FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH REVISITED:

PANEL DATA EVIDENCE FROM THE CASE OF SELECTED

SUB-SAHARA AFRICAN COUNTRIES

ADDIS ABABA UNIVERSITY

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BY

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FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH REVISITED:

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Dedication

Dear reader, you may find everything in this work may be all wrong.

But if so, it's all right! Since I dedicate it

To Mom,

Who took me to everywhere, but left me alone in the middle of nowhere.

I wish you were to see this.

Abstract

The finance – growth nexus, though it is well-entrenched in the academic discourse and no consensus is reached, still begs for updating through revisiting the issue using recent data. With this motivation, this paper has attempted to achieve two paramount objectives: examining the effect of economic growth on the development of the financial system and investigating the effect of other variables which were presumed and simultaneously supported by substantial body of literature to have significant effect on economic growth; a case from 20 selected sub-Sahara African region. Pertaining to this, first using annual data of 20 selected sub-Sahara African countries were collected and transformed in to five years averaged longitudinal data form, we applied multilevel mixed effects regressions (MMER). The results from the mixed effect regression revealed that, there is a significant and positive effect of economic growth, geographic location allotting sea door, macroeconomic stability, investment and domestic savings. On the contrary, negative relationship was observed between foreign legal system origination and financial development. The evidence under the probe on the effect of demographic situations have two effects comprising both direct relationship with financial depth and indirect effects on the efficiency of the financial system. Finally this paper has ended up suggesting further detailed research on the effects of demographic situations on financial development; additionally to examine the finance growth nexus and give microeconomic evidence.

Key words: financial depth, efficiency of financial system, economic growth, multilevel mixed effect regression, microeconomic evidence.

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Acronyms

CIA –	cash-in-advance
GDP-	gross domestic product
MER –	mixed effect regressions
GNP-	gross national product
INT –	interest rate margin
MIU-	money-in-utility
SSA –	sub Saharan Africa
SUR –	seemingly unrelated regression
VAR –	vector autoregressive
WDI –	world development indicator

CHAPTER 1-INTRODUCTION

1.1 Background of the study

Economics is concerned with the study of the production, distribution and consumption of scarce resources. Since the time of Adam Smith, economists have been preoccupied with the notion of economic growth. The controversy between apologists of the neo-classical approach and endogenous growth models has certainly contributed to the revitalization of economic growth theory. Though critics may question the wisdom of prioritizing economic growth as a policy objective or as the end question of economic inquiry, there is a general consensus that economic growth is able to serve as an effective means to achieve the prosperity of a nation, in order to raise living standards and the well-being of the people. During the past few decades, the world has provided a natural experiment with surprisingly variegating results: On one hand, countries which experienced spectacular economic growth, like Japan and Germany in the post-war period and the Asia Pacific countries during the past three decades have generally have exhibited the rise of the prosperity of nations and the improvement in living standards of their citizens. On the other hand, countries like SSA countries, where economic growth was stagnant, have seen widespread poverty and insufficient economic and human development and paraded instability and civil wars which resulted in further deterioration of the living standards of their people. Why is such difference: Africa's growth tragedy on the bottom and the Asian miraculous growth on the top? What should be done to narrow such a big gap? How can one explain this fact? And the like questions aroused interest for economists and policy makers on the notion of economic growth. Nowadays, for economists stepping in the middle where history, data and findings, and situations allow him observe but not to explain the growth phenomena of the tragedy and the miracle, the firsthand tools to solve the puzzle might be economic researches. The economic researches being a sub field of social researches are believed to help understand the complex nature of functioning of a system. Conducting such research beyond making a good contribution to the body of knowledge and evidence for decision making and policy formulation, offers the researcher the pleasure of solving puzzles. Analyzing the interaction of economic variables is one believed to give good insight to understand the complex nature of functioning of a system. The finance-growth interaction is one

among many where the financial sector development has a significant impact on economic growth is the strongest elements of the modern economists' canon.

The basal point before engrossing readers over the variegation in the findings might fall in answering the query why this interaction is worth studying. The study of financial markets and institutions will reward you with an understanding of many exciting issue. The financial sector is crucial; it bothers everyone: Financial markets and institutions not only affect your everyday life but also involve huge flows of funds—trillions of dollars—throughout our economy, which in turn affect business profits, the production of goods and services, and even the economic well-being of countries. Even the great concern to politicians today is highly attached to what happens to financial markets and institutions because it can have a major impact on elections. The step to begin shall better be rooted from studying the interaction of the financial and the real sector.

Financial markets, markets in which funds are transferred from people who have an excess of available funds to people who have a shortage. Financial markets, such as bond and stock markets, are crucial to promoting greater economic efficiency by channeling funds from people who do not have a productive use for them to those who do. Indeed, well-functioning financial markets are a key factor in producing high economic growth, and poorly performing financial markets are one reason that many countries in the world remain desperately poor. Activities in financial markets also have direct effects on personal wealth, the behavior of businesses and consumers, and the cyclical performance of the economy (Mishkin, 1978).

In the very early days there was one widely accepted strong belief among the economists, which descended from Adam Smith to Karl Marx, saying financial developments are not 'productive' in the sense that no real good is derived from it. Simply put no real good emerge out at the end of a financial process (Chow, 2008). Even in the 1930's the financial sector was treated as a facilitator in order that the productive powers of the community can be employed at their full capacity.

In a similar line of thought, there is a famous argument by Joan Robinson, saying "where enterprise leads finance follows". While this view is still embraced by some modern economists, the intellectual breakthrough of economic theory in more recent times has allowed economists to re-examine the linkage between finance and growth.

Consequently research in the area of the growth-finance nexus has intensified and with the subsequent development of the finance-growth nexus decades, such as the historical studies by (Gerschenkron, 1962) and (Cameron, 1967), the first detailed empirical studies by (Goldsmith, 1969), the McKinnon-Shaw school of the financial liberalization thesis, the development of the theory of intermediation using micro-approach during the 1970s and 1980s, and new growth theory and the accompanying second generation financial models of the 1990s, economists are having a general belief over the positive and significant influence of finance on economic growth. But there are still controversies over the relation between finance and economic growth which essentially emanates from the contestation between the neo-classical approach and endogenous growth models. The neo-classical point of view, economic growth is entirely driven by the accumulation of input factors and technical progress (but these sources are exogenous), with the potential role of finance restricted to assistance in the accumulation of capital. Endogenous growth approaches derived the sources of growth internally and stress the role of entrepreneurship and innovation, which allows some leeway for finance to direct incentives to research and development and innovation. In supporting the above argument for the general belief, no economist affiliated to one or the other camp would doubt that a developed financial system is beneficial to the economic growth (Micheal, 2001).

Surfing through historical records, one can find that an extensive amount of empirical investigations have been conducted, aimed at testing the conflicting-sometimes agreeing-theoretical developments mentioned above using different techniques. These studies, however, for the most part, focused on high-income and middle-income countries and there is a relative absence of sub-Saharan African (henceforth SSA) countries in the sample of countries studied, making it difficult to generalize their results across all developing countries. Hoping the large body of historical records' summary has provided readers with crystalized history of both the theoretical and empirical findings on the linkage between financial development and economic growth, it is possible to ponder the rediscovery of the finance-growth nexus in the last decade. Disaggregating both historical and theoretical facts from the literature, the notion has become appealing at least for the following four factors: (1) the growth theories in general macroeconomics has regained popularity; (2) the results from studies in the area have diametric conclusions; (3) the availability of huge cross-country data sets; (4) the interest of growth stimulating policy together with the interest of creating one single market. And therefore the researcher is directly motivated by this

fact. Equable to the above reasoning Substantial historical events like the "Asian financial crises"[1] in 1997 and "transformation of Hong Kong towards a service-oriented economy during the 1980s"[2] motivates to question the issue. Even more, from these days' common events on can observe that, next day after big financial crisis the real economy breaks down to pieces.

First and last, a large and by now well established literature has shown the critical importance of the development of the financial system for economic growth. If from both the theoretical and historical point of view, the positive relationship between financial development and economic growth is beyond any doubt, some points however remain object of a debate; some still need to be analyzed in more depth. Drawing from these, one can raise an interesting topic in discovering the mechanism of governing the relationship between financial development and economic growth specific to sub-Saharan Africa. Is financial development influenced by economic growth? What other variables determine financial development? These are the questions that this thesis attempts to answer. Two sub teams can be derived while answering these questions: one is the general relation between financial development and economic growth (with special focus on the effect of economic growth on financial development) and the other is what other variables have significant effect on financial development in these poor economies.

Therefore, this study is believed to contribute in showing: a well-focused and profound analysis of the effect of economic growth on financial development and what other variables do really have a significant relation with financial development.

1.2 Statement of the problem

The general relationship between financial development and economic growth on one hand and the causality relation between finance and growth on the other hand is one of the most debatable topics in macroeconomics and development discourse which is also characterized by variegating findings. There are controversies over the relation between finance and economic growth which

[1] The Asian financial crisis: Many Asian economies were badly hit during these crises. The growth rate stumbled, and the economy collapsed for the crisis-hit countries which lead to an interesting question on how a country's Financial development can affect long-run economic growth.

[2] The historical development of Hong Kong has raised another interesting question on how a country's economic growth can affect its financial development in the economy. The country has transformed from being supported by the manufacturing industry to service-oriented economy, financial industry has gradually become the pillar of the economy and the city has become an international financial center in the 1990s with highly sophisticated financial structure that serves as a backbone of the economy

essentially emanates from the contestation between the neo-classical approach and endogenous growth models. The neo-classical point of view, economic growth is entirely driven by the accumulation of input factors and technical progress (but these sources are exogenous), with the potential role of finance restricted to assistance in the accumulation of capital. Much of the post-1945 analysis of development has concentrated on real process and mainstream economic thought tend to relegate financial development into secondary importance prior to 1960s. The historical studies by Gerschenkron (1962) and Cameron (1967), the first detailed empirical studies by Goldsmith (1969), the McKinnon-Shaw school of financial liberalization thesis and the breakthrough of the theory of intermediation using micro-approach during the 1970s and 1980s, and the development of new growth theory in the early 1990s, has provided economist with formal theoretical foundation on finance- growth nexus. The new growth theories-Endogenous growth approaches derived the sources of growth internally and stress the role of entrepreneurship and innovation, which allows some leeway for finance to direct incentives to research and development and innovation (Heijdra,Frederick van der Ploeg, 2009). In the modern age research in the area of the growth-finance nexus has intensified starting from the first wave of evidence on the issue since the survey by Ross Levine. The issues of the finance-growth nexus is popular as there exists quite a large contemporary litrature with highly variegating results on the general and causal relation between finance and growth. Still far from being conclusive, there exists quite a lion's share of literature to affirm a positive relation among these variables which makes this issue more popular. There is agreement on that no economist affiliated to one or the other camp would doubt that a developed financial system is beneficial to the economic growth (Micheal, 2001). However more often the discrepancy in findings arises how significant this interaction is both across time and countries. Most of the empirical studies conclude that the development of the financial sector accelerates the economic growth of a nation for conceiving that financial systems play a crucial role in alleviating market frictions and hence influencing savings rates, investment decisions, technological innovation and therefore long-run growth rates. (Levine R. , 1997) (Levine R. , 2005), (Wachtel, 2001). Other authors also stand for this argument considering finance as an important element of growth (Schumpeter J.A, 1934) (Shaw, 1973) (Mckinnon, 1973) (Goldsmith, 1969), whilst for others finance is only minor growth factor and the operation of the financial sector merely responds to economic development, adjusting to changing demands from the real sector and is therefore overemphasized (Lucas, 1988) (Robinson, 1952). Something that seems

unique is the effect of finance on growth is a disappearing phenomenon (PeterL. Rousseau and Paul Wachtel, 2011). In the above stated references what is stressed more was the one-way causality; but, one can still find emperical results that model the dynamic interactions between finance and growth emphesizing a two-way causality between the two variables (Greenwood, Jovanovic, 1990) (Demetriades and Hussein, 1996) (Shan et.al, 2001). In fact it won't be viable to reconcile all these difference in findings for whatever reason (may be methodological difference or initially routed in differences with school of thoughts) they might arose but there is a gap on providing evidence for what the case looks like in subsaharan africa. A number of scholars motivated by this nexus have contributed to the body of literature with cross-country studies, panel studies, pure time-series investigations, and country case-studies, industry and firm level analyses (Levine R. , 2005). Above all, these studies, for the most part, focused on high-income and middle-income countries and there is a relative absence of SSA countries in the sample of countries studied (without denying there exists few contributions), making it difficult to generalize their results across all developing countries. One emperical finding on financial development and brings out such long run relationship, the direction of the relationship differs across countries (see Anthony Enisan Akinlo and Tajudeen Egbetundae, 2010). Drawing from these findings and other factors in the last decades, many developing economies have adopted development strategies that prioritize the modernization of their financial systems. The countries of sub-Saharan Africa are no exception. Since the end of the 1980s, these countries have been interested in fostering financial development, for example, by reducing governmental intervention in national financial sectors or by privatizing banks. However, the recommendation of such policies requires strong analysis of the general and causal relationship between financial and real sectors of the economy. What is clearly seen in most literatures of financial and growth is that either the general relationship is studied or the causality in between but the focus ought to be given for studying what determines financial development. However, the causality analysis is not quite enough to understand the nexus between finance and growth. Hence additional estimation using panel regressions renders better understanding of the general relationship among the variables (Thomas Gries, Manfred Kraft and Daniel MeierRieks, 2009), (PeterL. Rousseau and Paul Wachtel, 2011), among many.

The organization of the empirical evidence advertises an important weakness in the finance and growth literature: there is frequently an insufficiently precise link between theory and

measurement (Levine R. , 2005). Therfore, organizing onself around econometric approaches of examining the relationship between finance and growth the following gaps are identified.

Using a panel data set of 27 SSA countries for the period 1974-2003 and by applying a system of GMM estimator on three different growth models, Mulualem (2007) obtained a negligible support to the view that finance leads to economic growth. He also found out that though financial development has positive influence on physical capital growth in SSA, it has insignificant impact on total factor productivity (Mulualem, 2007). Though, the study's attempt to see the impact of financial development on total factor productivity for the first time in SSA countries makes it substantial; it has its own limitations. First, the results cannot be generalized to all SSA countries as the sample excludes almost half of the SSA countries. Second, the methodology adopted (panel data analysis) fails to address country heterogeneity that is in panel data models it is common to assume that the slope coefficient is identical across the countries included in the panel, which implies that financial development generates equivalent investment and productivity increase across countries, but in reality it may vary across groups. Therefore, the analysis in this paper didn't deeply show the effect of economic growth on the financial development. Another paper attempted to analyze and verify empirically the controversy on the relationship between the financial sphere and the real sphere. From the data observed on 21 SSA countries and by using the dynamic panel GMM technique showed that there exists a positive link between financial development and economic growth. As the model regressions of these papers was study of association, lacks analysis on the one way relation running from growth to finance, the effect of other variables on financial development. Here the clear gap is observed as the paper didn't deeply analyze the issue of what affects financial development other than growth.

In cross sectional analysis, Ndebbio (2004) utilizing averaged data from 1980 to 1990 for a sample of SSA countries and using the ratio of M3 to GDP as measure of financial development, found a positive impact of financial deepening on economic growth. However, beyond the common gap of deep analysis, this study suffers from a major weakness: the methodology adopted (cross sectional analysis).

While fully recognizing this problem, many of the biggest advances in empirical studies of finance and growth have been methodological in the motive of deeply analyzing the interaction among variables. Appreciating the attempts of the scholars albeit the above identified gaps exist, it is

possible to document the effect of growth on financial development and to assess what other variables significantly affect financial development by examining the relation using panel regression. First and last, a large and by now well established literature has shown the critical importance of the financial system for economic growth. Therefore, studying how economic growth affects the financial development and what other variables (those presumed to significantly affect economic growth) determine the development of the financial sector particular to SSA in more detail is meriting. Beyond filling these gaps, indirectly motivated by the fact: finance-growth nexuses have moved to the forefront of policy debate once again drawing from the observation that the real sector economy breaks down in to pieces following financial crisis that has occurred in different times which continues to grow and spread all around the world; this paper contributes the body of literature by giving nouveau analyses.

1.3 Objectives of the study

The overriding objectives of this study is to examine the effect of economic growth on financial development and what other variables significantly affect financial development, in the context of 20 selected SSA countries. In due course of achieving this paramount objective the following specific objectives are expected to be achieved:

- To examine the effect of economic growth on financial development
- To examine the effect of trade openness, level of saving and investment on financial development
- To examine the effect of macro-economic instability, demographic situations and institutional development on financial development
- To forward some policy implications

1.3 Hypothesis

The generation of working hypothesis and the subsequent examinations may be pursued grounding on the empirical evidences from literature over the interaction between the financial development, and economic growth. Hence the following conjectures are hypothesized to hold in the study of this paper:

- Economic growth doesn't have a significant positive effect on the development of the financial sector – where finance follows growth (demand-following hypothesis) argument doesn't hold.
- The level of investment and saving doesn't have a significant positive effect on the development of the financial sector
- Trade openness doesn't have a significant positive effect on the development of the financial sector
- Macro-economic instability and institutional development has nothing to do with financial development.

1.4 Scope and significance of the study

This paper attempts to assess whether economic development has actually swayed financial deepening or not in a sample of selected SSA countries and makes some implications on whether a policy focus on financial sector development is appropriate or not. Beyond the above role this paper is believed to add to the stock of existing literature by using robust data and econometric methods to examine the effect of economic growth and other variables like saving, investment, trade openness and capital on financial development.

The scope of this paper is confined geographically to the selected sub-Saharan Africa based on data availability and countries' heterogeneity and the period covers from1980 - 2014. Among the basic issues a researcher should deal with while undertaking such big research (covering wide geographical area and a bit longer time) is availability of data. Therefore from the list of SSA countries[3] the researcher is forced to drop countries that do not have enough data for analysis in the time span covered under this paper.

1.5 Organization of the study

Chapter two presents a brief review of the historical, theoretical and empirical literature on the relationship between finance and growth. Under chapter three we discuss the detailed methodology including the data type and source as well as the variables with their corresponding working

[3] This list is as per what is used by the world bank:
Madagascar, Mali, Swaziland, Tanzania, Togo, Uganda, Zimbabwe, Mauritius, Mozambique, Namibia, Nigeria, Rwanda, Senegal, Equatorial Guinea, Ethiopia, Guinea, Kenya, Botswana, Cameroon, Comoros.

definitions. This part finally discusses the method of analysis- both the descriptive and econometric approach. In chapter four we present some descriptive analysis on both financial development and economic growth of the region, and then wind up with discussing the findings from econometric analysis. Chapter five offers some concluding remarks together with some policy options.

CHAPTER 2 - REVIEW OF RELATED LITERATURE

This section attempts to present the review of the bulk of academic research works-both theoretical and empirical works in short and precise way based on the focus of this paper. The writer believes that presenting the historical, theoretical and empirical reviews separately and sequentially makes the idea flow in better way so that strong arguments are built on and the reader better gets a very good insight of the issue. Therefore the first part of the literature review will be confined to presenting the path of history that the finance-growth nexus have come through. The second part will have a role of making known what the theory says; stating the notions of financial development and economic growth together with the available means of measurement; explaining the interaction between these variables; determinants of financial development and the like relevant topics. The third part is held to reviewing empirical evidences over the point of discussion in this research paper. The empirical literature review part initially focuses on recapitulating the building blocks from early pioneers in the area and finally concentrates on the recent works, as the literature on the finance growth nexus is quite large, we can't make justice to it.

2.1 Historical Review of Literature

We could say it's best to start from history. No one would step here without passing through history, everyone walks through, attempts to work, to solve problems, tempt to live better life, still one generation makes mistake and the latter learn from the former, therefore we are here as a matter of history. In the following subsequent paragraphs a summary of reviewing the literature related to financial development and economic growth from a chronological point of view is presented.

The early intellectual development of the finance-growth nexus can be traced back to the 17th and 18th century, where earlier writers, such as John Locke, Adam Smith and Jeremy Bentham, had advocated the liberal attitude to finance that sound money and unrestricted financial intermediation are beneficial to society. In the late 19th century important contributions to the literature which has stressed the importance of the banking system, and highlighted scenarios where banks could foster innovations and future growth by identifying and financing productive investment (Arestis, 2005)

(Bagehot, 1873). In the early 20th century the essential and integral part of financial development on the process of economic development was explicitly emphasized as financial institutions are key agents in this process, as they evaluate and finance entrepreneurs in their initiation of innovation activity and the bringing of new products to market, which is the central process of economic growth (Fry, 1995) (King &Levine, 1993a) (Schumpeter, 1911). Fisher Debt-Deflation Theory of Great Depression and Gurley and Shaw's Theory of Intermediation comes first when reviewing the earlier intellectual development (Chow, 2008).

The standard view before the 1960's was highly dominated by Keynesian arguments that put emphasis on real processes and favored the policy of 'state intervention' and 'financial repression[4]' for economic development. Financial repression can be justified as a second-best strategy to finance government expenditure given the government low tax raising-power as well as the idea that the financial sector can be easily controlled and taxed. Besides, a suggestion by both Keynes liquidity trap theory, the Tobin portfolio model stating that credit shortage as a result of relative high equilibrium interest rate will lead to a loss of growth potential. This argument was also supported by the structuralisms in view of that higher interest rate will increase short-run inflation through a cost-push effect, and dampen economic growth because of reduced supply of real credit volume (Chow, 2008). In the post-world war II era history tell us that the Marxist view[5], prevalence of financial repression in developing countries and the treatment of financial institutions as subsidized agencies to reallocate resources to socially desirable investments were dominant. Implicitly, financial development only remains of secondary importance and the essential element in economic development. A new strand of economists emerged from this background arguing that financial development was a neglected but it is integral and essential element in economic development (Goldsmith, 1969) (Shaw, 1973) (Mckinnon, 1973). It was this time the seminal pioneer works in the finance growth-nexus: The empirical analyses conducted by Goldsmith in1969, and the theoretical model developed by McKinnon and Shaw in 1973 has formulated the intellectual basis of analysis.

[4] The concept of financial repression is used primarily in developing countries to describe any of a variety of burdensome controls of taxation regimes that inhibit the development of an efficient financial system. Generally speaking, Financial repression is a combination of rationing of bank credit or foreign exchange, accelerating inflation, reserve requirement and the nominal interest rate ceiling, in order to direct resources allocation and to act as a discriminatory tax on financial system (Honohan, 1992)

[5] The Marxist view is….

In the 1960's some detailed case studies of the interactions of finance and economic growth in successful industrialized nations as well as less developed countries, several works were published to provide empirical evidence for the importance role of finance sector in the process of economic development which were Based on the earlier economic thought developed by Schumpeter and others. The period-1960s- where there was a breakthrough in the finance-growth nexus as the period saw a surge of interest and growing academic debate in the area (Eschenbach, 2004). Among the prominent works the analysis of economic backwardness by Gerschenkron in 1962 can be mentioned. Another one-step to the fore is the contribution of Patrick in 1996. Grounding his work on Joan Robinson's (1952) famous claim that "where enterprise leads finance follows", and Gerschenkron's work (1962) mentioned above, Patrick come up with some what a new idea of "demand-following" and "supply-leading"[6] approach to the analysis of the causality question between financial development and economic growth, thus providing an empirically testable framework in this field for the subsequent work in this area. Other authors to be mentioned during this period Porter (1966), Cameron (1965, 1967, and 1972) and Goldsmith (1969). Porter was unique for his stressed explanation of the effect of the "qualitative aspect"[7] of financial development on economic growth. According to Cameron, the effect of financial development on economic growth remains ambiguous and conclusive arguments cannot be drawn. However, Cameron's works provided several historical evidences and insights for the importance of financial sector on economic growth. Goldsmith (1969) was the first to provide significant empirical evidence to the correlation between finance and growth for a cross-section of countries. He after defining financial development as change in financial structure summarized two views[8] about the path of financial development. Goldsmith's work represents a significant development on finance-growth nexus; in spite of the fact that his work has several drawbacks. He was the first one who attempt to thoroughly quantify financial development for quantitative analysis. Economists later incorporate the portfolio, transaction cost approach, and liquidity insurance the industrial organization approaches to financial intermediation to give a micro-foundation of their macroeconomic model to study the interaction between financial development and economic

[6]Where finance leads growth (supply-leading hypothesis), finance follows growth (demand-following hypothesis), or where the real and financial sector influence each other mutually (bidirectional causality) as sited by (Chow, 2008).
[7] see (Porter, 1966)
[8] One view is countries follow a universal path of financial development (absolute) and the other view is countries follow different paths of financial development.

growth. Yet, these models do not explain what makes the intermediary come into existence, and thus what functions it performs. As we will see later on, the literature in the 1980s tends to solve this problem endogenously i.e. how financial intermediaries exist and what functions they perform within the model.

The literature in the 1970's is highly dominated by Financial Liberalization Thesis of the works of McKinnon and Shaw and Justification of the existence of the Financial Sector with microeconomic foundations. The Micro-Economic Perspectives that justify the Existence of Financial Sectors are related to the development of information economies, financial imperfection and the theory of financial intermediation. The imperfection of capital markets theory discoursed by Stigler in 1967, Relaxation of the assumption of Modigliani-Millar theorem (1958) (presence of tax subsidies) in 1963, the Agency-theory (the principal agent problem) by Jenson and Meckling in 1976, the developments of the signaling theories[9] and the relevancy of financial structure, pioneered by Ross, Leland and Pyle, and Bhattacharya in the later 1970s, demonstrate that financial decision can affect what investors believe about the firm's prospects. In those times until 1970 the theoretical findings relating finance and growth have detected possibilities of negative effects of financial conditions to economic growth, or at best neutral effects. It was in 1973 that McKinnon and Shaw break grounds and developed a macroeconomic theoretical model in which financial development accelerates economic growth which is historically named as First Generation Financial Growth Model. Their work has challenged the dominant post-Keynesian theoretical teaching of the 1960's and become the dominant intellectual basis for subsequent analysis on finance-growth nexus (Chow, 2008). Basically the writing of McKinnon and Shaw was to controvert the financial repression thesis and advocate financial development and liberalization as a growth- enhancing economic policy. Others also have contributed to the literature in that period; few among many (Cho 1984), (Galbis 1977). In summary the 1970's period was highly dominated by the writings of McKinnon and Shaw.

The 1980's the literature tends to solve the drawbacks of the 1960s literature about the existence and the functioning of financial intermediaries by modeling their development endogenously. Based on the derived intellectual basis from the writings of McKinnon and Shaw and those subsequent extensions, in the verge of 1970s and 1980s countries pursue a financial liberalization policy of deepening their financial system to secure rapid economic growth. However history tells

[9] See (Chow, 2008)

us that those policy prescriptions were mixed blessings. The Latin American and Southern Cone experiments in financial liberalization during the late 1970s and the early 1980s saw the unintended negative consequences and problems as the direct results of new freedoms in the financial market. As to (Dornbusch and Reynoso 1989) highly liberalized financial systems are more prone to macroeconomic instability. A new insight in understanding the process of the financial system resulting from the mixed outcome from that policy implementation and the significant progress in the field of micro-analysis in the asymmetric information has emerged and challenged the approaches McKinnon and Shaw. The literatures of the 1980s are characterized by the short run analysis of the effect of finance on economic growth. The short run simultaneous analysis between finance and growth was facilitated by the progress in the economics of information and incentive.

Due to the shortcomings of the microeconomic analysis of free credit market when quality is dependent on price due to incentive and selection effect, the first Theorem of Welfare Economics will not hold i. e. free and competitive markets will not deliver the Pareto efficient allocation to imperfect information and externalities due. With this reason credit rationing another issue that's dealt during this period. Credit rationing is found to be consistent with Pareto efficient allocation a consistent and there are possibilities that tax and subsidy intervention can attain Pareto improvement (Stiglitz, 1987). This argument was indirectly attacking the investment efficiency argument of financial liberalization thesis. Another attacking against the financial liberalization thesis was by Mankiw (1986), with his theoretical model how there is inherent undesirable equilibrium (financial collapse) by raising interest rates in the unfettered financial market. To an extreme, it may result in financial crisis (Mankiw, 1986). Therefore the laterality of these arguments over the financial liberalization influenced the subsequent literatures and also give the authors whip hand to put a number of arguments. Therefore the above arguments demonstrate that financial institution emerge to provide screening and monitoring in order to reduce the information problem and agency cost from the micro-economic perspective. Still others have shown the inadequacy of capital markets to provide such monitoring services to achieve efficiency in equilibrium situation (Stiglitz, 1985) (Shleifer, A. and R. W. Vishny., 1986) (Prescott, 1986). So far the interaction between finance and economic growth stems from the activities in the market for the medium of exchange, such as goods market and money market, but not from the performance of financial markets for borrowing and lending. The theory of intermediation

pioneered by Gurley and Shaw to Tobin stressed the significance of the financial system and the importance of financial intermediation in the credit supply process. The first contribution in analyzing alternative transmission mechanisms of the financial system i.e. the idea of how bank crises can affect the real economy is by Mishkin in 1978. The severity of the Great Depression[10] and the contraction of aggregate demand were due to the weakness of borrower's balance-sheet (Mishkin, 1978). During 1980 it was stressed that the failure of a financial institution has a great knock-on effect and macroeconomic consequences (Chow, 2008). Friedman and Schwartz put down bank failure as a major cause of the great depression. In summary the 1980s was characterized by a series of work synthesizing the literature in explaining the role of the financial sector in output fluctuations. Yet macroeconomics researched in 1970s and 1980s focuses on the understanding of the causes of short-term aggregate fluctuations. With the development of endogenous growth literature in the mid-1980s economists shift their focus to the long run relationship between financial development and economic growth (Chow, 2008).

The literature in the 1990s is characterized by resurgence of interest in analyzing the long run interaction finance and growth. The analytical nature of several traditions of the modern economic growth theory - the Keynesian Economic Growth theory, the Neoclassical Solow-Growth Model, the Ramsey-Cass-Koopmans Optimal Growth Framework, has allowed economists to have a deeper understanding of the underlying mechanism of the growth process. With major innovation in growth theories a more efficient growth modelling system that gives a better understanding of how to determine the long run relation between finance and growth is the new endogenous growth theory. This growth theory attempts to determine the long-run growth rate within the model rather than treating the origin of economic growth as exogenous. In traditional neoclassical growth theory, the financial sector is treated as the equilibrium of the supply of savings and the demand for investment. The new growth theory places emphasis on the scale effect, knowledge accumulation and innovations shows that long-run economic growth can be endogenous within the system, breaks a path that growth can be related to preferences, technology, income distribution and institution arrangement, without resorted to exogenous technical progress. Therefore, it provides the theoretical underpinning to study the relationship between the development of

[10] The great depression after 1929, the demand for goods and services diminished, and in consequence the price of commodities fell rapidly, demand for labour fell causing hourly money wages to fell (where unemployment figures were seen as high as 25% with still more underemployed and working far below their experience and capability) (Keynes, 1930).

financial system and long run economic growth. The central focus of the financial development in the endogenous growth literature of the 1990s was that finance generates an external effect on aggregate investment efficiency that counteracts the effect of the diminishing marginal product of capital accumulation. The first major work contributed to the body of literature over the finance-growth nexus in the aurora of 1990s is from Greenwood and Jovanovic (1990) by analyzing the long-run relationship between financial development and economic growth. The two individuals attempted to formalize the bi-directional relationship between finance and growth drawing from the Goldsmith-McKinnon-Shaw view on economic development and Kuznet's (1955) hypothesis[11] on the depicted by inverted U-shaped curve for the relationship between economic growth and income distribution. In the advanced stage of development, an economy has a fully developed financial structure, attains a stable distribution of income across people, and has a higher growth rate than the state of the financial autarky in the early stage (Greenwood, Jovanovic, 1990); (Kuznet, 1955). One prominent work was by Bencivenga & Smith (1991) on Growth promoting through Liquidity provision by Financial Intermediation based on the work of Romer (1986) which was an attempt to construct a model to show that financial intermediation can provide liquidity in the market and thereby able to alter the composition of savings in a way that is favorable to capital accumulation. Models on multiple growth paths which were drawn from the idea on the economic dualism of financial repression have been used to analyze the effects of financial market on two variables i.e. technological choice and the division of labour. King and Levine (1993) introduced the notion of imperfect credit market and agency cost in the finance literature into the Schumpeterian model originated by Aghion & Howitt (1992) and Grossman and Helpman (1991) in the endogenous growth literature to explore the relationship between growth and finance. By the considering the simplest AK models[12] from the endogenous growth literature Pagano (1993) introduced the presence of financial intermediation cost (costly financial development). Other furtherance that allows economists to analyze the impact of money on the real economy is the inclusion of monetary growth in the endogenous growth models. Tobin (1965) was the first to place money into the general equilibrium macro-framework but subsequently other authors have come up with good works: Sidrauski (1967) and Clower (1967) pioneered the

[11] Kuznet's hypothesis states that income inequality of a country will worsen during the early stage of development and improve at later stage.
[12] The simple growth models termed AK…

`money-in-utility-function' (MIU) approach and Cash-in- Advance' (CIA) model respectively, where they place money into the general equilibrium framework that is consistent with the optimizing behavior of economic agent. The overall growth of literature in the 'finance-growth nexus in the long run' and the renewed interest to examine the issue of financial repression or government interventions in the presence of market failure in financial sector in the context of the new framework, to look at its impact on long term economic growth is imputable to development of endogenous growth theory. This has enabled the economists to introduce finance to the growth theories through the channel of money balances to study the long run relationship between financial development and economic growth. Another area of study during that period is stock market development; incorporation of the stock market development into the endogenous growth framework and the prominent works among many (Levine 1991), (Atje and Joyanovic 1993). By providing ample theoretical reasoning and empirical evidence that the development of financial systems is vital link to economic growth process Levine (1997) challenges the conventional distinction between the `real' and `financial' sector using functional approach with microeconomic view. Thus it offers a new view of the finance-growth nexus: the financial system is a real sector, and the quality of its functions provided is a critical and an inextricable part of growth process. This new approach also highlights the importance of the relationship between financial structure and the functioning of the financial system (Levine R. , 1997).

Recently the literature in the finance-growth nexus has been engrossed with multiple growth path, bi-directional causal relationship and legal view of finance. The economists further formalize theoretical models to understand this intertwining process. Berthelemy and Varaoudakis (1996) and Greenwood and Smith are among the most prominent works during the late 1990's. With technological advances in time including development in growth theories, data availability, data manipulation and analyzing tools, advances in information communication technology, it is now very common to revisit the interaction of economic variables, though there exists substantial body of literature. In fact, this is done not because previous works were poor, rather first, to check the robustness of those findings and see the case using recent data; second to find out if there new evidences.

2.2 Review of Theoretical Literature

This part seeks to pull together a diverse and active theoretical literature into a coherent view of the interaction between financial development, economic growth and other variables. The first part focuses on polishing up the concepts of financial development, economic growth and financial possibility frontier, together with measurement of financial development; the second part go over theories about how financial development promote growth; the third part focuses on: what the literature says on the determinants of financial development; finally some concluding remarks are forwarded.

2.2.1 Economic thought on: Financial development and Economic growth

The study of the interaction between financial sector and economic growth will reward both researchers and readers with an understanding of many exciting issue. I believe the attempt to present the economic thought on two broad concepts- financial development and Economic growth- will serve a comprehensive horizon to understand the issue; initially, if some definitions are given for explanation; then some clarification are made on measurements issues and finally explicating the functions that financial sector provide which potentially can ameliorate market frictions and foster economic growth.

According to the department of international development (2004) financial sector is defined as "the wholesale, retail, formal and informal institutions in an economy offering financial services to consumers, businesses and other financial institutions; it includes everything from banks, stock exchanges, and insurers, to credit unions, microfinance institutions and money lenders". Once we have the definition for financial sector more broadly put, we can now refer to what financial sector development from several scholars. Different scholars have delineated the concept of financial development: According to Shaw (1973), financial development is the accumulation of financial assets at a more rapid rate than the accumulation of non-financial assets. For Levine (2005), financial development occurs when financial instruments financiers, markets and financial intermediaries reduce, without necessarily eliminating them, the costs of obtaining information, the costs of executing contracts and the costs of transaction, and as a consequence, do a better job by offering financial functions. Somehow generically, financial development may well be defined as the improvement in quantity, quality and efficiency of financial intermediary services.

According to Khan and Senhadji (2000), the fundamental frictions that give rise to financial intermediaries are either of technological or an incentive nature. Using their word:

… "*The former prevents individuals from having access to economies of scale, while the later occurs because information is costly and asymmetrically distributed across agents in world where contracts are incomplete because not all contingencies can be spelled out". …*

Since the rigorous literature in the area has limned the fundamental frictions in the real sector give rise to the existence of financial sectors intermediary role, one can compose criteria to judge whether the sector is developed or not. Thus according to them and as explained by Levine (1997), financial intermediaries are granted to relax these frictions by: facilitating the trading, hedging, diversifying, pooling, efficiently allocating risks, monitoring managers and exerting corporate control, mobilizing saving, and facilitating the exchange of goods and services. In the following list we have number of criteria to judge whether a given financial sector is developed or not:

- The efficiency and competitiveness of the sector may improve;
- The range of financial services that are available may increase;
- The diversity of institutions which operate in the financial sector may increase;
- The amount of money that is intermediates through the financial sector may increase;
- The extent to which capital is allocated by private sector financial institutions, to private sector enterprises, responding to market signals (rather than government directed lending by state owned banks),may increase;
- The regulation and stability of the financial sector may improve; and
- More of the population may gain access to financial services which is particularly important from a poverty reduction perspective.

Economic growth is the evolution of Gross Domestic Product (GDP) in the short, medium and long term. It is the result of an increase in value-added produced by all the firms operating within a country. GDP is an aggregated value which takes account of all the value-added of all the firms operating on the national territory in a given time. The increase in the value-added during a given period means that the global wealth of a nation is rising. Economic growth and development are

dynamic processes, focusing on how and why output, capital, consumption and population change over time. This manifests itself in the growth of per capita income and in a higher level of well-being. Put differently, economic growth is able to serve as an effective means to achieve the prosperity of a nation, in order to raise living standards and the well-being of the people.

2.2.2 Proxy measures of financial development and economic growth

One may find an important weakness, common to most of the literatures in finance-growth nexus: there is frequently an insufficiently precise link between theory and measurement. Various authors have come up with several proxy measures of financial development with their respective argument claiming as a best tool. As most of the data at macro-level are costly and difficult to manage and consequently are prepared by big international organizations like the World Bank and International Monetary Fund, most of the literatures cite these data sources. Financial development is defined as a combination of depth (size and liquidity of markets), access (ability of individuals and companies to access financial services), and efficiency (ability of institutions to provide financial services at low cost and with sustainable revenues, and the level of activity of capital markets). Due to the diversity of financial services provided by the financial system and the existence of a diversity array of agents and institutions involved in financial intermediation activities, finding an objective major to accommodate every corner is quite a difficult task. According to the literature, the extent of financial deepening is best measured by the intermediaries' ability to reduce information and transaction costs, mobilize savings, manage risks and facilitate transactions-reduction of frictions. Ndikumana (2001) roughly classified the indicators of financial development used in empirical studies in to three broad categories as: monetary aggregates, stock market indicators, and structural and institutional indicators. Initially the indicators were based on monetary aggregates, such as M1 or M3 mainly because these aggregates are widely available. Researchers also shifted to broader definitions (M3), which is referred to as liquid liabilities of the banking system. However, this measure also is not without criticism. First it consists currency which is criticized earlier for measuring the degree of monetization than financial intermediation; second Demetriades and Hussein (1996) have raised doubts about the validity of the use of such a variable (M3 expressed as a percentage of GDP) to test the hypothesis that financial development leads economic growth because GDP is component of both focus variables. In addition the availability of foreign funds in the financial system also

renders this an inadequate measure of financial development as pointed out by king and Mckinnon (2005).

An alternative and commonly used measure of financial development is bank credit to private sector which is often argued to be a more superior measure of financial development. Since the private sector is able to utilize funds in a more efficient and productive manner as compared to the public sector, the exclusion of credit to public sector better reflects the extent of efficient recourse allocation.

Developed by King and Levine (1993a), another variable used as a measure is the ratio of commercial bank assets divided by commercial bank plus central bank assets which measures the relative importance of a specific type of financial institution that is the commercial banks in financial system. The basic idea underlying this measure is that commercial banks are more likely to identify profitable investment opportunities and therefore make more efficient use of funds than central bank.

Since all these indicators are highly correlated and yet there is no uniform argument as to which proxies are most appropriate for measuring financial development, others such as Khan and Senhadji (2000) and Abg and Mckibbin (2005) have attempted to address the problem of measuring the depth of financial development by using principal component analysis. This method of analysis is done to create a proxy that represents the overall development in the financial sector taking the relevant financial proxies in to account. Consequently the new index sufficiently deals with the problems of multi- collinearity and over-parameterization.

However, all of the above indicators are proxy measures for a bank based economy[13] and does not account for stock market developments. Demirguc-Kunt and Levine (1996) alleviated this problem by developing stock market development indicators using data for 41 countries from 1986-1993 which describe measures of: (a) Market size – measured by the market capitalization ratio-equals the value of listed shares divided by GDP; (b) Market liquidity-measured by total value traded ratio-total shares traded on the stock market exchange divided by GDP and turnover ratio-the value of total shares traded by market capitalization; (c) Market volatility- which is twelve month rolling

[13] See Levine (2005)

standard deviation estimate based on market returns; and (d) Market concentration-measured by market concentration ratio-the share of market capitalization accounted by the ten largest stocks.

Structure and institutional indicators provide information that enables to directly or indirectly assess the efficiency and sophistication of the financial systems. These indicators include: Indicators of financial structure (bank-based or market-based financial systems), indicators of banking regulation, banking ownership structure, and banking concentration, which provide information on the degree of concentration in the banking sector (Demirguc-Kunt and Levine, 1999).

In addition to discussing measurement of financial development others have analyzed the fundamental determinants of cross-country differences in financial development. For instance the findings of Huang (2005) suggest that the level of financial development in a country is determined by its institutional quality, macroeconomic policies, geographic characteristics, the level of income and culture characteristics whereas Stiglitz (1994) and Demirguc-Kunt and Levine (2008) emphasize the role of state in shaping the operation of financial systems specially in developing countries.

In conclusion, the literature tells many stories but none of them are precise. Therefore, broad multi-dimensional approach to defining financial development is needed. The financial development measured in terms of depth, access and efficiency are my preference set with making distinction between for financial markets and financial institutions. The reason is quite straight; there is no any data recording for some of the indicators in each category for SSA.

2.2.3 Financial Sector Development & Economic Growth: Theory

As the literature in the area suggests Finance and growth may interact in three different alternatives "yes-view", having in mind that still there exists small body of literature contending there is no interaction "no-view" (Lucas, 1988). Adhering our discussion with the "yes-view", the three alternatives of interaction are: finance affects growth ("supply-lead"), growth affects finance ("demand-following") views as to Patrick (1996) and the two way or bidirectional interaction.

Finance Promotes Growth:

The first view, where finance promotes growth, supported by different authors like McKinnon-Shaw (1973), Shaw (1973) from the McKinnon-Shaw school of thought, Bencivenga and Smith (1991), Greenwood and Jovanovich (1990), King and Levine (1993a, 1993b) and Pagano (1993) from the endogenous growth model proponents. The argument from the former group is that banks act as an engine of economic growth. They argue in their financial repression model where, economic growth can be increased by abolishing institutional interest rate ceilings, by abandoning selective credit programs, by eliminating the reserve requirement tax, and by ensuring that the financial system operates competitively under conditions of free entry. For the latter, financial systems can encourage portfolio investment allocation in favor of productive investment, so increasing both the quality and quantity of productive investment and hence increase the rate of economic growth. According to Demirguc-Kunt and Levine (2008), the overall function of a financial system is to reduce information and transactions costs impeding economic activity, and its five core functions are to (i) produce *ex ante* information about possible investments and allocate capital; (ii) monitor investments and provide corporate governance after providing finance; (iii) facilitate the trading, diversification and management of risk; (iv) mobilize and pool savings; and (v) ease the exchange of goods and services. The efficiency of a financial system refers to how well a financial system performs the five core functions and financial development refers to an improvement in the efficiency of a financial system. Let us now elaborate upon each of the five core functions so as to gain a clearer understanding of the nexus between financial development and economic growth.

First and foremost, financial systems produce information and allocate capital. The intermediation of savings into investments depends on the quality and quantity of information available to individual savers, but it may be too costly individual savers to acquire information on their own. Financial intermediaries such as banks collect, process, and produce information on possible investments more efficiently than individual savers. Armed with more and better information, financial intermediaries will invest in more promising firms and industries. The economy wide effect is a more efficient allocation of capital that directs capital toward the more productive producers and away from the less productive producers. Financial intermediaries can also stimulate innovation by identifying the most promising new technologies and products. Large and liquid

stock markets also encourage the acquisition of information by making firm-specific information more profitable.

Second, financial systems monitor firm behavior and exert corporate governance. To the extent that shareholders and creditors in a firm can effectively monitor and influence how the managers of the firm use the funds they provided, i.e., exercise corporate governance, they will have greater incentive to provide the funds in the first place. Effective corporate governance keeps managers on their toes and encourages them to use capital in ways that maximize profits and firm value. More efficient management at the firm level results in a more efficient allocation of resources for the economy as a whole. Large information and transactions costs mean that small individual shareholders and creditors do not have the incentive to engage in monitoring manager behavior. On the other hand, larger investors such as financial intermediaries face stronger incentives to monitor and have greater influence over managers. By improving corporate governance, financial intermediaries can have a positive effect on growth. Stock markets can also serve as a powerful for aligning the interests of firm mangers with those of firm owners.

Third, financial instruments, intermediaries, and markets can facilitate the trading, hedging, and pooling of risk. By enabling risk diversification across firms and industries, financial systems can influence the allocation of resources and hence economic growth. While individuals are generally averse to risk, high-return investment opportunities tend to be high-risk. By allowing individuals to diversify their risk, financial intermediaries and markets divert more capital to high-risk, high-return investment projects and thereby boost the overall productivity of capital. Risk diversification also has a positive impact on innovative activity since risk-averse savers are more likely to invest in a portfolio of new technologies and products than a single new technology or product. Financial markets and intermediaries also mitigate liquidity risk, and thereby induce savers to invest in

Fourth, financial systems pool or mobilize savings from different savers for investment. The mobilization of savings involves collecting savings from a large number of individuals into collectively large amounts that can finance even very large investment projects. Both financial intermediaries and financial markets can perform this function. Financial systems that are better able to mobilize savings create a larger pool of savings that lead to higher aggregate investment, faster rate of capital accumulation, and hence faster economic growth. Given that one of the

hallmarks of developing Asia's economic success was its high saving and investment rates, this core function has been important for the region's growth in the past. More generally, the mobilization of savings for investment matters more for low-income, capital-scarce economies, which typically enjoy higher marginal returns to capital. The high relative importance of the savings mobilizing function of financial systems at low income levels mirrors the high relative importance of quantitative capital accumulation in the early stages of the growth process.

Fifth, at a more fundamental level, financial instruments, intermediaries, and markets can stimulate specialization, innovation, and growth by reducing transactions costs. The transition from barter economy to a monetary economy brings about a quantum leap in efficiency and welfare as a result of the three basic functions of money—means of payment, unit of account, and store. By reducing the transactions costs of economic exchange and activity, money enables workers to specialize in specific activities. Greater specialization, in turn, improves the capacity of workers to create new technologies and products. The end result of increased specialization and innovation is faster economic growth. The decline in transactions costs does not stop with the introduction of money but will continue as long as there is financial innovation. Credit cards and automated teller machines are but two examples of financial innovation that have cut transactions costs. Financial innovation that reduces the cost of economic exchange and activity will spur further specialization and innovation and thereby contribute to growth.

Economic Growth brings Financial Development:

The second view, where growth causes financial development, passed around by authors like (Demetriades and Hussein, 1996) (Robinson, 1952), Kuznets (1955) and Stem (1989) few among many. The possible directions of causality between financial development and growth are labeled by Patrick (1966) as the supply- leading and demand-following hypothesis. The explanation initiated by Robinson (1952) argues that finance does not exert a casual impact on growth. Instead, financial development follows economic growth as a result of higher demand for financial services- demand-following hypothesis. According to different authors, the interaction theory on how growth can affect finance argues, as the real-side of the economy expands, there will intensified demand for more financial services, leading to the growth of financial services and thus, further led to economic growth. In the opinion of Robinson (1952), it seems to be the case that where enterprises lead finance follows. Kuznets (1955) equally states that financial markets

begin to grow as the economy approaches the intermediate stage of growth process and develop once the economy becomes matured. The argument is that high economic growth generates demand for some categories of financial instruments and arrangement and that financial market effectively respond to these demands and change.

Two-Way Causality:

The third view comprising the combination of demand leading and supply hypothesis, which postulates the two variables, is mutually causal- where the bidirectional-two way relationship dominates, diffused by authors like (Greenwood and Smith, 1997). This bi-directional relationship between financial development and economic growth implies that financial markets develop as a consequence of economic growth that in turn feedback as a stimulant to real growth.

Generally, once we adhere to the view proposing for a significant relationship to exist and the substantial body of literature supports the positive effect of financial development on economic growth, it is quite meriting to study what affects the financial development and work in that direction to bring about economic growth.

2.2.4 Determinants of Financial Development

Much research regards institutions as the fundamental factor in long-run growth, and some even argue that the only effect of geography on development is via institutions (Acemoglu t al.). Before proceeding to accept the literatures' conclusion on the main determinants of overall financial development, we shall start by reviewing some tests of the hypothesis of whether any of three determinants (institutions, policy and geography), considered as a whole, dominates the other two. Huang (2010) has demonstrated that geography, institutions and policy as a group are all important in the process of financial development, although their effects may be picked up by varied predictors when conditioning on other factors is in place. These results clearly suggest that it would be more appropriate to include all of them in the analysis. Therefore the usual claim that policy and geography works through institutions doesn't hold (Huang, 2010). Coming back to the fundamental determinants of financial development, the body of existing literature suggests that institutional factors, macroeconomic factors, geographic factors and others are potentially capable of determining the level of financial development.

Institutions:

Research on the role of institutions in financial development has been considerable, especially research on the effects of the legal and regulatory environment on the functioning of financial markets. A legal and regulatory system involving protection of property rights, contract enforcement and good accounting practices has been identified as essential for financial development. Most prominently, (La Porta et.al., 1997, 1998), (Beck et.al, 2003), are few among many. Some authors argue that the origins of the legal code substantially influence the treatment of creditors and shareholders, and the efficiency of contract enforcement, consequently the development of the financial sector (La Porta et.al., 1997, 1998). While some other authors argue that colonizers, often named as extractive colonizers, in an inhospitable environment aimed to establish institutions which privileged small elite groups rather than private investors, while colonizers, often named as settler colonizers, in more favorable environments were more likely to create institutions which supported private property rights and balanced the power of the state, therefore favoring financial development (Beck et.al, 2003). Both the legal origin theory and application are related to colonization, but the former is more concerned with how colonization determines the national approaches to property rights and financial development, whereas the latter is more about the channel via which colonization influences financial development. Generally speaking, institutions might have a profound impact on the supply side of financial development. The level of institutional development in a country to some extent determines the sophistication of the financial system.

Policies:

This view highlights the importance of some macroeconomic policies, openness of goods markets and financial liberalization in promoting financial development. The significant effect of policy on financial development could be working through either its demand side or its supply side. Some major national macroeconomic policies such as maintaining lower inflation and higher investment have been documented as being conducive to financial development. The prominent works of (Mckinnon, 1973), (Shaw, 1973) have shown that while financial repression reduces the quantity and quality of aggregate investment, financial liberalization can foster economic growth by increasing investment and its productivity. The positive link between domestic financial liberalization and financial development is supported by evidence although domestic financial

liberalization is not without risks. Both theoretical and empirical investigations on the effects of inflation on financial development conclude that economies with higher inflation rates are likely to have smaller, less active and less efficient banks and equity markets. Some recent work has supported the view that policies which encourage openness to external trade tend to boost financial development. Overall, the effect of policy on financial development is quite certain but the direction is dependent on the policy centering (Huang, 2010).

Geography:

There is less work directly addressing the potential correlation between geography and financial development in comparison to that for policy and institutions. However, much research attention has been paid to the importance of geography for general economic development, emphasizing three aspects in particular. The first stream mainly focuses on correlation between latitude and economic development Kamarck (1976), Diamond (1997), Gallupet al. (1999), few among many-suggesting that tropical location may lead directly to poor crop yields and production due to adverse ecological conditions such as fragile tropical soils, unstable water supply and prevalence of crop pests. A second strand of research relates to countries being landlocked, distant from large markets or having only limited access to coasts and rivers navigable to the ocean (Sachs and Warner, 1995a, 1995b, 1997; Easterly and Levine, 2003; Malik and Temple, 2009). As natural barriers to external trade and knowledge dissemination, geographic isolation and remoteness to some extent determine the scale and structure of external trade in which countries engage. The potential to enter a large economic market and exploit economies of scale may be limited by particular geographic circumstances. The ability to develop a competitive manufacturing sector may be constrained when some intermediate inputs for the production of manufactured goods need to be imported from distant markets. As the main feature of external trade for these countries, the limited range of primary commodities exported determines the vulnerability of these countries to external shocks. The last strand of research focuses on the link between resource endowment and economic development. Diamond (1997) suggests that countries with a richer endowment of grain species have more potential for high-yielding food crops and technological development. The authors in this group argue that a developing country's natural resource endowment affects its economic development through a unique channel in which natural resource endowment is linked to different export structures, different export structures determine institutional capacities towards

coping with external shocks and finally institutional quality is reflected in the level of GDP per capita. In general, geography is likely to work mainly through the demand side of financial development, although it may affect its supply side by influencing the quality of institutions. For instance, the production of particular agricultural products or primary goods and exploitation of some natural resources could reduce the demand for external finance, relative to other countries at a similar level of GDP per capita.

Other variables considered as determinants of financial development are economic growth, private investment, the income level, population level and cultural characteristics, etc. (Greenwood, Jovanovic, 1990). Huang (2010) in his analysis demonstrates that the series of both private investment and financial development are integrated, and two-way positive causal effects exist in the co-integrated system. In general, the chapter implies that, in a globalized world, private investment is both an engine and a follower of financial development, and vice versa.

To finalize this section, financial development may defined as is the accumulation of financial assets at a more rapid rate than the accumulation of non-financial assets under conditions when financial instruments financiers, markets and financial intermediaries reduce, without necessarily eliminating them, the costs of obtaining information, the costs of executing contracts and the costs of transaction, and as a consequence, do a better job by offering financial functions. Somehow generically, financial development may well be defined as the improvement in quantity, quality and efficiency of financial intermediary services. Whereas, Economic growth is the evolution of Gross Domestic Product (GDP) in the short, medium and long term. It is the result of an increase in value-added produced by all the firms operating within a country. The definition is economic variables, in particular the two above are often under agreement, while the measurement is somehow variegating.

Up until now, authors don't provide with generally accepted means of measurement, rather some proxies with corresponding arguments. We have seen that a number of proxy variables being used throughout the existing literature for measuring financial development from size, depth, breadth, efficiency and access dimensions. Monetary aggregates, credit both from the private and the whole financial sector both to the public and the private sector, liquid liabilities of the financial sector, interest rate margin, are few among the most widely used measures in this sphere.

The theoretical interaction between finance and growth exhibits two views: the 'yes-view' and 'no-view'. In the 'yes-view', the existing body of literature tells us three options: the 'finance promotes growth', the 'growth promotes finance' and the 'two-way relation'. Surprisingly, we get substantial pieces of works supporting each of these four views; the 'finance promotes growth' view dominates. One thing to note here, though there exists quite a large body of literature to study the determinants of financial development, there is observed relative absence of examining the effect of growth on finance together with other variables that are presumed to affect economic growth. In the last part of the theoretical review section, we have seen the determinants of financial sector. Factors related to institutions, macroeconomic policy, and geography are mostly supported by both theoretical arguments and empirical investigations are found to be the fundamental determinants of financial development. Other variables which are also put down to affect the level of financial development are the economic growth, private investment, demographic conditions, level of income and cultural characteristics, etc. However, the existing literature proposes further research into the more fundamental factors behind these characteristics is obviously worthwhile. Having these concluding remarks, the next subsection is confined to presenting the review of the empirical literature.

Stylized facts on: Financial development situation in sub Saharan Africa

Africa is a continent made up of 53 countries out of which 44 are held within the sub Saharan region. The sub Saharan region of the continent is economically and culturally diverse, with different regional economic blocs. Sub-Saharan Africa is, geographically, the area of the continent of Africa that lies south of the Sahara desert. Politically, it consists of all African countries that are fully or partially located south of the Sahara (excluding Sudan, even though Sudan sits in the Eastern portion of the Sahara desert). It contrasts with North Africa, whose Arab states are part of the Arab world. Somalia, Djibouti, Comoros and Mauritania are geographically part of Sub-Saharan Africa, but are also Arab states and part of the Arab world.

The financial systems and their level of development in these countries are as diverse as the countries. Reviewing the financial development of such a heterogeneous group of countries presents a challenge. Therefore, to make the review more concise, we categorized the countries along geographic lines into five groups, namely, North Africa, West Africa, East Africa, Central

Africa, and Southern Africa. This situational review covers, among others things, a brief and summarized consideration in the SSA region as per the above grouping of the overall financial system, its depth and efficiency. For reviewing the financial depth, the size and liquidity of the financial sector and the level of activity in the sector are applied as a means of description.

2.3 Overview of financial system in sub Saharan Africa:

Notwithstanding the positive improvements in financial developments, African growth had not yet proven to be sustainable and fully inclusive, even before the crisis. Similar to the rest of the world, African financial systems have been undergoing adjustments and stabilizing from the negative shocks of the global crisis over the last two years. In this subsection, we present the overview of African financial system, focusing on the banking system, insurance companies, micro-finance institutions, stock markets and other financial markets (bond markets). This part also gives some highlights on informal finance system through presenting the size of the formal financial system in the continent.

The Banking System:

The banking system in Africa, just the same for sub Saharan Africa, consists of the Central Banks, commercial banks-deposit taking institutions. The Central Banks are technically independent of government control, but in practice they work closely with the Ministries of Finance of their States or the office of treasury and help formulate and implement macroeconomic policies of the various governments. The commercial banks or deposit taking institutions are made up of local banks and branches or subsidiaries of foreign banks. Facts from data, foreign banks have played an important role in banking development in Africa; their share of total African banking has increased significantly. The increase can be attributed to the financial sector reforms that these countries have embarked upon, which in turn have led to the opening up of the markets in Africa and the attendant entry of foreign banks. However, there are still countries which are fully closed for foreign banks, Ethiopia-big country both in population and size is a good example here. The banking sector in most of the countries is either dominated by state-owned banks or by a few large, sometimes foreign, banks, Ethiopia is still one with highly dominated by state-owned bank-the commercial bank of Ethiopia. The banking industry in Africa is undergoing reforms focused on privatization and other forms of restructuring of state-owned banks with the view to improving the quality of the banks.

One common feature of the banking system in Africa is that a large number of banks invest in government securities, primarily treasury bills. This is troublesome since it is reflective of a highly dysfunctional banking intermediation that shuns provision of private credit in favor of safer government securities.

The low level financial development in terms of private credit provision that we observed earlier is attributable to this phenomenon. Credit to the private sector provided by the banking sector as a percentage of GDP has been declining over the years. This phenomenon does not bode well for the African countries. This dysfunctionality in financial intermediation is being increasingly recognized in African policy circles, and various efforts are under way to provide an environment for banks to serve as informed agents and build information capital that is vital for the efficient allocation of resources (see the table under financial depth subsection).

Nonetheless, the banking system in Nigeria and the Southern African countries of Malawi, Botswana, South Africa and the Seychelles is relatively well capitalized and dynamic and the banks pursue innovative banking practices. The Seychelles has a highly sophisticated banking system similar to that found in most developed countries.

Insurance companies:

The insurance industry in Africa as a whole and in sub Saharan region in particular is still in its infancy and is relatively underdeveloped compared to other emerging economies and developed countries. The insurance companies in this region offer property, auto, health, life, casualty, and other types of insurance; however in most countries the auto insurance sector holds the largest portion of the market share. The insurance market in some countries is dominated by nonlife insurance which represents about 85% of the industry premium. Life insurance is not a significant portion of the market, albeit the sector has been the fastest growing sector in the insurance industry. The insurance sector in Africa varies from a monopoly to a very competitive market. Nigeria has a large insurance market with 48 insurance companies operating in the country as of 2008. Although the insurance companies in this area are mostly privatized, the governments in some of these countries still hold significant stakes in the firms.

Stock markets:

A particularly important outgrowth of the extensive financial sector reforms in Africa, including policy measures for the development of capital markets, has been a surge of interest in the establishment of stock exchanges, particularly in Sub-Sahara Africa. Stock exchanges have proliferated over the last two decades. There were only 5 stock exchanges in SSA 20 years ago and 3 in North Africa, but now there are about 20 in operation. There has also been a market capitalization boom in Africa, with the exception of the two oldest markets in South Africa and Egypt which came into existence in 1880s. What is also interesting is that SSA witnessed an establishment of a regional stock exchange domiciled in Abidjan, which currently serves the Francophone countries of West Africa. There are, in fact, similar initiatives underway in Southern and Eastern Africa to consolidate the thinly capitalized markets into regional markets. To mention, Ethiopia is almost ready to launch secondary stock markets, though not yet started functioning.

Microfinance institutions:

Microfinance has a long history in Africa, initially organized in an informal setting. Informal microfinance systems predated the formal microfinance sector. The industry has experienced high growth in recent years and is becoming an important driver in the development of the economies in Africa and continues to play a key role as a grassroots financial tool. Access to credit by small business is a big problem in Africa, and for this reason the governments have facilitated the establishment of microfinance institutions (MFIs). The providers of these services range from government enterprises to large commercial banks to non-government organizations. These microfinance institutions can help build the foundation of the economy and help increase the GDP of the countries in this region. In Africa, these institutions have been successful in providing financial services to the people who may normally not qualify for loans from the banks and other financial institutions. This is why the MFIs have been popular in this region as many people do not have valuable assets to back their loans, and do not require large loans or have saving accounts which the banks go after. Countries in Africa including Mozambique and Ghana, are experiencing a great deal of growth in the MFI sector in rural and urban areas.

With over 45 million loans granted in some countries, the microfinance sector is a booming sector in the continent. The loans provided by the MFIs have had great impact on the agriculture sector. Since the farmers are able to raise capital through the MFIs they can buy tools and other necessary

equipment to farm and grow crops and generate income. This overall favorable development of microfinance, however, masks contrasting structural and qualitative developments, some of which could represent major risks for the sector. Mobilizing funds to the rural area where it is needed most is very difficult for the MFI of this region. High transaction costs cause these firms to operate in urban and semi-urban areas making it hard to reach the rural communities. Consequently, in certain parts of the continent, the microfinance sector comprises many microfinance institutions that are mostly concentrated around big cities. Microfinance in rural areas is not very well represented, and as a result it is very difficult for entrepreneurs in rural areas to undertake small businesses.

Other financial markets:

A key feature of the financial markets in Africa is the dearth of bond markets for both government and corporate bonds. The bond market is either not well developed or, at best, is at its infancy. Nigeria is the only country in the Anglophone West Africa region with a secondary debt market and a bond index. Just like in the other parts of Africa, the government bond market in East and Central Africa is not well established. The countries in this region do not have a wide range of treasury bills and bonds, except Kenya which has a variety of maturities to offer, as it has treasury bills and medium to long term treasury bonds. Southern Africa is the only region with a well-developed government bond market. Government bond issues in South Africa started in the 1980s when bonds were only issued on demand. Trading in the market which began in 1996 has attracted a lot of interest to the extent that the bond market also has a turnover ratio equivalent to other mature markets. Botswana is one of the few countries with a primary dealership system in government bonds for both the primary and secondary market. However, there are also other types of financial markets including the derivative markets, Private equity funds, pension funds and other non-bank financial institutions. Though it is very recent phenomenon, Ethiopia is another country, currently selling its bond both in international and domestic market

Generally, African financial systems, particularly those in Sub-Saharan Africa with the exception of South Africa, are dominated by traditional banking and informal finance. However, as a result of extensive and economic reforms that have taken place over the last two decades, there have been marked improvements in banking development, as well as emergence of non-bank finance, particularly in the form of stock markets which have proliferated across Africa. While the

challenges facing these markets, in terms of liquidity and depth, are immense, they have experienced improvement both in capitalization (size) and trading activity. These improvements have been in response to improvements in regulatory and economic environments that the region has experienced over the recent past. Accompanying these stock market developments is their performance record in recent years, and the available data indicates the markets have performed well both on an absolute and risk-adjusted basis.

Size of the formal financial sector:

Financial intermediation may be carried out either inside or outside the formal financial sector. Informal finance may involve transactions between related parties, reliance on specialized moneylenders, or the use of informal credit cooperatives. All of these have in common that they rely on informal means to overcome asymmetric information and contract enforcement problems, and they are likely to play a dominant role in financial intermediation when the formal institutional environment is weak. Under these circumstances the formal financial sector is likely to be small and to conduct a relatively minor fraction of financial intermediation. Relative to advanced and emerging economies, LICs exhibit substantially smaller ratios of deposit money bank assets to GDP as well as of nonbank financial intermediary assets to GDP. The ratio to GDP of assets held by deposit money banks and other formal financial institutions in advanced countries is 1.24, while in LICs it is only 0.32. Thus, relative to what is typically the case in advanced countries, the formal financial sector is a relatively much smaller player in LICs (The data are from Beck, Demigurc-Kunt and Levine (2010)). Hence, the facts about Africa's financial are market are highly dominated by the informal sector. The first reason is related to the underdevelopment and to provide with the fundamental roles of financial system. Another reason put down here is inefficiency of the formal financial system for some other reason for supplying services under competitive basis. One point to note here is that, for SSA countries the social, economic and political situations also have significant effect on the development of financial system.

2.4 Review of Empirical Literature

The empirical body of literature over the finance-growth nexus is accredited for its well-entrenched in the academic world of business and economics. Most of these findings aimed at clarifying the theoretical contestations in the discourse have attempted to achieve their goal using different

techniques, though they couldn't to do so. One thing peculiar here is that, the results vary extremely those advocating no or negligible interaction to those saying finance and growth are highly synergistic. An even more interesting point is the variegation bears on among the synergistic advocators over the direction of causality. In essence, such variegations are common in academic research; particularly in economics where one is exposed to several econometric and other analytical techniques to achieve its point of interest and let on the findings. Thus, this section will be organized around econometric approaches to examine the relationship between finance, growth and other variables together with their findings.

2.4.1 Evidences on financial sector development & growth

In a comprehensive review of the empirical literature, Demirguç-Kunt and Levine (2008) point out that the literature contains four different types of studies: (i) pure cross-country growth regressions, (ii) panel techniques that make use of both the cross-country and time-series dimensions of the data, (iii) microeconomic studies that explore the various channels through which finance may affect economic growth, and (iv) individual country case studies. Thus, in the next section empirical evidences under the first two econometric methodologies and one not from this list will be discussed.

2.4.1.1 Pure cross-country growth regressions

Using data for 35 countries covering the period from 1860-1963 on the value of financial intermediary assets divided by GNP, Goldsmith (1969), has made a pioneering study and found out that first the size of financial development indicators rises as countries develop and second documents (graphically) a positive correlation between financial development and economic development. The major drawbacks of his study were that he used only 35 countries, does not systematically control for other factors influencing growth, close association does not identify the direction of causality and finally the measures of financial development used may not accurately proxy for the functioning of financial system.

The other most popular cross-country study which was made after Goldsmith's work is that of King and Levine (1993a) where they used 77 countries (77 observations) for the period 1960-1989. After controlling for other factors affecting growth, they examined three growth indicators: namely real per capita GDP growth, growth in capital stock per person and total productivity growth

("Solow residual"[14]). They have also constructed additional measures of the level of financial development[10].

Using alternative econometric methods, they concluded that there is a strong positive relationship between each of the financial development indicators and the three growth indicators and sizes of the coefficients are economically large. For instance rise in DEPTH alone eliminates 20% of the growth difference between the slowest growing and the fastest growing quartile of countries. King and Levine (1993b) confirm these findings using alternative econometric methods and robustness checks. Furthermore, they found out that financial depth in 1960 is a good predictor of subsequent rates of the three growth indicators and coefficients are economically large.

However, their study is not without criticism. First while their study shows that finance predicts growth, it still do not formally deal with the issue of causality and second while it improves upon the measure of financial development still it focus on only one segment of the financial system that is banks and still do not directly proxy for the five financial functions stressed in theoretical models of finance and growth.

Using two different data sets and methodology[11], De Gregorio and Guidotti (1995)[12] examined the empirical relationship between long-run growth and financial development, proxied by the ratio between bank credit to the private sector and GDP.

Using the cross-country growth regressions, first they find a positive effect of the measure of financial development on long-run growth of real per capita GDP where this positive effect is particularly strong in middle and low-income countries. Second, their findings suggest that the effect of financial intermediation on growth is due mainly to its impact on the efficiency of investment rather than its volume. They find that only one-fourth of the effect of the measure of financial development on growth is channeled through the volume of investment, the rest being explained by improved efficiency of investment.

Adding stock markets to cross-country studies of growth Levine and Zervos (1998) including 42 countries (Observations: 42 for the real per capita GDP growth regression and 41 for the others)

[14] "Solow residual" is defined as real per capita GDP growth minus (0.3) times the growth rate of the capital stock per person

for the period from 1976 to 1993 constructed numerous measures of stock market development to examine the relationship between stock market development and growth. For instance, the turnover ratio (total value of shares traded divided by the value of shares listed on stock exchanges) which reflect trading friction.

They find that initial levels of stock market liquidity and banking development are positively and significantly correlated with future rates of economic growth, capital accumulation and productivity growth whereby stock markets provide different financial functions from the banks. For instance one standard deviation increase in initial stock market liquidity implies that real GDP per capita would have been over 15% higher over 18 years. They also find that stock market size (market capitalization/GDP) is not robustly correlated with growth, capital accumulation and productivity improvements.

Again despite the great improvement in incorporating stock market measures, qualification has been raised on their work and some of them are that they do not deal formally with the issue of causality and second while they include measures of the functioning of stock markets and banks they exclude other components of the financial sector such as bond markets and the financial services provided by non-financial firms.

In general, evidence concerning the effect of financial development on economic growth from these studies varied according to the set of countries in the sample, the time span, and the set of variables included in the regressions. For instance using cross-sectional data leaves open the question of spurious correlation arising from non-stationarity, and does not permit an examination of the direction of causality (Christopoulos and Tsionas, 2004).

The other problem of using a cross-sectional methods is that by grouping countries that are at different stages of financial and economic development, it fails to address the country-specific effects of financial development on economic growth and vice versa (Ghirmay,2004).

2.4.1.2 Time-series evidences

To improve a number of statistical problems with pure cross-country investigations, a number of pure time-series econometric applications which frequently use Granger-type causality testes and vector autoregressive (VAR) procedures to examine the nature of the finance growth relationship have been undertaken.

As explained in Mulualem (2007) these method, as the sample size used is small, has helped researchers to examine individual countries in depth, employ a more powerful econometric technique and test a variety of financial development measures. Whereas the problem of generalizing time-series evidences to other countries were found to be the major limitation of this method. In general the evidences from series analysis were mixed owing to shorter time span of the data, measures of financial development used and difference in model specification.

Jung (1986) was among the first to test for causality by applying a Granger-causality procedure. He used annual data for 56 developed and developing countries. However, his results were inconclusive because they varied according to the financial development indicator used[13]. Jung's test was conducted in a levels vector auto regression (VAR) framework without testing for stationarity of the data. However, as data are very likely to be nonstationary, Jung's findings are debatable (Granger and Newbold, 1974).

In a frequently-cited paper, Demetriades and Hussein (1996) have presented a time-series evidence for 16 countries excluding highly developed countries based on a criteria [14] and used two measures of financial development (the ratio of money to GDP and the ratio of bank claims on the private sector to GDP). Their result provides little support to the view that finance is a leading sector in the process of economic development. However, they find a considerable evidence of bi-directionality and some evidence of reverse causation where their findings also clearly demonstrate that causality patterns vary across countries.

Arestis et al. (2001) enhanced time-series studies of finance and growth by incorporating measures of both stock market and bank development using quarterly data to five developed economies. They find support for the view that finance stimulates growth but raise some cautions on the size of the relationship and they show that while both banking sector and stock market development explain subsequent growth, the effect of banking sector development is substantially larger than that of stock market development.

Christopoulos and Tsionas (2004) after nothing that many time-series studies yield unreliable results due to the short time spans of typical data sets, used panel unit root testes to yield causality inferences within a panel context that increases sample size in ten developing countries over the period 1970-2000. Contrary to the findings of Demetriades and Hussein (1996), they find strong

evidence in favor of the hypothesis that long-run causality runs from financial development growth and that there is no evidence of bi-directional causality.

In order to provide further evidence on the causality issue, there has also been a movement away from applying time-series methods to a variety of countries towards examining individual countries, which allows research to design country-specific measures of financial development and expand the time-series dimension of the analyses in some cases.

For instance, Kar and Pentecost (2001) examined the causal relationship between financial development and economic growth in Turkey for the period from 1963 to 1995. After developing five alternative proxies for financial development, they showed that the direction of causality is sensitive to the choice of proxy used for financial development. On balance, however, for Turkey, growth seems to lead financial sector development.

Choong et al. (2004) carried out a time series study in the context of Malaysia, for the period from 1978 to 2000 and suggested that stock market development has a significant positive long-run impact on economic growth. In contrast to Choong et al. (2004), Ang and Mckibbib (2005) using time series data from 1960 to 2001 for Malaysia and conducting a co-integration and various causality testes concluded that output growth causes financial depth in the long-run.

Shan and Jianhong (2006) examined the impact of financial development on economic growth in china and supported the view that financial development and economic growth exhibit a two-way causality. Whereas, Guryaya et al. (2007) examined the relationship for Northern Cyprus for the period from 1986 to 2004 using OLS method and two proxies for financial development and presented evidence of causality from economic growth to the development of financial intermediaries.

2.4.1.3 Panel Data Evidences

Panel data sets where the same cross-sectional units are followed over time are being used more and more in applied work, especially for policy analysis on macroeconomics and analysis for financial markets. Most studies utilize the difference Generalized Method of Moments (GMM)

and *systems* GMM[15]. As explained in Levine (2005) and Mulualem (2007), these methods improve upon pure cross-country work in three respects.

The first benefit from moving to panel is the ability to exploit the time-series and cross sectional variation. The second benefit from moving to panel is that it avoids biases associated with cross county regressions: With cross-country regressions, the unobserved country-specific effect is part of the error term so that correlation between unobserved country-specific effect and the explanatory variables results in biases coefficient estimates.

The third benefit from moving to panel is that it permits the use of instrumental variables for all repressors and thereby provides more precise estimates of the variables because pure cross-sectional estimators do not control for the endogeneity of all the other explanatory variables which can lead to inappropriate inferences on the coefficient on financial development.

A pioneering work utilizing these methods in the finance-growth linkage was that of Levine et al. (2000). They use a GMM dynamic panel estimator as well as a cross sectional instrumental variable estimator [17]. In addition, unlike other cross-country growth literatures, they use instrumental variables to address the issue of causality. Both estimation techniques produce consistent findings: the exogenous component of financial intermediary development is positively and robustly linked with economic growth. The empirical evidence so far reveal about the finance-growth nexus by segmenting from methodological point of view. At the same time, the extensive battery of methodological weaknesses associated with cross - country regression reviewed above can certainly be levied against these initial findings on finance, income distribution, and poverty. Consequently, applying diverse econometric techniques and datasets to bear on the question of whether financial development influences income distribution and poverty is likely to be an active area of research.

This big section of the study has reviewed the historical, theoretical and empirical works on the relationship between financial development and economic growth. The historical part was mainly confined to briefing how the literature on the issue comes through history – highlighting which works were pioneer and how the development and innovations in the academic research world contributed to the evolution of investigations in finance – growth nexus. The theoretical part

[15] See Levine (Levine R. , 2005)

illuminates many of the channels through which economic growth affect the emergence and development of financial system (instruments, markets and institutions) and also how the latter affects the former. To conclude, by now we all have a good understood from the existing body of literature about the notions of financial development, economic growth; even how to measure them in a better way. We have also seen the theoretical explanation of the interaction between finance and growth and the determinants of financial development. Finally, we have seen what role do government policies play and how the financial crisis of the westerns was affecting Africa.

CHAPTER 3 - METHODOLOGY OF THE STUDY

3.1 Data type and source

Annual data from 20 African countries of the sub-Saharan region covering the period 1990-2014 gathered from the World Development Indicators (WDI) of the World Bank will be used. The SSA region is quite big and enough to boost the representativeness of the findings, despite data constraints. Consequently the study has gone through selecting minimum of 2 countries from each of the regions are (south, east, central and west) included in the sample. Further the data is transformed to 5-years average allotting each country 5 observations, this way the data will be set to be longitudinal.

One important issue concerning the link between financial sector development and growth, even with other variables is the difficulty to identify proxies for measuring them. To be more precise and specific in estimating the effect of explanatory variables some authors have suggested different indicators of financial development capturing the size, activity and efficiency of the financial sector, institutions or markets. Drawing from the works of Beck et al. (2000, 2008) we segment the variables of financial development indicators as measure of depth (including size, level of activity and liquidity of markets), access (ability of individuals and companies to access financial services), and efficiency (ability of institutions to provide financial services at low cost and with sustainable revenues, and the level of activity of capital markets) of the financial sector. But we stick to the financial depth and efficiency components only. Primarily, there is not adequate data for measuring access. The second reason, it still makes sense to think the indicators in the employed two components serve as proxy for this component implicitly.

- To measure the financial depth, the suggested best way of using proxy variables is to use monetary aggregates as share of GDP. To measure the level of financial activity, the best proxy variables is the ratio of credit to the private sector to GDP, which is the value of loans made by banks to private enterprises and households divided by GDP, is used as a measure of financial depth and banking development. In fact it is possible to use the overall all credit made available to the economy, but for most developing economies, this might

be misleading as the central banks and government have substantial share from the credits and borrowings respectively. Therefore, I choose this indicator as it keeps apart credit issued by banks, as opposed to credit issued by the central bank, and credit to enterprises, as opposed to credit issued to governments (Levine R. , 2005). To measure the size of financial sector, the best proxy variables suggested is Liquid liabilities to GDP ratio, which equals liquid liabilities of the financial system divided by GDP. It is used as a measure of "financial depth" and thus of the overall size of the financial intermediation sector

- To measure the efficiency of the financial sector, the best proxy variables is the net interest rate margin (INT), which measures the difference between deposit and lending rates in the banking market is used to measure the efficiency of the sector.
- In most of the literatures in the finance-growth nexus the growth rate of real per capita GDP is widely used to measure economic growth, so do we. Some detailed explanation of all variables used are presented in tabular form below.

3.2 Model Specification

To achieve the objectives of this study, we have prepared data comprising both time series and cross-sectional elements, and such a dataset would be known as a panel of data or longitudinal data. Therefore we use dynamic panel regression. Estimation using such data offers a number of advantages for researchers (as discussed in the empirical review part). These advantages include to be able to address a broader range of issues and tackle more complex problems, enables to examine how variables, or the relationships between them, change dynamically (over time), helps to remove the impact of certain forms of omitted variables bias in regression results. However, there are limitations of panel data techniques; mainly the relationship between the explained and explanatory variables is assumed constant both across country and over time. The panel regression in this study is balanced panel model- has the same number of time-series observations for each country.

Econometrically, the setup we may have is as described in the following equation:

$$y_{lt} = a_i + \beta X_{lt} + U_{it}$$

Where y_{it} is the dependent variable, α is the intercept term, βis a k×1vector of parameters to be estimated on the explanatory variables, X_{it} is a 1×kvector of observations on the explanatory variables, and U_{it} is the error term; t =1,..., T; i =1,...,N[2 (Chris, 2008)].

The general representation of the model to estimate the effect of economic growth and other variables on financial development is given in equation below. The selection of explanatory variables in general was made based on reviewing empirical literature (is driven by previous results in the literature) (see Levine, Loayza and Beck (2000)).

$$FD_{it} = a_i + \theta y_{it} + \beta X_{it} + \gamma Z_{it} + \nu_{it}$$

a_i - Stands for country specific characteristics.

Where:

- FD_{it} - is financial development indicator (dependent variable) in logarithm value and this done to reduce the effect of outliers. It is measured both in terms of its depth and efficiency.
- y_{it} - is the variable for economic growth measured in terms of growth rate of real GDP per-capita, and
- Z_{it} - are the set of control variable that are referred by literature to affect financial development; includes macroeconomic policy variables, institutions and geography.
- X_{it} - is set of explanatory variables that are presumed to affect economic growth; including level of investment, saving, human capital, government expenditure and trade openness.
- ν_{it} - represents the error term.
- *'i'* and 't' (the indices) - represent the cross section and time period respectively.

- All the notations and representations in equation above also holds for subsequent models (unless and otherwise it is specified)

The first subtheme derived from the basic research question was to examine the relationship between financial development and economic growth specifically, consequently checks whether there is significant relationship and estimates that specific effect of economic growth. The second

subtheme of this study is to examine the effect of other variables that are presumed to affect economic growth in frequent literatures; accordingly, the following equation is modelled as a general presentation. The following regression model presented in general form serves achieve these subthemes.

$$FD_{it} = a_i + \theta y_{it} + \gamma Z_{it} + \nu_{it}$$

After having the above two models of general representation next we formulate the specific models that will be employed for panel regression. Essentially, there are broadly two classes of panel estimator approaches that can be employed in financial research: fixed effects models and random effects models. The simplest types of fixed effects models allow the intercept in the regression model to differ across section but not over time, while all of the slope estimates are fixed both across section and over time. This approach is evidently more parsimonious than seemingly unrelated regression (SUR) framework[16]. An alternative to the fixed effects model described above is the random effects model, which is sometimes also known as the error components model. As with fixed effects, the random effects approach proposes different intercept terms for each entity and again these intercepts are constant over time, with the relationships between the explanatory and explained variables assumed to be the same both across section and temporally. However, the difference is that under the random effects model, the intercepts for each cross-sectional unit are assumed to arise from a common intercept α (which is the same for all cross-sectional units and over time), plus a random variable that varies across-section but is constant over time. The error term measures the random deviation of each entity's intercept term from the 'global' intercept term α (Chris, 2008). The model equation below represents how economic growth and other variables affect financial development using dynamic panel regression (the specific presentation of the models are presented in the order of achieving the two themes stated above).

$$\begin{aligned} FFD_{it} = a_0 + a_i + \beta_1 FD_{it-1} + \beta_2 GDP/CAP_{it} + \beta_2 OPENNESS_{it} + \beta_4 GDS_{it} \\ + \beta_5 GDP/CAP_{it} + \beta_7 GRCAP_{it} + \beta_9 INF_{it} + \beta_{11} TOTPOP_{it} + D_1 GEOG_{it} \\ + D_2 BRITISH_{it} + D_3 FRENCH_{it} + \epsilon_{it} \end{aligned}$$

[16] See (Chris, 2008) pages 489

Where: a_0 is the intercept, a_i is country specific case varying across countries but not in time.

The ϵ_{it} - is the catchall as usual.

The notation of variables in both models is the same for both and demonstrated as follows:

FD_{it} -is financial development indicator, measuring depth using private domestic credit and Liquid liabilities (both to GDP ratio) and net interest rate margin to measure efficiency. FD_{it-1} - represents one period lagged value of the financial development indicator. The values are in logarithm value to see the effect in terms of growth rate and reduce the effect of outliers; GDP/CAP_{it}- is the variable for measuring economic growth in terms of growth rate of real GDP per-capita; GDS_{it} - measures the level of savings; INF_{it} measures the level of inflation; $OPENNESS_{it}$- measures the level of openness; $GRCAP_{it}$- measures the level of investment in terms of gross capital formation; $TOTPOP_{it}$ measures the total population. The above equations also possess dummy variables: $BRITISH_{it}$ is a legal dummy that assumes a value 1 if the origin of legal system is from British and 0 otherwise; $FRENCH_{it}$ is a legal dummy and assumes a value 1 if legal origin is derived from French and a value 0 otherwise; $GEOG_{it}$ is dummy variables for geographic location and assumes a value 1 for having sea door (port) and a value 0 otherwise. The index *'i' &'t'* represent the cross section or country and time period respectively.

Variable name (with code)	**Definition**
Trade Openness **(OPENNESS)**	Measures the degree of international openness. Total volume of trade over GDP is used. Total volume of trade is the sum of exports and imports of goods and services. The idea is that the larger the ratio, the higher the ability for the country to specialize according to its comparative advantage, which in turn will improve the efficiency of resources allocation and thereby economic growth.
Educational Attainment **(EDUC)**	Schooling serves as a proxy for aggregate human capital in the growth literature. Gross Secondary School Enrolment rate is used. It is the ratio of total enrolment, regardless of age, to the population of the age group that officially corresponds to the level of education shown. Secondary education completes the provision of basic education that began at the primary level, and aims at laying the foundations for lifelong learning and

	human development, by offering more subject, or skill-oriented instruction using more specialized teachers.
Investment *(***GCAPFORM***)*	Gross Capital Formation as a percentage of GDP is used. Gross capital formation consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Fixed assets include land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases, and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Logarithm value is taken
Institution *Set of Legal Origin Dummies* **(LEGAL)**	Legal origins, law enforcement, creditor rights, accounting practices, information sharing, control of corruption, political stability, and financial openness. Legal origin is chosen from the alternatives to know the legal origin of the financial system. The categories are British, French, and other legal origin.
Population level **(POPULATION)**	The total Population is used. Population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship - except for refugees not permanently settled in the country of asylum, who are generally considered part of the population of the country of origin
Geographical location	Countries being landlocked, distant from large markets or having only limited access to coasts and rivers navigable to the ocean. Regional Dummy Variables are added to examine if geographical location affects financial development.
Inflation Rate **(INF)**	Inflation is measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a fixed basket of goods and services that may be fixed or changed at yearly interval. It is included to control for price distortions.
private domestic credit- ***to measure the level of financial services*** **(DCPS)**	Domestic credit to the private sector as a percentage of GDP. Because of the situation in most of the SSA developing economies where banks are subject to mandated loans to priority sectors, or obligated to hold government securities.

Liquidity- ***is used to measure the overall size of the financial intermediary*** **(liq-M3)**	The broadest definition of money (M3) – as a proportion of GDP – to measure the liquid liabilities of the banking system in the economy will also be used. we used M3 as a financial depth indicator because the other two monetary aggregates (M2 or M1) may be a poor proxy in economies with underdeveloped financial systems because they "are more related to the ability of the financial system to provide transaction services than to the ability to channel funds from savers to borrowers"
Gross domestic savings **(GDS)**	The ratio of gross domestic savings to GDP
The interest rate margin (INT)	Measures the difference between deposit and lending rates in the banking market is used to measure the efficiency of the sector.
Institution	A legal and regulatory system involving protection of property rights, contract enforcement and good accounting practices has been identified as essential for financial development.

3.3 Method of analysis

In this subsection, we describe the methodology used to investigate the effect of economic growth and other variables on financial development in the selected SSA countries. As presented in more detail above, this paper utilizes panel regression method in general and fixed effects model estimation in particular. Most literatures suggest the ground for choosing which model (fixed effects or random effects) to use can be made depending on the objective of the study. In addition to this, it is also frequently recommended to undertake Hausman test.

This test takes as a null hypothesis that if the individual effects are random, the estimators should be similar, because they are consistent. On the other hand, in the alternative hypothesis, the estimators differ. The idea of Hausman test is simple: The hypothesis formation is done as follows:

$$H_0: cov\ (X_{it}, \alpha_i) = 0$$

$$H_1: cov\ (X_{it}, \alpha_i) = 0$$

UnderH_0: both the fixed effect and random effect estimators are consistent

$$\hat{\beta}_{RE} \xrightarrow{p} \beta \qquad\qquad \hat{\beta}_{FE} \xrightarrow{p} \beta$$

Thus we can expect that $\hat{\beta}_{RE} \approx \hat{\beta}_{FE}$. however under H_0 only $\hat{\beta}_{FE}$ is consistent,
Therefore we reject H_0 if the difference between the two estimators is large enough.

Another way of extending the model is to allow that the intercept may change across individuals and time. This is carried out in order to incorporate possible variations in time over the individual. Another way of extending the model is to allow that the intercept may change across individuals and time. This decision for the specific case of this paper i.e. the interest of investigation fly between both individual country's' specific characters and other random variables may not be done solely based on the suggestion from the Hausman test. Therefore multilevel mixed effects model will be used. This model doesn't run regressions having lag values of the dependent variable as explanatory which is consistent with the pursuit of this paper. To mention, we used the STATA 12 package for the entire econometric stuff.

This paper applies both descriptive and econometric methods of analysis. The descriptive analysis part looks into the economic growth and financial development situations of the region focusing on the depth and efficiency of the financial institutions and markets. The econometric analysis part will be using panel regression over 5-years average data of the variables for those countries under this study.

CHAPTER FOUR- DATA ANALYSIS AND DISCUSSIONS

4.1 Stylized Facts on: Financial Development and Economic Growth Situation in Sub- Saharan Africa

4.1.1 Depth of financial system in sub Saharan Africa:

Financial depth, as literature reveals, is frequently measured in terms of size of the financial sectors-measured by monetary aggregates to GDP ratio and the level of activity or intermediation - measured by the ratio of credit provided to the private sector to GDP. The second measure, the volume of credit supplied to the private sector is a very good signal of the performance of the financial sector in pooling savings and supply for investment. Based on these two variables and their corresponding proxy measure, the financial depth in SSA region is blamed to be poor, comparing it with international standards. Table 1 shows that on average SSA countries continue to have shallower financial systems than other developing regions of the world. This evidence reflects, in particular, the performance of SSA MICs, recording an average M3 to GDP ratio of 45 percent in 2014 against around 65 percent elsewhere. The catch-up of SSA LICs, instead, appears broadly in line with other regions. This is likely to reflect a combination of small absolute size, low economic diversification and infrastructure weaknesses, which represent critical bottlenecks to the development of African financial markets above a certain size. The size of the financial sector is quite small, though it is growing substantially in the last decade.

Table 1: Indicators of financial development in terms of depth

Domestic credit provided by financial sector (% of GDP)			
	Average of 1995	average of 2004	average of 2014
SSA LIC	19.9	23.7	27.2
SSA MIC	42.3	48.2	48.6
Other LIC	24.7	28.8	33.8
Other MIC	43.2	43.6	60.7

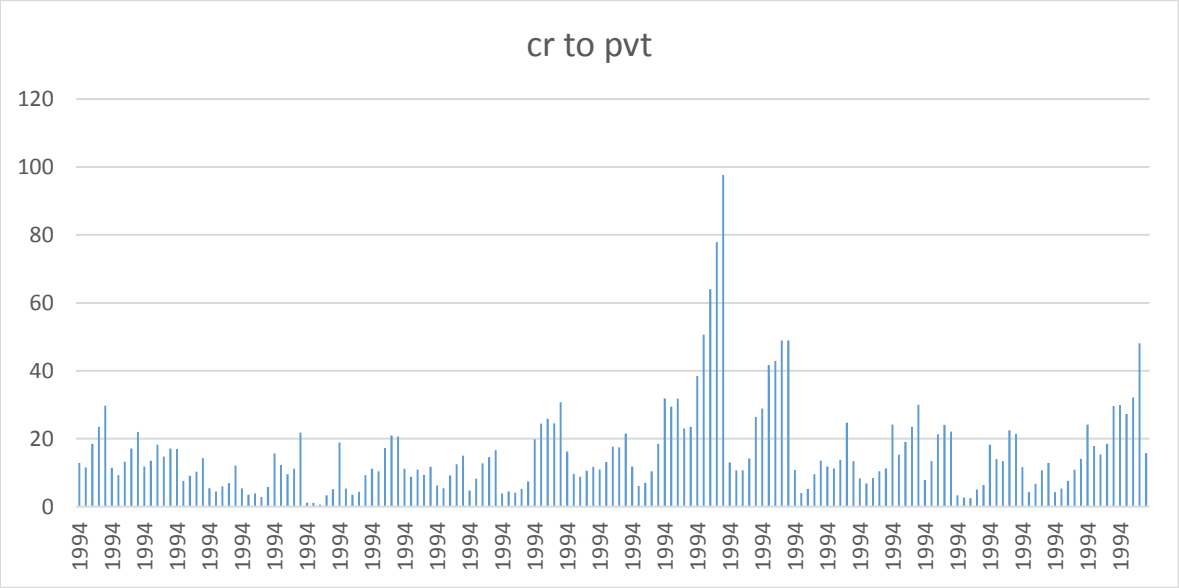
Money and quasi money (M3) as % of GDP			
	Average of 1995	average of 2004	average of 2014
AFR LIC	22.9	29.6	34.5
AFR MIC	34.5	40.4	44.9
Other LIC	28.2	33.2	49.8
Other MIC	43.0	50.8	64.6

LIC- Least income countries; MIC- middle income countries

Source: international finance statistics, IMF, own calculation.

The figure below shows the overall trend of the volume of total credit provided to the private sector. The highest value belongs to Mauritius around 97.6 and it's the average of the previous five years and calculated at the 1999 average. The lowest value is observed in D.R of Congo around 0.62.

Figure 1: level of credit to the private sector in five years average for 20 SSA countries



4.1.1.3 Efficiency of financial system in sub Saharan Africa:

Notwithstanding that there are many measures of scoping the efficiency of financial system in a given region or country, I use one standard proxy measure to gauge the efficiency in the region. The interest rate margin which is measured in terms of the difference between deposit and lending rates in the banking market is used to measure the efficiency of the sector. Based on this measure,

the African financial system is graded as uncompetitive in general and highly profitable to the depository institutions only.

Table 2 Efficiency indicators, 2004-2011

	Interest margin (% of assets)		Return on assets (before tax)	
	2004 (average)	2014 (average)	2004 (average)	2014 (average)
Low income countries in SSA	8.5	7.5	3.2	3.1
Middle income countries in SSA	6.7	5.7	2.3	2.6

Source: Global Financial Development Database, World Bank, own calculations.

As the table above shows, the interest rate margin remains very high in sub Saharan region. Essentially, the interest rate margin - its size has a very interesting entailment, it tells how well developed and so that how competitive the financial system is. Simply put higher margins imply lower development-lower competition. Conversely, lower margins imply higher development and tough competition. The interest rate margin has got also another very interesting implication on the transmission mechanism of monetary policy to the real sector. Depending on the size of this margin, when it is large it enables commercial banks absorb measures taken by the central banks and consequently impedes the transmission of monetary policy measures to the real sector. When this gap is small, as the commercial banks-depository institutions are not capable of absorbing the central bank's measure, the monetary policy would smoothly get transmitted to the real sector given other conditions are satisfied.

Generally, SSA financial systems remain underdeveloped. The overall depth and financial sophistication of the banking sectors in (SSA) are still low by global standards. The lack of financial depth in Africa is exemplified by the highly liquid and yet narrow banking sectors. The region's banking sectors are typically concentrated and generally inefficient at financial intermediation. They are constrained by their small size. Competition is still limited, albeit increasing. According to the World Bank's Financial Inclusion Database, only 34 percent of adults in SSA had a bank account in 2014, but this is up from 24 percent in 2011. Consequently, access to finance in sub-Saharan Africa, though expanding, remains among the lowest in the world and one of the key obstacles to the activity and growth of enterprises, especially micro, small and medium-sized enterprises.

4.1.2 Stylized Facts on Economic condition of sub Saharan Africa

The continent as a whole and the sub Saharan region in particular has been the most economically under-developed region of the world but the economies seem to be improving. Sub-Saharan Africa's economy is set to register another year of solid economic performance, expanding at 4½ percent in 2015. The region been experiencing high economic growth rates in recent years, significant government reforms and a rapidly expanding middle class. Development prospects for SSA remain promising, with real growth in SSA countries forecast by the IMF to be above 4 percent in 2015, a faster pace than for all other developing regions except China. However, the pace of growth for the region will be below the 4.4 percent annual average growth rate of the past two decades, as a marked slowdown in emerging markets has weakened demand for commodity exports from the region, with immediate negative effects on external and fiscal positions. Furthermore, once population growth is taken into account, the growth of real GDP per capita is forecast by the IMF to be 2.0 percent in 2015. In fact, relatively high population growth rates require GDP growth to accelerate in many SSA countries in order to create a sufficient number of jobs, particularly for young workers. This said, the expansion and the prospects will be at the lower end of the range registered in recent years, mainly reflecting the adverse impact of the sharp decline in oil and other commodity prices.

The effect of this shock will be quite heterogeneous across the region. The region's eight oil exporters will be hit hard and, with limited buffers, are expected to effect significant fiscal adjustment, with adverse implications for growth. For much of the rest of the region, near-term prospects remain quite favorable, with many countries benefiting from lower oil prices—although, for a number of them, this positive effect will be partly offset by the decline in the prices of other exported commodities. Notable exceptions are South Africa, where growth is expected to remain lackluster, held back by continuing problems in the electricity sector. Unluckily, Guinea, Liberia, and Sierra Leone, where the Ebola outbreak continues to exact a heavy economic and social toll, conditions might go worse, but now it is almost controlled. Having this flash about the region, in this subsection, first, we attempt to give some insight to the situation of economic growth by highlighting on the growth rate of real GDP, per-capita income (per-capita real GDP) and unemployment. Second, we present some broad overview of the macroeconomic stability of the region in terms of inflation.

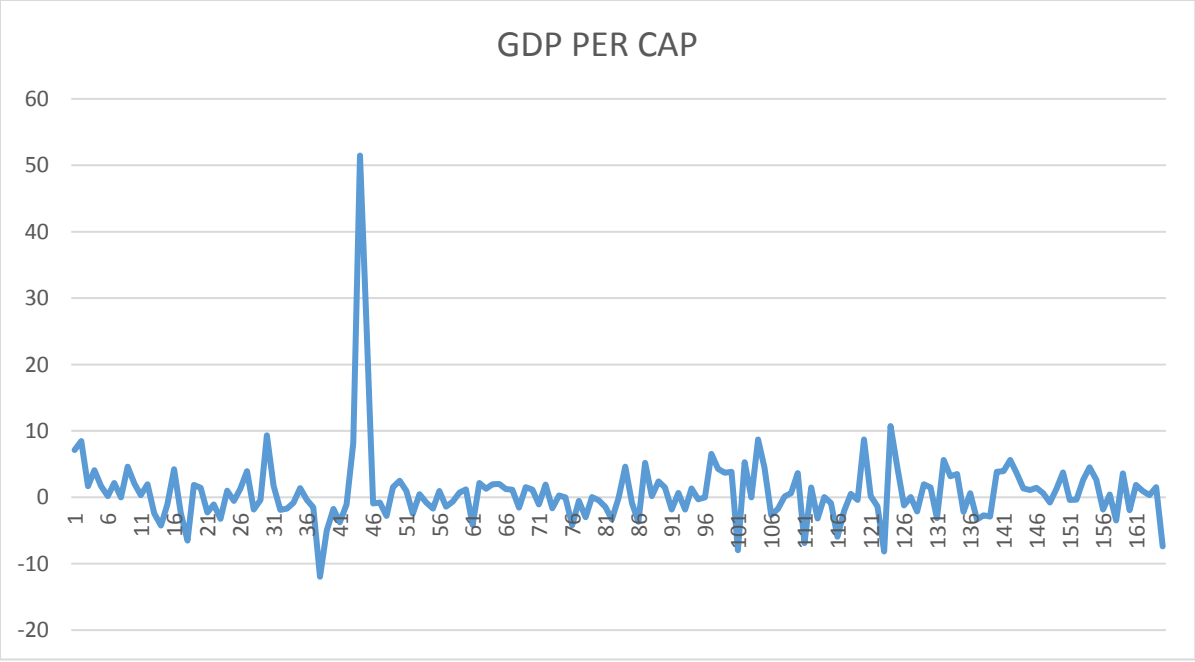
Economic growth: real GDP, per capita income and unemployment:

Somewhat interesting articulation of economic growth from Maddison (1970), with his own wording:

> …the rising of income level is generally called economic growth in rich-countries and in poor ones it is called economic development. …

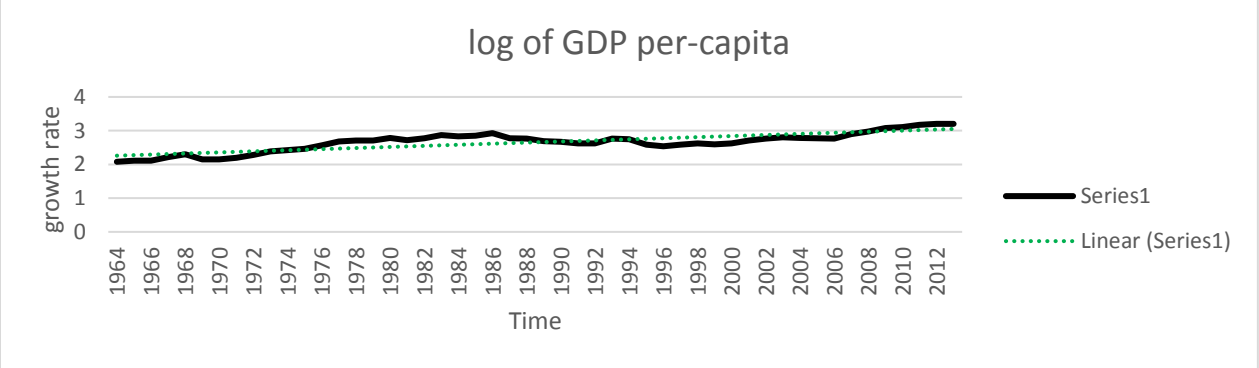
The per-capita income is one of the most widely used measures of economic growth, albeit the above stated misuse. Essentially, in social science particularly in economics there is no perfect measure, even closer to perfect; but economists tend to choose the best proxy among available means. Based on the measure of per-capita income, most of the SSA countries individually and the region as a group found at the underneath of international standards. As the figure below depicts some countries exhibit a very high growth rate while other with a negative growth rate. In the SSA region there is a clearly observed variation in the growth rate of the economy as a whole and particularly in the growth rate of percapita GDP. Some countries might have big economic size but low percapita GDP for instance, from the SSA region Nigeria and Ethiopia are the most populous countries being first and second respectively with big economic size and low GDP percapita.

Figure 2: trend in the growth rate of real GDP percapita in five years average



As shown in the figure below, the trend of per-capita real GDP for the region as a whole exhibits continuous growth. For the last 50 years, SSA region has achieved a continuous and smooth economic growth measured in terms of per-capita real GDP. The trend in the growth rate of per-capita real GDP initially exhibited sharp increase for the period from 1970 to 1985; but stayed unaltered-stagnated but fluctuating until 2008. In the last decade it was observed that a tremendous increases in per-capita-real GDP is registered.

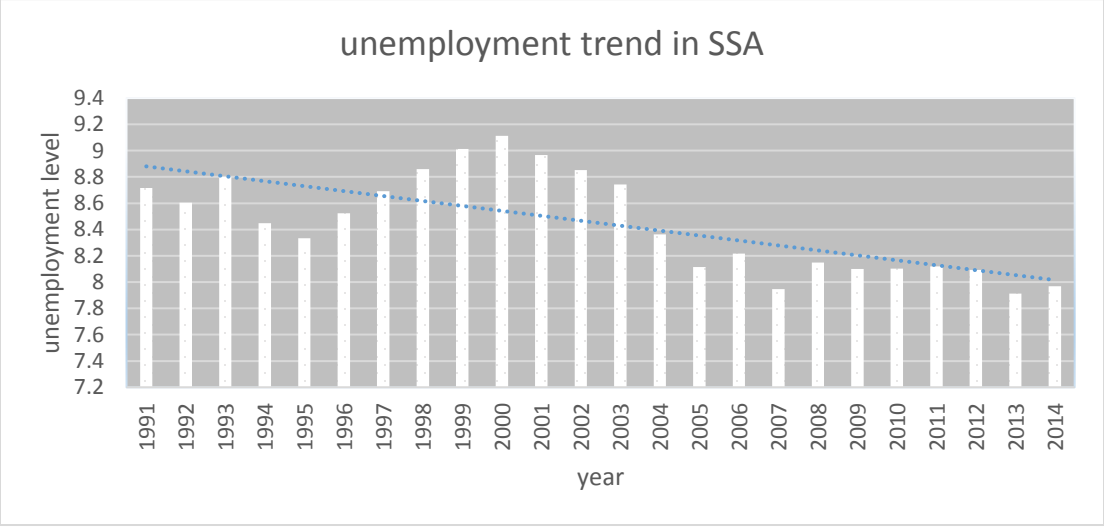
Figure 3: trend in the growth rate of real GDP percapita



Source: World Bank database: Global Financial Development, 2015

Poring our discussion to unemployment situations in SSA region, fact can easily be seen from the figure below.

Figure 4: unemployment trend in SSA



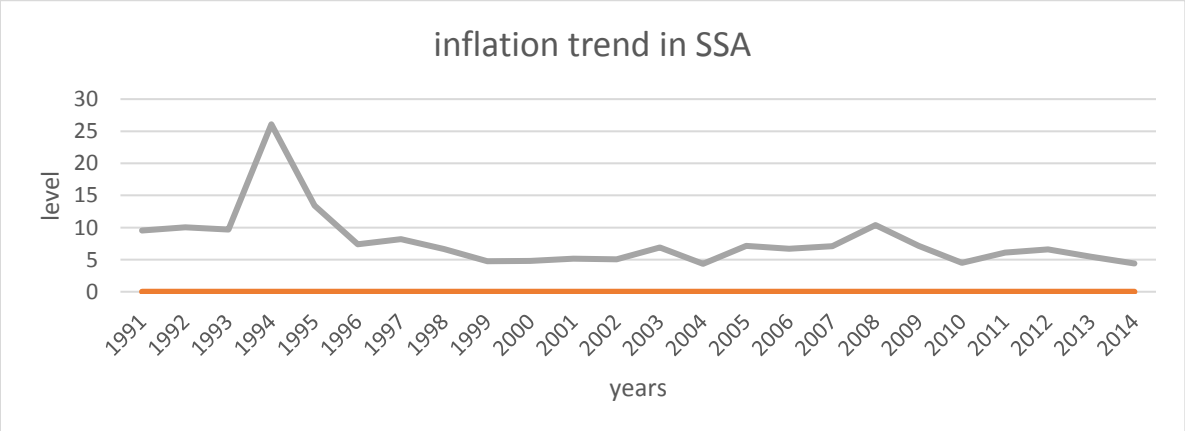
Source: World Bank database: Global Financial Development, 2015

The data depicted in the figure above refers to the crude but widely used measure of unemployment which refers to the share of the labor force that is without work but actively seeking for jobs. Based on this measure the SSA region as a whole has experienced a declining trend in the last three decades. The year 2000 was the highest and 2005 was the lowest. Whether it is the maximum or the minimum, the level of unemployment is not perturbing because our world has experienced more than threefold of this figure during the great depression and still this time it's a commonplace level of unemployment. The unparalleled fact here for this region is the people work but paid back less - lower than subsisting oneself with basic needs. The working poor is special name, sounds a perfect explanation of the imperfect living and distorted and distorted living standard of Africans.

Macroeconomic and political stability: Inflation

Inflation edged up in the first half of 2005, due in part to higher food prices, but remained in single digits in most countries. The uptick was most visible among frontier market countries that sustained large currency depreciations—notably Ghana, where inflation was in double digits (see Figure 3 below). In some countries (Ghana, South Africa), inflation rose above the upper limit of the central bank target range for 2014, prompting a tightening of monetary policy. Reduced real disposable income, due to inflation, and higher borrowing costs weighed on investor sentiment and kept household consumption subdued, slowing economic activity. However, low and declining commodity prices helped contain inflation in most countries in the region.

Figure 5: inflation trend in SSA



Source: World Bank database: Global Financial Development, 2015

Political stability: Sub-Saharan Africa is a continent of young nation states, as most countries gained their independence from European colonizers between 1960 and 1980. Autocratic regimes and civil strife were widespread in the first part of the post-colonial period. Many countries subsequently introduced multi-party political systems in the early 1990s and stability has improved since. This progress should be conducive to economic and political development since political instability is detrimental to economic growth and self-reinforcing. Sub-Saharan Africans have managed to bring down the number of armed conflicts. Combined with a lower number of coups - from twenty per decade in the period 1960-2000 to six in the 2000s and four so far in this decade - this has contributed to greater stability and stronger states. According to the State Fragility Index, most African countries have improved their resilience since 1995, bar a few exceptions such as Uganda. But stability is fragile and risks are still high. Nevertheless, Sub-Saharan Africa comes from a low base and stability cannot be taken for granted. Despite improvement, there are still a significant number of armed conflicts and the risk of cross-border contamination is high as most countries have a conflict-torn neighbor. Moreover, there have still been spikes of violence, sometimes widespread, in recent years and even in more stable countries.

Descriptive statistics:

The table below presents the descriptive statistics for all the variables used in the study. SSA countries differ considerably in real per capital GDP (labeled gdppcap). The maximum per capita GDP[17] ($3423.81) is registered by the Republic of South Africa in the period (1990-2014) while minimum ($105.52) is that of Burundi, between 1999 and 2003. However, as we can see from Figure below, all countries in the sample except Botswana, the Republic of Congo, the Republic of South Africa, and Swaziland, have a per capital GDP of less than $1000, leading to mean of $551.13.

SSA countries also show a considerable variation in the calculated gross capital formation (Gcapitalf), where Burundi (1990-2014) has the lowest value of $22.04 and South Africa (1990-2014) has the highest of $5977.03. Nevertheless, only the Republic of Congo and South Africa

[17] All values of per capita GDP and per capita capital in this paper are real values measured at constant 2000 US $ values.

have an average per capita capital of well over $2000 rendering the average value to a low of $1014.247.

Regarding the dependent variables, the logarithmic value of financial development indicators, varies from a low of 1% in Chad (1990-2014) to a high of 60.69% in Botswana (1990-2014). In general, however, the growth rate seems to be symmetrically distributed. Table 3: summary statics of variable.

variable	mean	sd	min	max	skewness	kurtosis
crtops	18.57113	15.59697	2.432094	97.64912	2.392621	10.52935
m2togdp	28.3883	17.37201	7.596033	100.4724	2.23219	8.774544
nimargin	10.5428	7.687211	1.634	59.46041	3.818772	22.03483
gdppcap2	10.69056	6.657984	0.999997	60.64259	4.737989	34.59306
gdppercap	1.51411	6.657984	-8.17645	51.46614	4.737989	34.59306
openness	77.97641	63.15834	26.89666	440.7405	3.228117	15.84264
gdsaving2	70.22091	17.17022	0.999831	142.7116	0.77172	9.271214
gdsaving	10.29891	17.17022	-58.9222	82.78963	0.77172	9.271215
gcapitalf	23.2511	21.09385	3.958172	179.8639	5.178137	34.92551
inflation	98.08844	859.371	1.019133	8603.275	9.840313	97.891
totpop	1.76E+07	2.90E+07	404686.2	1.68E+08	3.489216	15.74588

Hypothesis that GDPPCAP is normally distributed at 4% level of significance. The level of significance should obviously have increased, if we had not had those few extreme values. This reflects the so-called ‘tragedy’ that SSA has not only the lowest income level but also the lowest growth rate (Levine R. , 1997).

On the other hand, the logarithmic per capital growth, ranges from -29% in Cote D’Ivoire (1990-2014) to 94% in Gambia (1990-2014) whereas Chad has both the lowest (-30% in 1990-2014). Though generally low, there is also a significant variation in CREDIT (credit to the private sector as a percentage of GDP) across countries ranging from a low of 0.02% in Togo in the period 1990-2014 to a high of 64% in South Africa in the year 1990-2014. As we can see from table above, no country has a ratio of more than 40% except South Africa and the mean is a very low value of 15%.

Notwithstanding the fact that it shows a fairly sustained increase in almost all countries (see Appendix), literacy tare is still very low with a mean rates of 60%. Countries also differ in their

degree of openness to international trade with Swaziland (1990-2014) and Ghana (1990-2014) taking the highest (173%) and the lowest (10.5%) levels, respectively. Government size is quite smaller in our sample of countries as the mean share of government expenditure to GDP 15% with a low of about 6% and a high of 50% (Mauritania, 1990-2014). Finally, the average inflation rate is about 14% where both a negative (-2.6% in the Republic of Congo, (1990-2014)) and a very high (131% in Zimbabwe, (1990-2014)) rate have been observed.

As in the case for most macro-economic data, our variables are not normally distributed (see Appendix). One common way of accounting for the problem of extreme values and non- normality is transforming the levels into logarithms. The transformation improved the distribution of GDP, government size and openness while the distribution of inflation and CREDIT remained asymmetrical (see Appendix). However, since literacy rate was a bit normal in levels, taking the logarithmic value worsens the distribution. Hence, in the ensuing regressions, we use the logarithmic values of all explanatory variables. Because some of the variables are not still normally distributed, conclusions from this pare should be seen in some sense of caveats, however. (The detail of the discussion are exhaustively presented at the appendix).

The correlation coefficient matrix:

Table 4: the correlation matrix among the variables under study:

	lncrtops	lnbrdmny	lninrmar	lngdpp~p	lnopen~s	lngdom~v	lngcapf	lninfla	lntpop
lncrtops	1								
lnbrdmny	0.8455	1							
lninrmar	-0.2459	-0.1225	1						
lngdppcap	0.067	0.0419	-0.075	1					
lnopenness	0.298	0.1804	-0.1282	0.3875	1				
lngdomsav	0.1335	0.1299	-0.1271	0.2462	-0.0357	1			
lngcapf	0.0577	-0.042	-0.0746	0.2961	0.4868	-0.2154	1		
lninfla	-0.0372	-0.0156	0.0012	0.0089	-0.1267	-0.0129	-0.2809	1	
lntpop	-0.1326	-0.0928	0.2001	-0.1969	-0.6691	0.1594	-0.3481	0.2242	1

4.2 Empirical Findings

As mentioned above, this chapter is separated in two parts; the first to pass-through the descriptive analysis part as discussed above and the second focusing on empirical findings which will be discussed in the forthcoming subsections. We have presented this part handily by attaching the

results with the corresponding objective. In this subsection finding from empirical diagnosis, interpretation, consistency with previous works, and the argument behind such finding and at last some concluding remarks are included under each objective -finding pairs.

Effect of economic growth on financial depth: Using mixed effects estimation for examining the effect of economic growth on the depth and efficiency of the financial system it was found that, there is a positive and significant relationship between financial development-measured in terms of broad money to GDP ratio and economic growth-measured in terms of per-capita real GDP (see table 3&4 below). The argument behind such empirical findings is that, high economic growth generates demand for some categories of financial instruments and arrangement; consequently, that financial market effectively responds to such changes in demand. This implies, the level of activity intermediated by the financial system, the credit supplied to the private sector and the competitiveness in the financial sector all respond to the increasing demand caused by economic growth. These empirical findings are consistent with early pioneer works of (Robinson, 1952), (Kuznet, 1955), and recent works like (Agbetsiafa, 2003), (Waqabaca, 2004) and (Odhiambo, 2004 and 2008), among many.

The Effect of domestic savings and investment on financial development:

Using the same measures of financial depth and efficiency, to analyze the effect of domestic savings-measured by gross domestic savings and level of investment-measured by proxy variable i.e. gross capital formation, the findings revealed an interesting. On one hand, the findings from the saving side shows a positive and significant relation between savings and financial depth. Basically, the financial institutions and markets those whom we were embarking on so far have a primary role of pooling savings and provide a flow of initial and working capital to investment. The sub Saharan region is characterized dominantly by low income earning population which looks for secondary sources for investing. Therefore, the increase in savings is positively related to the increased credit availability for the private sector and supply of money to the economy. In sum-up, from the empirical findings the two economic variables- savings and investment were found to be significantly and positively related to financial development on the study region. These finding are plausible, for one thing, they agree with the theoretical notion of the interaction between financial development and economic growth. Furthermore, they call for deep and strong research works in future investigations.

The effect of macroeconomic stability and trade openness on financial development:

In this part, the analysis was done to examine the effects of two variables i.e. macroeconomic stability and trade openness on financial development from depth and efficiency dimensions. The result from the mixed effect regression reveals that there is a direct and significant effect of macroeconomic stability and trade openness with financial depth which is measured in the same way by the two measures like above. Based on the first gauge of financial depth which is measures by credit made available to the private sector, at 10% significance level, the more the countries in the SSA region open their market for external trade the more will be the credit supplied to the private sector. When countries open their door for import and export, it allows for capital inflow-increases availability of capital for further production and sell in the international market. The same positive relation is also found between how broad the monetary base is and trade openness (see table 5&6 below). When we come to the efficiency dimension, the more open is the country's door for external trade and as foreign financial institutions join domestic markets, the tight will be the competition equivalently the higher will be the efficiency of the financial system. Centering on macroeconomic stability, measured in terms of inflation, the direction of relation is indirect and significant with the financial depth measure of credit supplied to the private sector but not significant with measure of broadness.

Table 5: regression result on financial depth by credit provision to the private sector

lncrtops	Coefficients.	Std. Err.	z	P>z	[95% Conf.	Interval]
gdppcap2	-0.0300596	0.0148061	-2.03	0.042	0.0590791	-0.0010402
lngdomsav	0.2705253	0.1616044	1.67	0.094	-.0462135	.5872641
llckd	0.0764555	0.1587768	0.48	0.63	-.2347412	.3876523
openness	0.0029481	0.0015396	1.91	0.056	-.0000695	.0059657
french	-0.5794795	0.1743886	-3.32	0.001	-0.9212749	-0.2376842
british	-0.4760481	0.2098147	-2.27	0.023	-0.88728	-0.0648188
lninfla	-0.0652564	0.0638711	-1.02	0.307	-.1904416	.0599287
_cons	2.133534	0.7257417	2.94	0.003	.7111066	3.555962
Parameters		Estimate	Std. Err.		[95% Conf. Interval]	
sd (Residual)		0.6762888	0.0478208		.5887666	.7768215

The effect of institutions, demographic situations and geographical location on financial development:

This section presents the findings from the analysis of examining the effect of institutional development explained in terms of origination of the legal system, geographical location described with the availableness of sea door or not and finally demographic situations. We see each turn by turn. Amazingly all the institutional dummies were significant in effect and inversely related to the development of the financial system. One explanation for this fact might be related to adaptation problem while trying to harmonize this imported legal systems with domestic environment. As a matter of fact these legal systems are found to be efficient when they are implemented and evaluated back in original countries for reasons which most likely go beyond the interest of the people. However, we have some unique fact here in the sub Saharan region where heterogeneity is a commonplace and the ineffectiveness of these legal systems might be blamed on that. Centering the interpretation to effects of geographical factors, it is revealed that countries having sea door are found to be in a better financial system as compared to those who do not have sea doors (see table 3&4). One straight point here is that, a country with sea door has to serve itself for trading abroad and others to make trading through renting ports of proprietors, all this process handles transactions, intermediation by financial institutions. This high demand for financial services will induce high growth in both quantity and quality of financial services which will take it to tough competitions; finally end up being efficient. The effect of having sea door or no didn't show a significant relation with the availableness of credit to the private sector. One remark to be noted here having sea door is not a guarantee for developed financial system. The regression results bring out this fact (for further reference see table 5 below). The last variable to be considered for the query under this objective is whether the demographic situation in the countries promotes the development of financial system or appear as an obstacle. Theoretically higher population has two different dimensions in affecting economic variables. The first is it increases demand at least for basic goods which will in turn induce for more investment and further to increased demand for credit by private sector investors. The other way is related to economic dependency which is expected to be high in large populations (high birth rate) and consequently lower saving. Combining the two views one may think that there will be an imbalance between the demand for credit and supply of credit. This causes the net interest margin to be higher as it will increase the lending rate. The above interaction is based on the fact that the countries in this region are mostly

characterized by lack of financial capital. Concluding on this point, the result takes two different forms: the first is direct relation with financial depth and the second is indirect relation with efficiency of the financial system. The evidence from the mixed effects regression is consistent with this fact. Demographic situations explained in high birth rate and higher population features are positively related to financial depth property but negatively related to financial system efficiency. For the detailed numerical result see table 3, 4&5 below.

Table 6: Regression result on financial depth by broad money

lnbrdmny	**Coefficients**	**Std. Err.**	**z**	**P>z**	**[95% Conf. Interval]**	
lngdppcap	0.2329997	0.135895	1.710	0.086	-0.0333496	0.4993491
gdppcap2	-0.0116989	0.0134937	-0.870	0.386	-0.0381461	0.0147483
gdsaving2	-0.0108426	0.0055271	-1.960	0.050	-0.0216755	-9.65006
lngdomsav	0.3417273	0.1538729	2.220	0.026	0.0401419	0.6433126
french	-0.5799404	0.1141968	-5.080	0.000	-0.8037619	-0.3561188
british	-0.4765306	0.1281613	-3.720	0.000	-0.7277221	-0.2253391
llckd	-0.1330906	0.1021307	-1.300	0.193	-0.3332631	0.0670819
lninfla	-0.062489	0.0403702	-1.550	0.122	-0.1416132	0.0166351
_cons	2.715868	0.4970514	5.460	0.000	1.741665	3.690071
Parameters		Estimate	Std. Err.		[95% Conf. Interval]	
Sd (Residual)		0.4262608	0.0301412		.3710961	.489626

The effect of economic growth, savings, investment, institutions, demographic situations and geographical location on efficiency of financial system:

The same method of estimation technique used and the findings bring out a negative and significant relation between the efficiency of the financial system-measured in terms of net interest rate margin and economic growth-measured as usual. Arguments put down for this result is that, the SSA regions is economically underdeveloped but growing faster and on the other hand there exists a limited supply of financial services. Consequently, the mismatch between these two-created at initial stage of economic growth where there would be imbalance between the demand for and

supply of financial services- might potentially has caused the inverse relation (see table 5 below). Though to be give more credible findings, deeply analyzing the determinants of the interaction between the efficiency of the financial system and economic growth, it begs further research.

The findings from the investment side brings out indirect relation with the efficiency of the financial markets in SSA (see table 5 below). The explanation for this result is simple; the increase in investment in terms of increased gross capital formation induces demand for investing more (at least in poor regions-like SSA) and this results in increased demand for credit by the private sector to invest more and finally the change in the net interest rate margin (that depends on change lending rate relative to the depositing rate) may not be estimated accurately.

The efficiency of financial system is significantly affected by inflationary pressure but the direction is direct. The argument given to this finding may be, in the existence of macroeconomic instability the interest rate charged by the bank on private sector borrowers tend to be higher than in the case of stable environment. This is one evidence for the SSA region to exhibit higher inflationary pressure and simultaneously higher net interest rate margin (see table 5 below).

Geographical location measured in terms of having sea door has a direct and significant relationship with the efficiency of the financial system. The set of legal origins, those which are adopted from France and British were found to be highly significant but with negative effect; this might be put down to the problem of harmonizing the existing situations with the adopted legal systems (mind that heterogeneity is a commonplace in SSA). The effect of having sea door or no didn't show a significant relation with the availableness of credit to the private sector. One remark to be noted here having sea door is not a guarantee for developed financial system. The regression results bring out this fact (for further reference see table 5 below). Concluding on this point, the result takes two different forms: the first is direct relation with financial depth and the second is indirect relation with efficiency of the financial system. The evidence from the mixed effects regression is consistent with this fact. Demographic situations explained in high birth rate and higher population features are positively related to financial depth property but negatively related to financial system efficiency. For the detailed numerical result see table 7 below.

Table 7: Regression result on financial efficiency by net interest rate margin

lninrmar	Coefficients.	Std. Err.	z	P>z	[95% Conf. Interval]	
lngdppcap	-0.1525118	0.169113	-0.9	0.367	-.4839672	.1789436
llckd	0.1172059	0.1248952	0.94	0.348	-.1275841	.3619959
french	0.144995	0.1353622	1.07	0.284	-.12031	.4103001
british	0.2210389	0.1601411	1.38	0.168	-.092832	.5349097
gdsaving	-0.003482	0.0043374	-0.8	0.422	-.0119831	.0050191
gdppercap	0.0139437	0.0157746	0.88	0.377	-.0169739	.0448613
_cons	2.398072	0.3954656	6.06	0.000	1.622974	3.17317
Parameters		Estimate		Std. Err.	[95% Conf. Interval]	
sd (Residual)		0.5329642		0.0376863	.4639904	.6121912

CHAPTER 5-CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

This investigation on the effects economic growth and other variables - those which are presumed to have a significant relationship with growth - on financial development in 20 selected SSA countries was undertaken using mixed effect estimation method. The probe on this issue will wrapped up based on the findings from both descriptive and empirical analysis using data entirely from the World Bank data base. The data covers the period from 1990 to 2014 and was set to longitudinal form by taking averages of five years.

The existing data (from the World Bank) concerning financial development reveal that, the financial system in sub-Saharan Africa is relatively less developed and diversified compared to other regions of the world. The selected SSA countries lagged behind in all the measures of financial development when compared to the various regions of the world. Overall the inefficient and traditional banking system, infant and shallow-coverage insurance companies, newbie micro-finance institutions and stock markets and solely government-led bond markets are explaining features of financial development in SSA. The overall depth and financial sophistication of the banking sectors in (SSA) are still low by global standards. The region's banking sectors are typically concentrated and generally inefficient at financial intermediation. They are constrained by their small size; dominated by traditional banking and informal finance and still dominated by government owned commercial banks. The overall efficiency of the financial system is inefficient; competition is still limited, albeit increasing.

The economic growth of the SSA economies, based on the data from World Bank, neither has not measured up to the facts disclosed by the politicians in the respective countries nor with expectations drawn from the reforms and transformation plans. The economic growth rate has not been impressive. The GDP growth rates for many of the countries in SSA are far below 5 per cent. This growth rate has once boomed up approximately to 10% for the region as a whole but for the rest of the years in the last 3 decades it rounds around 5%. The same notion but somehow better

measurement is the percapita GDP, it is still quite low highlighting the poor standard of living among the region's people. The other issue raised here is the umbrella containing the economic growth itself is macroeconomic stability. This wide sphere is measured very narrowly – by inflation variable; the SSA region as a whole looks almost stable on this ground, nonetheless some individual country are suffering from stability tortures. Unemployment: another crude measure in the academic world, shows a declining trend throughout the last three decades. The stylized facts reveal that unemployment is not a problem of poor nations be it from Africa, Asia or Latin America. Rather the problem is, people have job and are named employed but neither enough wage is paid nor are the workers themselves productive enough.

In short, limited progress has been made by financial sector reforms in Africa towards improved savings mobilization and intermediation. As literature suggests many of the problems associated with the difficulties in the financial sector have their origins in the past poor administration of the region's economy as a whole and the financial sector in particular.

From econometric analysis using STATA-12 package, after we undergo all the necessary and relevant steps to, we arrived at the following conclusions:

- Based on the first enquiry, the effect of economic growth on financial development in SSA region - an issue well entrenched by previous works but still demanding some more investigations using recent data; it was found that there is strong relationship between the two main variables under this study. Thus, we reject the first hypothesis establishing evidences from our findings and we put down economic growth to have strong and positive effect on financial development.
- From the second query of this study – an investigation on whether there is a significant relationship between financial development and those economic variables which are presumed to have strong relation with economic growth – it was found that. … Therefore we reject the second hypothesis based on the findings from this analysis, consequently saving and investment have strong and positive relationship with financial development.
- According to the third query, to investigate the effect of macroeconomic stability, trade openness and demographic situation, it was found that the effect on financial development is a positive and significant for both macroeconomic stability and trade openness. The case for the effect of demographic situations is a bit different: it is positively related to financial

depth and negatively with the efficiency of the financial sector. Hence, it will not be possible on rejecting or accepting the corresponding hypothesis grounding on the findings of this study, but it highlights the need for further investigation.

- Finally, country specific characteristics geographical location, origins of legal codes have been found to have a significant effect on financial development. Being land-locked have a negative impact on financial development of the SSA countries. Under all regressions, the legal origin variables have no significant effect on financial development, though they have a negative sign.

To conclude, the above all findings are done drawn from macroeconomic perspective and even the data has passed through different transformations which all begs the preciseness, which in turn questions the generalizability of the results and credibility for policy options. In fact, it is not only the case for this study solely, rather is the case for most researches held on macroeconomic frameworks.

5.2 Recommendations

The summary of the previous section has identified which economic variables have significant effect on financial development. Based on these findings we forward the following policy options as a recommendation:

- Further opening up of the financial sectors of these economies would no doubt enhance the efficiency of the sector with positive effect on their growth rates and economic growth as well.
- The monetary and fiscal policy makers in most countries of the region shall work cooperatively to reinforce each other's outcome. Not necessarily prescribing independency of monetary authority basically this doesn't lie scope of this study. Once we have identified which variables are found to have a significant effect on the financial development of the countries in the sub Saharan Africa, the next step is to set an operational targeting which we can influence directly, and upon monitoring some intermediate targets finally achieve the final targets.
- The government of the countries in the region has to intensify efforts on policies that will enhance growth which will in turn improve financial sector development of the economy.

- A general approach toward strengthening of these factors may also help to reduce deficiencies in financial systems, so countries in SSA may benefit from financial deepening in the future. Such an approach should also help countries in SSA to gain more from trade openness.

- Finally, it is important to note that presently many of the reforms are now being implemented in some SSA countries. However in spite of the reforms, anecdotal evidence still suggests that financial systems remain relatively underdeveloped compared to other regions of the world. Hence, one could say that the findings of the study are still highly relevant for the present situation in the selected countries.

All the above bulleted conclusions and the recommendations as well finally begs for deep and robust analysis of each of the topics raised in this paper from microeconomic perspectives, so that the expectation of the governments and peoples of the region are realized. Therefore, we finally suggest that far reaching measures coupled with stable macroeconomic environment and good governance must be ensured for the financial sector reforms to yield appropriate fruits in the region.

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Appendixes

1. Summary of descriptive statistics on the variables under study:

variable	mean	sd	min	max	skewness	kurtosis
crtops	18.57113	15.59697	2.432094	97.64912	2.392621	10.52935
m2togdp	28.3883	17.37201	7.596033	100.4724	2.23219	8.774544
nimargin	10.5428	7.687211	1.634	59.46041	3.818772	22.03483
gdppcap2	10.69056	6.657984	.9999967	60.64259	4.737989	34.59306
gdppercap	1.51411	6.657984	-8.176454	51.46614	4.737989	34.59306
openness	77.97641	63.15834	26.89666	440.7405	3.228117	15.84264
gdsaving2	70.22091	17.17022	.9998314	142.7116	.7717202	9.271214
gdsaving	10.29891	17.17022	-58.92217	82.78963	.7717204	9.271215
gcapitalf	23.2511	21.09385	3.958172	179.8639	5.178137	34.92551
inflation	98.08844	859.371	1.019133	8603.275	9.840313	97.891
totpop	1.76e+07	2.90e+07	404686.2	1.68e+08	3.489216	15.74588

2. Summary of descriptive statistics under the three estimation techniques.

Variable		Mean	Std. Dev.	Min	Max	Observations
lnbrdmny	overall	3.208137	.5091994	2.027626	4.609883	N = 100
	between		.4490586	2.3963	4.452744	n = 20
	within		.2564723	2.452601	4.044348	T = 5
lninrmar	overall	2.194954	.5500117	.491031	4.085311	N = 100
	between		.3707349	1.551483	2.81909	n = 20
	within		.4130639	.4727053	3.830307	T = 5
lncrtops	overall	2.646954	.7479055	.8887525	4.58138	N = 100
	between		.6916713	1.299868	4.134175	n = 20
	within		.3166752	1.950592	3.672313	T = 5
gdpper~p	overall	1.51411	6.657984	-8.176454	51.46614	N = 100
	between		3.823359	-1.622008	16.23195	n = 20
	within		5.504662	-18.4656	36.74831	T = 5
inflat~n	overall	98.08844	859.371	1.019133	8603.275	N = 100
	between		394.0496	2.796183	1772.019	n = 20
	within		767.8002	-1671.6	6929.345	T = 5
llckd	overall	.25	.4351941	0	1	N = 100
	between		.4442617	0	1	n = 20
	within		0	.25	.25	T = 5
british	overall	.2	.4020151	0	1	N = 100
	between		.4103913	0	1	n = 20
	within		0	.2	.2	T = 5
french	overall	.55	.5	0	1	N = 100
	between		.5104178	0	1	n = 20
	within		0	.55	.55	T = 5
other	overall	.25	.4351941	0	1	N = 100
	between		.4442617	0	1	n = 20
	within		0	.25	.25	T = 5
lnpop	overall	15.76339	1.463162	12.91087	18.94153	N = 100
	between		1.481402	13.24242	18.68132	n = 20
	within		.1869766	15.39543	16.09584	T = 5

.

3. Regression result on the natural log credit supplied to the private sector:

lncrtops	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
lngdppcap	.011042	.0810211	0.14	0.892	-.1477565	.1698405
lnopenness	.4167298	.1858268	2.24	0.025	.0525159	.7809436
lngdomsav	.0335356	.0888397	0.38	0.706	-.140587	.2076581
lngcapf	.2461819	.1276045	1.93	0.054	-.0039183	.4962822
lninfla	.0479503	.0459378	1.04	0.297	-.0420861	.1379866
lntpop	.154119	.0954873	1.61	0.107	-.0330326	.3412706
laglncrtops	0	(omitted)				
_cons	-2.517028	1.958793	-1.28	0.199	-6.356192	1.322136
sigma_u	.58317506					
sigma_e	.32477575					
rho	.76327242	(fraction of variance due to u_i)				

4. Regression results on natural log of broad money

lnbrdmny	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
laglnbrdmny	0	(omitted)				
lngdppcap	.0109619	.0630367	0.17	0.862	-.1125878	.1345117
lnopenness	.3387783	.1444089	2.35	0.019	.055742	.6218146
lngdomsav	-.0634119	.0691259	-0.92	0.359	-.1988961	.0720724
lngcapf	.0153089	.0992288	0.15	0.877	-.179176	.2097938
lninfla	-.0069713	.0357287	-0.20	0.845	-.0769982	.0630556
lntpop	.2149113	.0740094	2.90	0.004	.0698556	.359967
_cons	-1.381361	1.520377	-0.91	0.364	-4.361246	1.598524
sigma_u	.38226124					
sigma_e	.21424069					
rho	.76097063	(fraction of variance due to u_i)				

5. Regression results on natural log of net interest margin:

lninrmar	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
laglnlninrmar	0	(omitted)				
lngdppcap	.0159367	.1043635	0.15	0.879	-.1886121	.2204855
lnopenness	.1774225	.1831794	0.97	0.333	-.1816026	.5364476
lngdomsav	-.1547135	.1150044	-1.35	0.179	-.3801179	.070691
lngcapf	-.169281	.1433036	-1.18	0.237	-.4501509	.1115888
lninfla	-.0244213	.0538403	-0.45	0.650	-.1299464	.0811038
lntpop	.1311748	.0712096	1.84	0.065	-.0083934	.270743
_cons	.5553055	1.69317	0.33	0.743	-2.763247	3.873857
sigma_u	.30217783					
sigma_e	.44144022					
rho	.31906894	(fraction of variance due to u_i)				

6. Results from dynamic panel regression of Arellano, Bond estimation technique:

```
. xtabond lninrmar lngdppcap lnopenness lngdomsav lngcapf lninfla lntpop, lags(1) artest

Arellano-Bond dynamic panel-data estimation  Number of obs         =        60
Group variable: ctrnum                       Number of groups      =        20
Time variable: obsrvn
                                             Obs per group:    min =         3
                                                               avg =         3
                                                               max =         3

Number of instruments =     13               Wald chi2(7)          =      3.16
                                             Prob > chi2           =    0.8697
One-step results
```

lninrmar	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
lninrmar						
L1.	-.2001248	.2606801	-0.77	0.443	-.7110485	.3107989
lngdppcap	.0131413	.1271703	0.10	0.918	-.2361078	.2623905
lnopenness	-.0974204	.3332272	-0.29	0.770	-.7505337	.5556928
lngdomsav	-.0341641	.1118978	-0.31	0.760	-.2534799	.1851516
lngcapf	-.2981274	.2284454	-1.31	0.192	-.7458722	.1496174
lninfla	-.0047223	.0727634	-0.06	0.948	-.147336	.1378914
lntpop	.0516009	.4381393	0.12	0.906	-.8071363	.9103381
_cons	3.322852	5.927935	0.56	0.575	-8.295687	14.94139

```
Instruments for differenced equation
        GMM-type: L(2/.).lninrmar
        Standard: D.lngdppcap D.lnopenness D.lngdomsav D.lngcapf D.lninfla D.lntpop
Instruments for level equation
        Standard: _cons
```

7. The correlation matrix of variables under study:

	lncrtops	lnbrdmny	lninrmar	lngdpp~p	lnopen~s	lngdom~v	lngcapf	lninfla	lntpop
lncrtops	1.0000								
lnbrdmny	0.8455	1.0000							
lninrmar	-0.2459	-0.1225	1.0000						
lngdppcap	0.0670	0.0419	-0.0750	1.0000					
lnopenness	0.2980	0.1804	-0.1282	0.3875	1.0000				
lngdomsav	0.1335	0.1299	-0.1271	0.2462	-0.0357	1.0000			
lngcapf	0.0577	-0.0420	-0.0746	0.2961	0.4868	-0.2154	1.0000		
lninfla	-0.0372	-0.0156	0.0012	0.0089	-0.1267	-0.0129	-0.2809	1.0000	
lntpop	-0.1326	-0.0928	0.2001	-0.1969	-0.6691	0.1594	-0.3481	0.2242	1.0000