved regulatory framework, access to financial information, control of corruption, maintenance of rule of law and promotion of investor's protection. However, despite the many institutional reforms carried out, the East Africa's frontier market economy is not yet at the same level as other emerging financial sectors in other developing countries such as South Africa and Ethiopia. Consequently, the financial sector's contribution to real GDP growth rate in Kenya, Uganda and Tanzania remains unimpressive.

The study sought to determine the effect of regulatory quality reforms on financial sector development in Kenya, Uganda and Tanzania; determine the effect of reforms in accessing information on financial sector development in Kenya Uganda and Tanzania; and establish the effect of reforms in reducing corruption on the financial sector development in Kenya, Uganda and Tanzania.

In this study, panel data estimation techniques was used to analyze the data and estimate the effects of institutional reforms on financial development in Kenya,

Uganda and Tanzania. The study found out that regulatory quality and access to information had a positive effect on financial sector development whereas corruption had a negative effect on financial sector development. In addition trade openness, GDP per capita have a positive effect on financial sector development. However inflation had an adverse effects financial sector development.

### **5.3 Conclusions**

The study concluded that regulatory quality and access to information are important in boosting financial sector development. However corruption slows down the development of the financial sector.

In addition, the study concluded that improvement in GDP would lead to improvement in financial sector development. Trade openness also enhances financial development of a country. High rate of inflation slows down financial sector development.

The study also concludes that introduction of regulatory quality reforms such as price controls would lead to improvement in financial sector development. In addition, improvement in scope, accessibility and quality of credit information available through either public or private credit registries would lead to improvement in financial sector development.

### **5.4 Policy Implications**

Loan specialists or savers ought to be more anxious to back firms which respond to budgetary part advancement. Solid lawful frameworks for the authorization of agreements and insurance of legitimate right of speculators ought to be given

judiciousness. This is because the study found that regulatory quality had a positive effect on financial sector development.

The study recommends that suitable institutional changes ought to be started so as to enhance transparency, common administration, upholds strict controls and prudential guide for business exercises. This help far in lessening the stature of defilement and ingrain more trust in the segment and the economy when all is said in done. This is because the study found that corruption had an adverse effect on financial sector development.

The study recommends that macroeconomic solidness – low premiums and inflation rates, ought to be guaranteed to pull in more speculators into the market along these lines advancing the private sector improvement. Thus, for the advancement of the Kenya budgetary part and its commitment to economic growth, this study considers policy suggestions from the findings of this study plausible. This is because inflation has a negative effect on financial sector development.

With respect to trade openness, East African countries should be very open to trade and be financially developed. However, too much money may result to a disaster that adversely influences growth, occasionally even beyond the short term. This is because the study found that trade openness has a positive effect on financial sector development.

The study recommends that practical institutional reforms should be introduced to improve transparency and accountability of public institutions and foster improved regulatory framework. This will lead to a positive contribution of the financial sector to real GDP of a country hence economic growth and development which is the focus

of any government. This is because the study found that GDP per capita has a positive effect on financial sector development.

### **5.5 Contribution to Knowledge**

Lastly, given the limited knowledge in the same field, the findings of this study may also be used as a source of reference for other researchers. Similarly, this study will be of great significance to the academician as they seek to increase their knowledge on the effects of institutional reforms on financial sector development in Kenya, Uganda and Tanzania

### **5.6 Limitations of Study**

There exist inherent limitations as far as the accuracy of the data is concerned. The data was secondary in nature and the researcher is not aware of how it was collected and the various manipulations and assumptions that were used in order to prepare and present the data.

The analytical methodology was also very scientific. The study failed to extract qualitative information that would have explained the soft and hidden issues that affect the effect of institutional reforms on financial sector development in selected East Africa community member states. An open ended questionnaire, an interview or a focus group discussion would have yielded qualitative information and hence collaborate this results.

### **5.7 Areas of Further Research**

The focus of this study was limited to effect of institutional reforms on financial sector development in selected East Africa Community Member States. The study

proposes that other studies can focus on other countries in East Africa for purposes of making comparisons.

In addition, comparable examination could be carried out utilizing other institutional components and financial sector development measures to test the significance of various institutional qualities on financial sector development, or to address nation particular attributes.

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## APPENDICES

### Appendix I: Secondary Data

**Table A1: Secondary Data**

Year	Country	Domestic credit to private sector by banks (% of GDP)	GDP per capita (current LCU)	Exports of goods and services (% of GDP)	Consumer price index (2010 = 100)	Regulatory quality	Access to information	Corruption index
1987	Kenya	13.59	6204.052309	21.30522135	159.6480497	0	0	0
1988	Kenya	13.53	6771.256811	22.37121356	150.1897771	0	0	0
1989	Kenya	13.83	7517.306815	23.03302943	140.9142239	0	0	0
1990	Kenya	14.31	8378.047062	25.69260596	131.8464844	0	0	0
1991	Kenya	19.49	9252.672457	27.04163232	124.7149422	0	0	0
1992	Kenya	20.38	10566.29932	26.26037419	114.0215499	0	0	0
1993	Kenya	16.77	12918.28472	38.90363017	100	0	0	0
1994	Kenya	19.58	15057.74568	37.04028084	96.18955755	0	0	0
1995	Kenya	25.85	16996.68086	32.59170122	88.0581565	0	0	0
1996	Kenya	17.24	24469.95801	25.20060195	69.75466128	0	0	0
1997	Kenya	17.72	26707.80309	22.68638735	63.55263568	0	0	0
1998	Kenya	18.19	28777.9235	20.16926083	55.52692196	0	0	0
1999	Kenya	17.21	29930.38008	20.8327352	50.33589289	0	0	0
2000	Kenya	16.60	31154.39831	21.58757114	45.09413465	0	0	0
2001	Kenya	18.47	32018.70617	22.93157636	41.06347134	0	0	0
2002	Kenya	18.98	32670.55039	22.93157636	40.27358227	0	0	0
2003	Kenya	18.91	33733.10289	24.08681531	38.08787233	1	0	0
2004	Kenya	18.86	37004.15187	26.61025858	34.63162722	1	0	0
2005	Kenya	18.99	40049.88537	28.50903021	32.75106095	1	0	0
2006	Kenya	19.21	51315.66528	22.98493964	30.68807461	1	0	0
2007	Kenya	19.60	57753.49834	21.91899129	27.55708169	1	0	2.9



2008	Ken ya Ken	20.15	64925.9 8323	22.67405755	25.3132 8958	1	0	2.8
2009	Ken ya Ken	20.24	72923.0 6787	20.03262925	24.9258 5992	1	0	2.5
2010	Ken ya Ken	20.04	78587.4 9261	20.65720485	19.3502 1392	1	0	2.5
2011	Ken ya Ken	20.31	89954.6 6291	21.62597244	13.2554 8857	1	0	2.5
2012	Ken ya Ken	20.56	100161. 0889	19.81682883	10.4101 4877	1	0	2.5
2013	Ken ya Ken	21.37	108608. 9745	18.14904796	8.66901 9857	1	0	2.5
2014	Ken ya Ken	21.91	120320. 751	16.92444637	7.36023 6297	1	7	2.5
2015	Ken ya Ken	22.56	135164. 5642	15.76902012	6.46830 1659	1	7	2.5
2016	Ken ya Uga	23.37	17939.3 0646	8.247098751	5.76163 879	1	7	2.5
1987	Uga nda	2.81	24065.8 8869	7.572671313	166.621 9315	0	0	0
1988	Uga nda	2.78	53262.2 4606	7.954400699	156.621 9315	0	0	0
1989	Uga nda	3.31	79137.0 1096	7.240720859	148.844 1868	0	0	0
1990	Uga nda	3.59	101816. 9155	7.464430308	142.723 8878	0	0	0
1991	Uga nda	3.53	147833. 4059	8.761088805	135.328 9691	0	0	0
1992	Uga nda	3.83	201817. 5006	7.062522977	118.692 9045	0	0	0
1993	Uga nda	4.31	222333. 9326	8.740531831	103.9 103.175	0	0	0
1994	Uga nda	4.33	262943. 4516	11.79199233	103.098 5292	0	0	0
1995	Uga nda	4.58	290953. 5114	11.96111327	102.945 0925	0	0	0
1996	Uga nda	5.28	305979. 1932	13.35951368	102.945 9552	0	0	0
1997	Uga nda	4.82	338913. 6283	9.639047588	101.553 628	0	0	0
1998	Uga nda	5.61	354841. 1935	12.2515739	96.6789 4615	0	0	0
1999	Uga nda	6.02	394160. 3204	10.65140929	91.4843 0539	0	0	0
2000	Uga nda	5.67	419665. 9849	11.51808264	89.2783 8625	0	0	0
2001	Uga nda	6.62	427541. 9935	11.21327917	84.7010 0056	0	0	0
2002	Uga nda	7.70	474620. 9149	11.38672483	84.5437 3053	0	0	0
2003	Uga nda	8.27	566563. 6447	12.69688075	83.6994 3878	1	0	0
2004	Uga nda	7.61	572369. 6672	14.17969998	81.9377 0076	1	0	0
2005	Uga nda	8.47	627890. 4728	15.27541338	79.1009 5728	1	0	3.5
2006	Uga nda	9.97	706408. 1459	16.72506853	79.0671 97	1	0	3.3

	Uga		789872.		75.3615			
2007	nda	10.10	6134	24.28014234	9831	1	0	3.3
	Uga		109299		72.3182			
2008	nda	13.79	1.463	17.27576752	2138	1	0	3.3
	Uga		123549		69.7167			
2009	nda	13.35	7.14	17.13179503	2051	1	0	3.1
	Uga		138823		67.9255			
2010	nda	14.28	7.02	18.74412677	4777	1	0	3.1
	Uga		169795		63.0940			
2011	nda	14.17	7.527	19.89502016	4762	1	0	3
	Uga		177062		59.6480			
2012	nda	15.42	1.241	19.979152	4969	1	0	3
	Uga		186480		50.1897			
2013	nda	15.25	1.986	17.86550549	7713	1	0	2.9
	Uga		199437		40.9142			
2014	nda	15.89	4.912	17.71037625	2387	1	7	2.9
	Uga		130062		31.8464			
2015	nda	16.50	7.142	24.28014234	8442	1	7	2.8
	Uga		145533		24.7149			
2016	nda	17.00	2.241	17.27576752	422	1	7	2.8
	Tanz		158442		158.020			
1987	ania	14.50	8.03	17.13179503	5091	0	0	0
	Tanz		175038		158.020			
1988	ania	6.58	3.114	18.74412677	5091	0	0	0
	Tanz		268392.		149.657			
1989	ania	7.06	3124	19.89502016	8707	0	0	0
	Tanz		299841.		141.011			
1990	ania	8.90	0179	19.979152	5842	0	0	0
	Tanz		338058.		130.722			
1991	ania	8.03	1089	17.86550549	7573	0	0	0
	Tanz		379145.		112.690			
1992	ania	9.74	5603	17.71037625	9695	0	0	0
	Tanz		503682.					
1993	ania	10.80	9051	17.98310786	100	0	0	0
	Tanz		595790.		94.1618			
1994	ania	9.70	183	20.61398071	2029	0	0	0
	Tanz		663818.		83.9664			
1995	ania	6.66	5615	24.07472273	2556	0	0	0
	Tanz		787421.		76.1404			
1996	ania	3.09	0124	19.93716494	14	0	0	0
	Tanz		878473.		71.1423			
1997	ania	3.55	8469	16.21810672	0139	0	0	0
	Tanz		988884.		66.3325			
1998	ania	3.86	0609	12.39772917	466	0	0	0
	Tanz		115307		63.1530			
1999	ania	4.18	3.887	12.52965707	6145	0	0	0
	Tanz		130062		60.2974			
2000	ania	4.09	7.142	13.36490944	9196	0	0	0
	Tanz		145533		57.2606			
2001	ania	4.92	2.241	17.00656486	3621	0	0	0
	Tanz		158442		54.3693			
2002	ania	6.03	8.03	17.58075321	6387	0	0	0
	Tanz		175038		51.7077			
2003	ania	7.45	3.114	18.56259595	2526	1	0	0
	Tanz		135164.		48.8158			
2004	ania	8.54	5642	19.65127524	9088	1	0	0
	Tanz		246851.		45.2458			
2005	ania	8.07	0092	16.91431367	0109	1	0	3.5

2006	Tanzania	9.34	268392.3124	17.10083396	40.11161325	1	0	3.5
2007	Tanzania	11.28	299841.0179	18.91911613	34.5519743	1	0	3.5
2008	Tanzania	11.90	338058.1089	18.64867074	28.56071827	1	0	3.5
2009	Tanzania	11.20	379145.5603	17.37384595	22.41325797	1	0	3.5
2010	Tanzania	11.73	503682.9051	18.74641327	16.71591261	1	0	2.9
2011	Tanzania	12.49	595790.183	20.75641834	13.34313349	1	0	2.8
2012	Tanzania	12.91	663818.5615	21.28530986	10.95074172	1	0	2.7
2013	Tanzania	12.82	787421.0124	17.65122642	8.509022282	1	0	2.6
2014	Tanzania	13.71	878473.8469	19.41418065	6.264613506	1	7	2.4
2015	Tanzania	15.03	988884.0609	21.62126362	4.97784788	1	8	2.3
2016	Tanzania	16.03	115307.3887	21.62126362	3.794475497	1	8	2

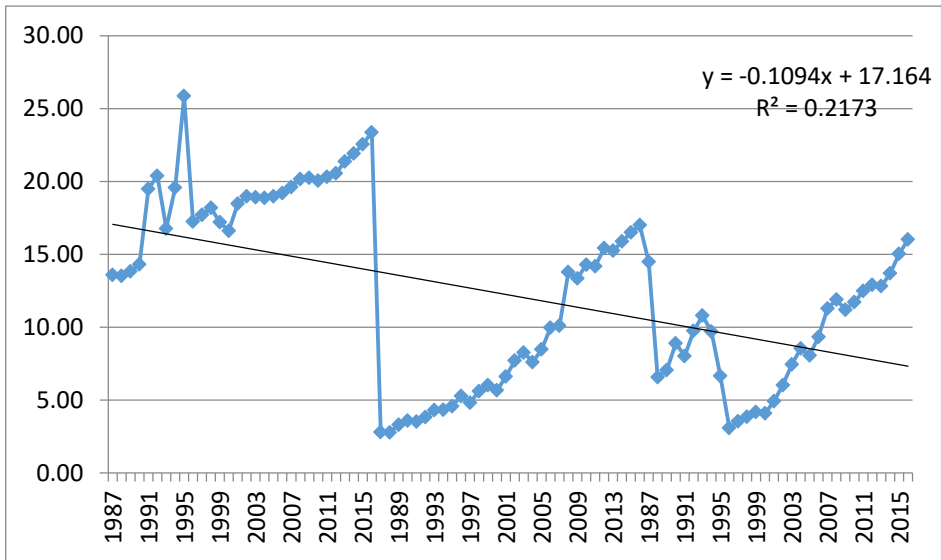
**Appendix II: Map of Kenya, Uganda and Tanzania.**



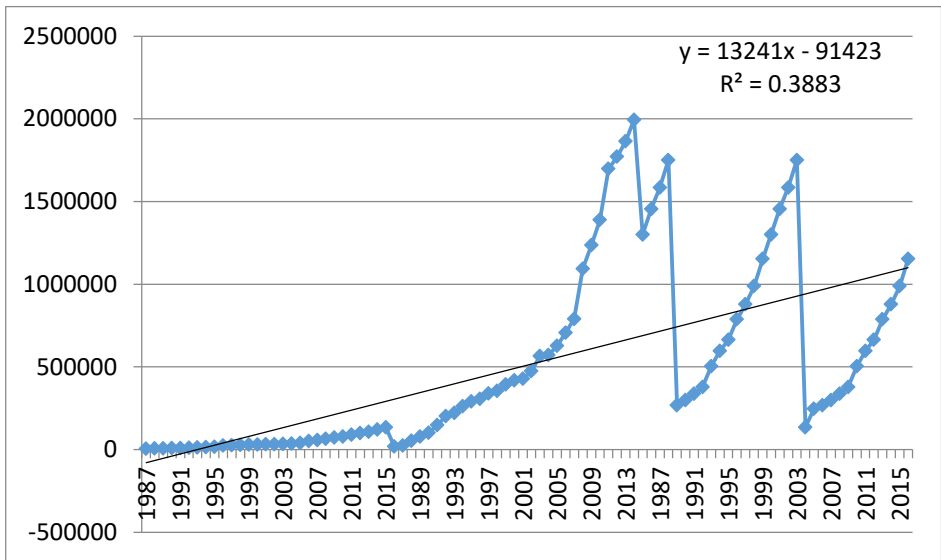
(Source: Google map)

**Figure A1: Map of Kenya, Uganda and Tanzania.**

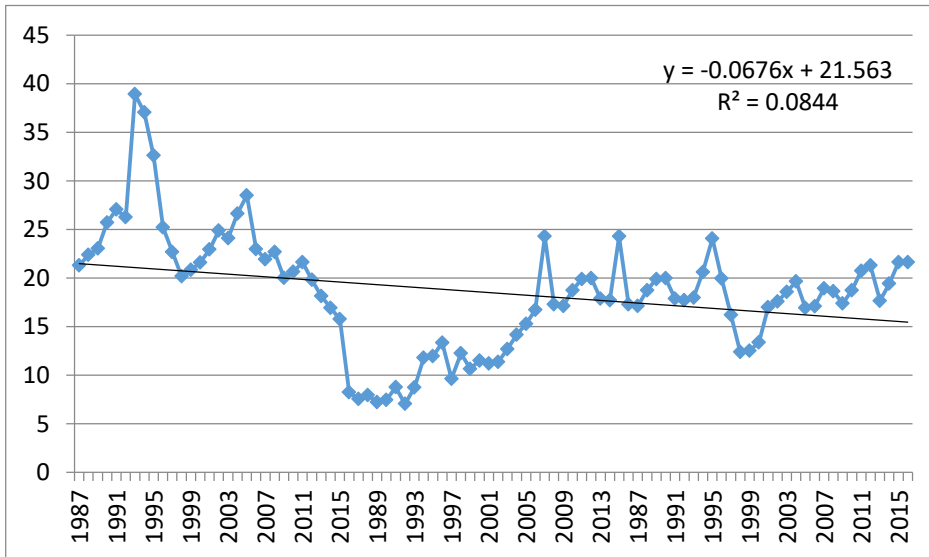
### Appendix III: Trend Results



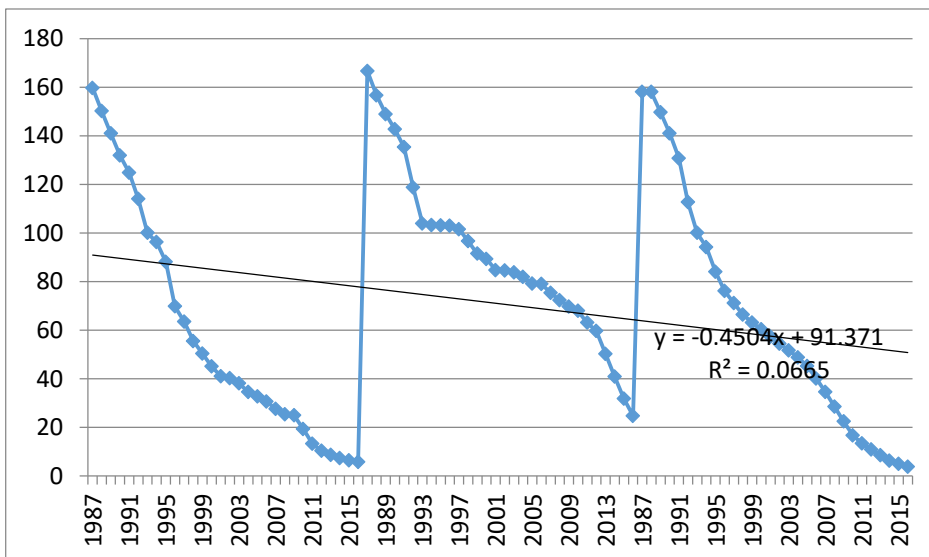
**Figure A2: Domestic Credit to private sector by banks**



**Figure A3: GDP per Capita (LCU)**



**Figure A4: Export of goods and services (% of GDP)**



**Figure A5: Consumer price index**

## Appendix IV: Regression Results

```
. xtreg domesticcreditprivatesectorbyb regulatory_quality gdppercicapitacurrentlicu exportsofgoodsandservicesofgdp consumerpriceindex2010100,fe
> e
```

```
Fixed-effects (within) regression      Number of obs   =       90
Group variable: country1              Number of groups =        3
```

```
R-sq:                                Obs per group:
    within = 0.6465                    min       =       30
    between = 0.9221                    avg       =      30.0
    overall = 0.3855                    max       =       30
```

```
F(4,83) = 37.96
corr(u_i, Xb) = 0.1616                 Prob > F       = 0.0000
```

domesticcreditprivatesecto-b	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
regulatory_quality	2.825227	.7713529	3.66	0.000	1.291037	4.359417
gdppercicapitacurrentlicu	1.43e-06	6.51e-07	2.20	0.031	1.37e-07	2.73e-06
exportsofgoodsandservicesofgdp	.2161437	.0572065	3.78	0.000	.1023622	.3299251
consumerpriceindex2010100	-.0259499	.0094063	-2.76	0.007	-.0446587	-.0072411
_cons	7.98104	1.412856	5.65	0.000	5.170926	10.79115
sigma_u	5.2296657					
sigma_e	2.3483708					
rho	.83219317	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(2, 83) = 47.29                 Prob > F = 0.0000
```

```
. xtreg domesticcreditprivatesectorbyb corruption_index gdppercicapitacurrentlicu exportsofgoodsandservicesofgdp consumerpriceindex2010100,fe
```

```
Fixed-effects (within) regression      Number of obs   =       90
Group variable: country1              Number of groups =        3
```

```
R-sq:                                Obs per group:
    within = 0.6446                    min       =       30
    between = 0.9802                    avg       =      30.0
    overall = 0.5290                    max       =       30
```

```
F(4,83) = 37.63
corr(u_i, Xb) = 0.3246                 Prob > F       = 0.0000
```

domesticcreditprivatesecto-b	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
corruption_index	.9357503	.2606899	3.59	0.001	.4172486	1.454252
gdppercicapitacurrentlicu	1.44e-06	6.53e-07	2.20	0.030	1.41e-07	2.74e-06
exportsofgoodsandservicesofgdp	.1365663	.0637266	2.14	0.035	.0098166	.2633159
consumerpriceindex2010100	-.0387002	.0072703	-5.32	0.000	-.0531604	-.0242399
_cons	10.02857	1.206382	8.31	0.000	7.629126	12.42802
sigma_u	4.5583555					
sigma_e	2.3548605					
rho	.78934152	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(2, 83) = 36.99                 Prob > F = 0.0000
```

```
. xtreg domesticcreditprivatesectorbyb access_to_informationcredit_info gdppercicapitacurrentlicu exportsofgoodsandservicesofgdp consumerprice
> index2010100,fe
```

```
Fixed-effects (within) regression      Number of obs   =       90
Group variable: country1              Number of groups =        3
```

```
R-sq:                                Obs per group:
    within = 0.6527                    min       =       30
    between = 0.9986                    avg       =      30.0
    overall = 0.5247                    max       =       30
```

```
F(4,83) = 39.00
corr(u_i, Xb) = 0.3160                 Prob > F       = 0.0000
```

domesticcreditprivatesectorbyb	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
access_to_informationcredit_info	.4966511	.127687	3.89	0.000	.2426869	.7506153
gdppercicapitacurrentlicu	7.98e-07	6.50e-07	1.23	0.223	-4.96e-07	2.09e-06
exportsofgoodsandservicesofgdp	.2684984	.0568989	4.72	0.000	.1553288	.3816681
consumerpriceindex2010100	-.041903	.0067341	-6.22	0.000	-.0552969	-.0285091
_cons	9.427548	1.225544	7.69	0.000	6.989991	11.8651
sigma_u	4.5952342					
sigma_e	2.3277751					
rho	.79579442	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(2, 83) = 39.00                 Prob > F = 0.0000
```

```
. xtreg domesticcreditprivatesectorbyb regulatory_quality access_to_informationcredit_info corruption_index gdppercapitacurrentlcu exportso
> fgoodsandservicesofgdp consumerpriceindex2010100,fe
```

```
Fixed-effects (within) regression      Number of obs   =      90
Group variable: country1              Number of groups =       3
```

```
R-sq:                                Obs per group:
    within = 0.7179                    min =          30
    between = 0.9660                   avg =         30.0
    overall = 0.5150                   max =          30
```

```
F(6,81) = 34.36
corr(u_i, Xb) = 0.2666                 Prob > F = 0.0000
```

domesticcreditprivatesectorbyb	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
regulatory_quality	1.771708	.8092548	2.19	0.031	.1615448	3.381871
access_to_informationcredit_info	.4596414	.1168024	3.94	0.000	.2272414	.6920415
corruption_index	.5785697	.2726094	2.12	0.037	.0361625	1.120977
gdppercapitacurrentlcu	1.12e-06	5.98e-07	1.87	0.065	-7.20e-08	2.31e-06
exportsogoodsandservicesofgdp	.1890849	.0586808	3.22	0.002	.0723285	.3058413
consumerpriceindex2010100	-.0187472	.008698	-2.16	0.034	-.0360535	-.0014408
_cons	7.275741	1.321164	5.51	0.000	4.647038	9.904443
sigma_u	4.7493145					
sigma_e	2.1235745					
rho	.8333835	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(2, 81) = 43.98                 Prob > F = 0.0000
```