



FINANCIAL LIBERALIZATION, FINANCIAL DEVELOPMENT AND ECONOMIC PERFORMANCE: THE SUB- SAHARAN AFRICAN EXPERIENCE

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Abstract

Financial Liberalization and Financial Development have gained grounds in the provision of green light in directing economic performance in advanced economies of the world today. Therefore, this paper aim at investigating into the extent to which these drivers of economic performance among others have been able to enhance the present levels of economic performance in Sub-Saharan African Countries using the Arellano and Bond Panel GMM estimators, to examine the causality between financial liberalization, financial development and economic performance. The data collected from World Development Indicators ranging from 1980

to 2016 due to availability of data. The findings reveal that there exist long run causality between financial liberalization, financial

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development and economic performance in Sub-Saharan African countries. Specifically, the paper observes a negative causal link between financial liberalization and financial development in Sub-Saharan Africa. Furthermore, it confirms the fact that in Sub-Saharan Africa, financial development negatively influence economic performance but economic performance positively influence

financial development. The paper also confirms that financial liberalization positively influence economic performance while economic performance negatively influence financial liberalization. These finding are the true reflection of Sub-Saharan African countries and their low levels of financial development as well as their dependency. Based on the above, we recommend financial discipline in Sub-Saharan Africa and guided financial liberalization practices as a spring board for economic performance.

Introduction

There is high rate of increasing interest in the issues associated with the effects of financial liberalization and financial development on economic performance in Africa and beyond. For instance, Fowowe (2002), Oshikoya (1992), Odhiambo (2009), Obamuyi (2009), Charlie and Oguie (2002), and Seck and El Nil (1993) have investigated into the effect of financial liberalization, financial development and economic performance in some selected African countries African countries of their choices and arrived at mixed conclusions. Previous empirical studies on this subject suffer from series of limitations. First, the majority of the previous studies on this subject have attempted to examine the direct relationship between interest rate reforms and economic growth and based on the used of the Ordinary Least Squares(OLS) technique (Odhiambo, 2011) affirms that such relationship is indirect.

Interest rate liberalization affects economic growth among other things, through its influence on financial deepening and savings. Fully liberalized financial systems featured by minimum or no government control in the credit market, free entry and exit of financial institutions, bank autonomy, withdrawal of government shares from financial institutions, interest rate flexibility, free international capital movement–contribute most to the resources mobilization and allocation process in the economy (Mahar and Williamson, 1998). Conversely, financial repression is featured by controlled interest rate in the face of high and unstable inflation, controlled and directed credit to government favored sectors, and little or no competition in the financial markets. McKinnon and Shaw (1973), in their works on the efforts in financial sector reforms, are pioneers who illuminated the financially impounded economies and got the economic units to be valorous enough to break the chains of repression. Afterwards, many developed, developing, and least

developed economies in the world, underwent the process of financial reforms and eventually gained kaleidoscopic experiences. Many countries fostered their economic growth and efficiency; at the same time, many others got frustrating results by facing a financial crisis and halted economic growth.

The analysis of a vast volume of theoretical literature has revealed the scope of liberalized financial intermediation as a significant determinant of economic growth rate. Earlier literatures by many scholars such as Patrick (1966), Cameron (1967), Goldsmith (1969), McKinnon (1973) and Shaw (1973) explained the role of financial institutions in the credit supply process in the economy. Their explanations were buttressed by the strong positive relationship between the extent of financial development and economic growth. Goldsmith (1969), pointed out how efficiency of investment contributes to financial development; McKinnon and Shaw instead, asserted the role of contribution and functioning of financial post-reforms in achieving savings and investment growth. Pagano (1994), Sala-I-Martin (1992) and Guidotti (1992) stated that the achievement of high rates of economic growth in developing economies mainly depends on the functioning of efficient financial sectors. According to World Bank (1989), allocation of resources to the highest yielding activities is the most crucial function of an efficient financial intermediation system.

Greenwood J., (1989) and Smith (1991) argued in their studies that financial intermediaries reshape their savings composition for greater capital accumulation, thereby nourishing and raising economic growth. The effects of financial variables such as real interest rate and other monetary aggregates on economic growth were explored by some other studies using different models by Agarwala R.K (1983), Anderson D. (1987), Khatekhate D.R (1988), Gelb Alan H. (1989), Gallagher M. (1991), Odedokun M. (1992), and Sundararajan V. (1985, 1987) are not left out. Most of these studies tried to detect the contributions of financial liberalization on growth by taking into account the ratio of either money or credit to GDP or the real interest rate as the proxy of financial sector development. In reality, financial sector development is of a multidimensional perspective which is highly influenced by different variables in different ways. Moreover, these studies ignored the direct role of multidimensional financial reforms on economic growth and efficiency. Analyzing the relationship between various economic variables and real sector growth at a complex level is essentially required in designing financial sector reforms to obtain maximum benefit at the lowest cost.

In any case, financial liberalization remains a core element of policy reform in developing countries (Mishkin, 1999). Among some analysts, this reflects an overall belief in the virtues of free markets. More importantly, there is a widespread perception based on a fairly large body of scholarly work that financial liberalization promotes financial development, and that subsequently this deepening of the financial system stimulates economic growth. For instance, in his survey of the finance–growth nexus, Levine states: ‘Although conclusions must be stated hesitantly and with ample qualifications, the preponderance of theoretical reasoning and empirical evidence suggests a positive, first-order relationship between financial development and economic growth’ (Italics Added, 1997).

From the 1950s onwards, conventional policy advice held that governments in developing countries should actively promote development through massive interventions in the financial sector. By the early 1970s, this policy of so called financial repression came under severe criticism. Nevertheless, the actual experience with such reforms during the past two decades has been somewhat disappointing. Kirckpatrick and Green make the pertinent point that weak financial regulation, often as a consequence of over-hasty financial liberalization, has contributed directly to economic instability. For instance, the banking crises in Argentina and Chile in the early 1980s have been estimated to have caused losses in the order of 20–55 and 13–42 per cent of GDP, respectively (Cole and Slade, 1998). Moreover, in both cases losses appear to have been closer to the upper end of these ranges (Caprio and Klingebiel, 1996). Second, the cost of bailing out Venezuelan banks in the early 1990s is estimated to have reached 16 per cent of GDP, and the restructuring following the ‘Tequila Crisis’ in Mexico in 1994 probably amounted to around 12 per cent of GDP. Third, the recent Asian crisis implied bailouts for Thailand, Indonesia, and Korea in the order of 20–50 per cent of GDP (Calomiris, 1999). Finally, Caprio and Honohan (1999) reported that on an average, the cost of 59 banking crashes in developing countries during the period 1976–96 was 9 per cent of GDP (Goodhart et al., 1986).

The crises in the Southern Cone, Mexico, and the Asian region are all examples of what Kaminsky and Reinhart (1999) refer to as twin crises, i.e. crises with banking and currency problems, occurring in the wake of financial liberalization. Kaminsky and Reinhart also estimate that the probability of a banking crisis beginning, conditional on financial liberalization, is higher than the unconditional probability. This certainly suggests that twin crises have something to do with deregulation of the financial sector. The Kaminsky and Reinhart findings are supported by

econometric work by Demirgüç-Kunt and Detragiache (1998). They find that financial liberalization is a significant factor leading to banking sector fragility, and this effect is at work even after controlling for the state of the economy. These authors also test whether the effect of financial liberalization on banking sector fragility tends to be a transitional effect, i.e. whether it is noticeable only in the years immediately after the onset of the liberalization. This is not the case. Banking sector fragility emerges only over time.

By the late 1980's and early 1990's, against an unfavorable background of rapidly deteriorating economic and financial conditions, many countries in Sub-Sahara Africa undertook far reaching economic reforms. Within the framework of IMF and World Bank supported structural adjustment programs, these countries were to restructure their economies, in order to achieve private sector led growth, through a market based system (World Bank, 1994). Financial liberalization was a significant component of these reforms. Countries were to grant their central banks more autonomy in conducting monetary policy, liberalize interest rates, avoid or abolish the direct allocation of credit, implement monetary policy through indirect instruments, restructure and privatize banks and, more generally, develop and foster the environment for the proper functioning of financial markets (Mehran et. al 1998).

Today, almost a decade after their initiation, financial reforms appear to have affected the economies of Sub-Sahara Africa in a very little way (Aryeetey E., 1998). **Whether the blame is to fall on their initial design itself, or on the difficulties and partial nature of their implementation, liberalization policies have seemed insufficient in mobilizing savings, deepening intermediation through the financial sector, or raising investment. Yet, Africa needs properly functioning financial markets for a more efficient allocation of resources, and, perhaps more importantly, for a more efficient and economic performance, thereby inducing risk diversification. On these grounds, this paper seeks to investigate the causal link between financial liberalization, financial development and economic performance of Sub-Saharan African economies.**

Literature Review

The concepts under consideration in this paper are the concepts of financial liberalization, financial development and the concept of economic performance. **The concept of *financial liberalization* is defined as the removal of government intervention in the financial markets. Liberalization includes eliminating the**

restrictions such as bank interest rate ceilings; compulsory reserve requirements; barriers to entry, particularly foreign financial intermediaries; and credit allocation decisions. These policies reduce the government's interference in financial markets, leading to the privatizing of state-owned banks; introducing the convertibility of the currency on the capital account (i.e., capital account liberalization); improving prudential regulation; and promoting local stock markets. In the past three decades, both industrial and emerging market countries have moved toward this form of liberalization of their financial systems (Galindo et al, 2000).

The concept of *financial development* is about overcoming “costs” incurred in the financial system. This process of reducing the costs of acquiring information, enforcing contracts, and making transactions resulted in the emergence of financial contracts, markets, and intermediaries. Different types and combinations of information, enforcement, and transaction costs in conjunction with different legal, regulatory, and tax systems have motivated distinct financial contracts, markets, and intermediaries across countries and throughout history. Financial development thus occurs when financial instruments, markets, and intermediaries ease the effects of information, enforcement, and transactions costs and therefore do a correspondingly better job at providing the key functions of the financial sector in the economy.

It is practically difficult to measure financial development as it is a vast concept and has several dimensions. Empirical work done so far is usually based on standard quantitative indicators available for a long time series for a broad range of countries. These quantitative indicators include; ratio of financial institutions' [assets](#) to GDP, ratio of liquid liabilities to GDP, and ratio of deposits to GDP (World Bank's, 2013).

Economic Performance used in this paper is a macro-indicator that examines the overall performance of a country's economy and reports any deviation from the desired level of economic performance. Similar to the construction of GDP, which measures the overall output of an economy, the Economic Performance Index (EPI) reflects the active in the economy's three main sectors: households, firms, and government. The EPI comprises variables that influence all three sectors simultaneously: the inflation rate as a measure of the economy's monetary stance; the unemployment rate as a measure of the economy's production stance; the budget deficit as a percentage of total GDP as a measure of the economy's fiscal stance; and the change in real GDP as a measure of the

aggregate performance of the entire economy. An EPI score is calculated by taking a total score of 100 percent and subtracting the inflation rate, the unemployment rate, the budget deficit as a percentage of GDP, and, finally, adding back the percentage change in real GDP, all weighted and calculated as deviations from their desired values (IMF, 2013).

The *theoretical foundations* of this paper are the Mckinnon-Shaw Hypothesis (1973) and Financial Endogenous-Growth Models (Pagano, 1993).

Many of the theoretical arguments in favour of financial liberalization originate, as already alluded to, in the *Mckinnon-Shaw Model (1973)*. The McKinnon-Shaw (MS) model challenges the policy of financial repression, including the ceilings on interest rates, high reserve requirements, administrative credit allocation, and other government induced distortions, which were so prevalent in developing countries during the 1960s and 1970s. In particular, the MS-model puts focus on the negative effects of ceilings on deposit and loan rates. The basic argument is that financial repression in the guise of a ceiling on nominal interest rates will booth financial deepening and thereby economic growth.

The M-S hypothesis was refined by the model proposed by Edwards and Khan (1985) where they opined that liberalized as well as non-autarky factors affect the domestic interest rate of an economy with restricted capital account transactions. Edward and Khan (1985) began with specifying the standard Fisherian equation of nominal interest rates;

$$i_t = rr_t + \pi_t^e \dots \dots \dots (2.1)$$

Where; i = nominal interest rate; rr = real interest rate; π^e = expected rate of interest. In contrast to the temporary short-run disequilibrium of the Fisher's equation, the model assumed non-mean-reverting nature of the real interest rate; even in the short-run. As such, we have;

$$rr_t = \rho - eM_t^s + \varepsilon_t \dots \dots \dots (2.2)$$

Where; eM^s = excess money supply at a given period; ρ = positive parameter value and ε = random error term. Substituting for the real interest rates into equation (1), gives;

$$i_t = \rho - eM_t^s + \pi_t^e + \varepsilon_t \dots \dots \dots (2.3)$$

It is seen that the excess money supply is the excess of the actual stock of real money supply over the desired equilibrium stock of real money balance. An interest rate ceiling, leading to low or negative real interest rates, essentially has two negative effects. First, it reduces savings and hence the amount of loanable funds intermediated through the formal financial system. Second, low real

interest rates influence the marginal productivity of capital. Bankers have no incentive to ration credit according to marginal productivity considerations. Instead, they ration according to their own discretion, which in turn thwarts the efficient allocation of investible funds. High reserve requirements and directed credit programmes further intensify these detrimental effects.

In sum, the money supply model considers financial repression to be a disequilibrium phenomenon, which prevents markets from clearing and serving their allocative function in an optimal way. The policy implications are straightforward: liberalize the financial system, i.e. remove government induced distortions, and allow the market mechanism to determine the allocation of credit. Accordingly, policy measures have included the removal of interest rate ceilings and reserve requirements. Similarly, entry barriers have to be lowered, and foreign banks allowed in, government interference in credit allocation have to be scaled down, and banks and insurance companies have to be privatized on a grand scale. In a nut share stock markets have to be promoted.

In recent years, a second generation of models addressing some of the weaknesses of the MS-model has emerged, in particular the lack of explicit modeling of the link between financial and real sector variables. The main features of these so called **financial endogenous-growth (FEG) models** are the incorporation of endogenous financial structures as well as endogenous growth. By introducing a stochastic environment, FEG models can show how utility maximizing agents choose to form Pareto-improving financial intermediary structures. Moreover, by assuming the presence of some sort of externality leading to endogenous growth, FEG-models provide a bridge from financial development to long-run economic growth. This is because the MS-model is implicitly couched in the neoclassical growth model, an improved financial structure relates only to levels and transitional growth rates; not to steady-state growth rates. The latter are determined by exogenous technological progress. Thus, the early literature was, strictly speaking, not able to provide a satisfactory account of the relationship between financial development and long-run economic growth.

FEG models have mainly focused on the allocation role of the financial system (Levine, 1997). One reason is that financial development may lead to a decrease in overall savings. The reduction in income insecurity associated with financial development could reduce precautionary savings, and a higher real interest rate tends to depress savings via the income effect (Pagano, 1993; Levine, 1997). The main channel through which the financial system affects economic performance

is normally identified as the provision of some sort of risk-sharing device. For instance, relying on the seminal work of Diamond DW (1983), Bencivenga and Smith (1991) show how banks enable the economy to reduce the fraction of savings held in the form of unproductive liquid assets. In this way, banks improve on the composition of savings, which in turn affects the equilibrium growth rate. The model of Pagano is inspired from the Romer model in analyzing the potential impacts of financial development on economic growth. The model states that financial development is the channel for economic growth and economic performance in the world. The model relies on the assumptions that; there is a closed economy, no government intervention, firms produce a homogenous product, the unique product can be consumed and invested by using technology with constant returns to scale. From the above assumptions, the model framework is thus;

$$Y_t = AK_t \dots \dots \dots (2.4)$$

Where; Y is the output of the countries, A is the level of technology and K is the amount of capital. Introducing an equation of gross investment to the above function gives

$$I_t = K_{t+1} - (1 - \delta)K_t \dots \dots \dots (2.5)$$

In equation (2.5), δ is the rate of depreciation of capital

The model considers that a fraction $(1-\beta)$ of total savings is used in the process of intermediation. The growth rate of the year (t+1) by considering equation (2.5) is thus;

$$g = \frac{Y_{t+1} - Y_t}{Y_t} = \frac{K_{t+1}}{K_t} - 1 \dots \dots \dots (2.6)$$
 , generated from the Harrod- Domar growth model.

Equation (2.4) and (2.5) permit us to deduce this growth rate of equations (2.6) which is out to justify the three channels through which the financial system can affect economic growth and economic performance to include; (1) increase in the proportion of national savings allocated in productive investments will lead to an increase in economic performance, (ii) the marginal productively (A) will increase as a result of a collection of information and incitation of investors due to more significant repartition of risk by participating countries, and (iii) the financial system influences growth in this model through the intermediation of rate of savings (S) of the economy. Therefore, the growth rate of an economy depends on the functioning of the financial system. As well, if the financial system functions in an efficient manner, that is, it proceeds from a good collection of savings to an optimal allocation of the resources.

Nonetheless, weaknesses of the model that limits its applicability hinge on the theoretical assumptions which are unrealistic. Nevertheless, the model has shown the channel through which the financial system promotes the economic performance of countries through savings intermediation and the volume of investment. The model has also presented a tenable leeway for other forms of technology to be generated to promote economic performance.

Saint-Paul (1992) takes a related route by arguing that a developed financial system allows increased specialization in production through diversification of demand risks. A small household-enterprise producing simple goods using general-purpose tools is better suited to sudden changes in the composition of demand. So in the absence of a financial system which offers risk sharing, productive units prefer to hedge risk through their choice of a less specialized technology. Productivity remains low and economic growth is impaired.

On an empirical front, several studies have empirically explored the link between financial liberalization, financial development and economic performance across the globe. For instance, Tajudeen Egbetunde, Taofeek Olusola Ayinde and Abdul Ganiy Ademola Balogun, (2017) consider a structural interaction of the interest rate liberalization-growth nexus; through the inclusion of financial development variables, for sub-Saharan African economies spanning the periods 1980-2012. Coupled with the institutional theory of growth, this study relies on the McKinnon-Shaw framework and, given its merits over conventional tests, a battery of panel unit-root tests was used to purify our data of spurious regression estimates. Later, both panel cointegration and panel error correction models were employed for empirical investigations. From the results obtained, it was evident that other factors such as the openness to trade and price stability are much more significant for interest rate liberalization and economic growth in sub-Saharan African countries. More so, the extent as well as degree of financial development relatively assisted in reducing interest rates; further facilitates investment and then engendered growth. Interestingly, the results show that public institutions have been found significantly detrimental to driving the growth process of the sub-Saharan African economies. From the foregoing, the level of financial development, price stability and institutional arrangement should be properly attended to for effective and far-reaching policy suggestions in sub-Saharan African economies.

Sarkar Kabir and Hafiz Hoque (2016) started the process of financial liberalization since the late 1980's. Like many other underdeveloped countries the

consequences of financial liberalization in Bangladesh are dubious. Old studies done in within the context of Bangladesh mostly pertain to the performance of economy and financial institutions. This study is focused on the impact of financial liberalization upon economic growth of Bangladesh, considering three proxies of financial development such as real interest rate, volume of intermediation, and efficiency of intermediation. The analysis shows that despite the extensive financial development in the post-reform period, financial and monetary variables are not fully contributing to growth.

Obamuyi (2009) examined the relationship between interest rates liberalization and economic growth in Nigeria. Using time series analysis and annual data from 1970 to 2006, he applied a co-integration and error correction model to capture both the long-run and short-run dynamics of the variables in the model. He showed that in Nigeria, the real lending rates have significant effects on economic growth. He also showed that a long-run relationship exists between economic growth and interest rate liberalization and he concluded that the behaviour of interest rate in a liberalized economy is important for economic growth. Importantly, the study confirmed a positive relationship between interest rates and investment, on the one hand, and investment and economic growth, on the other hand, and concluded that the formulation and implementation of financial policies that enhance investment-friendly rates of interest are necessary for promoting economic growth in Nigeria.

Moreso, Owusu (2011), in his empirical findings show that in the long run interest rate liberalization will lead to economic growth in Nigeria, thereby, supports the Mckinnon-Shaw hypothesis. Also, the studies of Chipote, Mgxekwa & Godza (2014), who examined financial liberalization on economic growth in South Africa, employed the VECM technique and found long-run equilibrium condition among the variables included in the model with a short-run condition that inflation, lending rate and financial deepening have positive influence on economic growth as the exchange rate negatively impacted on it.

Adofu, Abula & Audu (2010) assessed the effects of interest rate deregulation in enhancing agricultural productivity in Nigeria. With the use of Ordinary Least Squares (OLS) technique, the results obtained showed that interest rate deregulation has significant and positive impact on agricultural productivity and enhance economic activities in Nigeria for the period reviewed. Udo & Ogbuagu (2012), having established stationarity and long-run equilibrium condition among the variables, found that deposit rate of interest has a positive effect on financial

depth while the causality test revealed one-way causality; flowing from financial depth to economic growth and that interest rate liberalization tends to granger cause both financial depth and economic growth.

Gehringer (2013) summarized it best as the author found a mix result in the finance-led proposition but obtained a clear positively significant effect of the growth-led hypothesis. The findings align with the results obtained in the study of Balamoune-Lutz (2003). Concerning the theories of economic growth, four major strands remain prominent in the theoretical literature. The first is the traditional theories of growth, the second is the neoclassical as well as exogenous theories of growth, the third is the endogenous growth theories and the fourth is the institutional growth theory. The traditional growth theories, which laid the foundation for many growth theories, largely centers around the classical propositions which posited that an increase in real GDP per person (which was brought forth by advances in technology and the accumulation of capital) will be temporary because posterity will induce a population explosion and the population explosion will decrease real GDP per person.

Thomas Barnebeck Andersen and Finn Tarp (2016) surveyed what is actually known about the finance–growth relationship based on theory and empirical work. We point out that traditional theoretical models linking financial development and economic growth do not pay sufficient attention to insights emerging from modern information economics. Markets with asymmetric information are not in general constrained Pareto efficient; and increased banking sector competition, following financial liberalization, will not necessarily induce efficient financial intermediation. Increased competition is likely to erode franchise values, which may, in turn, generate an unstable banking environment where gambling behaviour on the part of the banks is prevalent. Increased competition can also discourage relationship-banking, and it disturbs what may actually be a constrained efficient mode of contracting in a dynamic setting characterized by asymmetric information. We argue that these problems are further aggravated by the massive task of building an appropriate institutional and regulatory framework designed to effectively curb imprudent bank behaviour. Turning to the empirical evidence, it is shown that the alleged first-order effect whereby financial development causes growth is not adequately supported by econometric work. The empirical evidence on the finance–growth nexus does not yield any clear-cut picture. By way of conclusion, we question whether financial development, in the sense of increased formal financial sector intermediation in a

deregulated environment can be expected to act as ‘engine of growth’ in the development process; and we argue in favour of a more cautious approach to financial sector reform.

Methodology

The paper adopts the causal research design to investigate the causal link between financial liberalization, financial development and the economic performance in the Sub-Saharan African countries with Ethiopia inclusive. The paper uses secondary panel data collected from the World Development Indicators (WDI, 2018) for Sub-Saharan African countries.

✓ Measures of Financial Development

Bank credit to the private sector (as a percentage of GDP) represents the general level of development in the banking sector. Private credits are used to capture the activity of the financial sector in banks and other financial institutions. It excludes credit given to the public sector (firms and agencies) and credits by the government issued by the central bank. The higher the bank credits given to private sector, the higher the level of financial services and hence the more developed the financial sector (Beck T, Demirguc Kunt A, Levine R, 1999).

Bank deposits (as a percentage of GDP) and the **number of accounts at commercial banks** provide the extent of access and deposit mobilization that the financial system offers. Used to seize the structure of financial intermediaries, the ratio of money deposits’ bank domestic assets plus central bank domestic assets is used as financial development measure. Balamoune Lutz N (2003) considers the relevance of this indicator since the importance of a central bank is sensitive to the income level across countries.

✓ Measures of Financial Liberalization

The process of financial liberalization, understood as institutional and policy reform on the real interest rate, the spread between deposit and lending rate, and the financial depth of the economy, as captured by the monetary aggregates $M1/M2$, $M2/GDP$, $M3/GDP$, the share of stock market capitalization in the gross domestic product is generally interpreted as a measure of the effort for stock market capitalization (Carmen M., Reinhart., Ioannis Tokatlidis, 2000).

The index for financial liberalization (FL) and financial development (FD) were constructed by a statistical method, known as the **principal component analysis** (PCA). This method can transform correlated variables into orthogonal or uncorrelated variables. Literally interpreted, the term orthogonal means intersecting or lying at right angles. Uncorrelated variables are said to be orthogonal because when plotted on a graph, they form right angles to one of the axes. The orthogonal variable(s) thus obtained are called the principal component(s).

We then calculate the current **economic performance** (EPI) score as: 100% minus the absolute value of the inflation rate, minus the unemployment rate, minus the budget deficit as a percentage of GDP, plus the percentage change in real gross domestic product, all as deviations from their desired values (IMF, 2013).

$$\begin{aligned}
 EcP &= \text{Change in RGDP} \\
 &= 100\% - |Inf(\%)| - Un(\%) - \frac{Def}{GDP(\%)} \\
 &+ \Delta GDP(\%) \dots \dots (3.1)
 \end{aligned}$$

✓ **Model specification**

To investigate the causality between financial liberalization, financial development and economic performance in Africa, we employ panel co-integration and panel causality methods. Such a model may be specified as:

$$EcP_{ti} = \alpha_i + \beta_i FL_{ti} + \gamma_i FD_{ti} + \varepsilon_i \dots \dots \dots (3.2)$$

Where; *EcP* is the economic performance index, FL and FD are measures of financial liberalization and financial development respectively, ε is the error term. We employ the recently developed heterogeneous panel unit root tests to check whether the variables in our model are stationary or non-stationary. One of such tests is the Harris-Tzavalis unit-root test that takes heterogeneity into account using individual effects and individual linear trends. Pedroni, (1997, 1999, 2004) developed a residual-based panel co-integration Panel co-integration analysis that also allows a lot of heterogeneity through individual effects, slope coefficients and individual linear trends across countries. The **Pedroni Panel co-integration analysis** is adopted in this study. The panel co-integration method tests for the existence or absence of long-run relationships between financial liberalization, financial development and economic performance. The test does not indicate the direction of causality. But one can estimate causality

using the **Panel GMM** estimator as developed by Holtz-Eakin & Newey (1988, 1989) and Arellano & Bond, (1991). In this paper, the Arellano and Bond (1991) panel GMM estimator is used to examine the causality between financial liberalization, financial development and economic performance in sub-Sahara Africa. It is assumed that first differences of instrumenting variables are not correlated with the fixed effects. The null hypothesis of Arellano and Bond test is that there is no autocorrelation and is applied to the differenced residuals. AR(2) detect autocorrelation in levels, therefore, the test for its significance in first differences is imperative. The Sargan test of over-identifying restrictions is used to test the validity of the instruments. The time-stationary vector autoregressive model is specified below.

$$EcP_{it} = \alpha_0 + \sum_{j=1}^m \alpha_j EcP_{it-j} + \sum_{j=1}^m \beta_j FL_{it-j} + \sum_{j=1}^m \gamma_j FD_{it-j} + p_i + \varepsilon_{it} \dots \dots \dots (3.2)$$

$$FL_{it} = \rho_0 + \sum_{j=1}^m \rho_j EcP_{it-j} + \sum_{j=1}^m \pi_j FL_{it-j} + \sum_{j=1}^m \sigma_j FD_{it-j} + q_i + \mu_{it} \dots \dots \dots (3.3)$$

$$FD_{it} = \delta_0 + \sum_{j=1}^m \delta_j EcP_{it-j} + \sum_{j=1}^m \tau_j FL_{it-j} + \sum_{j=1}^m \epsilon_j FD_{it-j} + r_i + \varphi_{it} \dots \dots \dots (3.4)$$

Where; ε_{it} , μ_{it} , and φ_{it} , are the error terms, p_i , q_i and r_i are individual fixed effects. Nickell, (1981) then shows that including the fixed effects and the lagged dependent variables correlated with the error terms leads to biased estimation. Anderson & Hsiao (1981) recommend using the first difference operator to eliminate the individual fixed effects. Δ indicates the first difference operator, the resulting model is as follows;

$$\Delta EcP_{it} = \alpha_0 + \sum_{j=1}^m \alpha_j \Delta EcP_{it-j} + \sum_{j=1}^m \beta_j \Delta FL_{it-j} + \sum_{j=1}^m \gamma_j \Delta FD_{it-j} + \Delta \varepsilon_{it} \dots \dots \dots (3.5)$$

$$\Delta FL_{it} = \rho_0 + \sum_{j=1}^m \rho_j \Delta EcP_{it-j} + \sum_{j=1}^m \pi_j \Delta FL_{it-j} + \sum_{j=1}^m \sigma_j \Delta FD_{it-j} + \Delta \mu_{it} \dots \dots \dots (3.6)$$

$$\Delta FD_{it} = \delta_0 + \sum_{j=1}^m \delta_j \Delta EcP_{it-j} + \sum_{j=1}^m \tau_j \Delta FL_{it-j} + \sum_{j=1}^m \epsilon_j \Delta FD_{it-j} + \Delta \varphi_{it} \dots \dots \dots (3.7)$$

If the errors move by an average of the order k in the model at all levels, they will move by an average of the order $k+1$ at the first difference and, therefore, Anderson and Hsiao (1981) suggest using some instrumental variables to get a consistent estimation of the parameters. The panel GMM estimator combines the level equations (3.2, 3.3 and 3.4) and the differenced equations (3.5, 3.6 and 3.7) in a system. This estimator uses the lagged levels as an instrument in the difference regressions and the most

recent difference as an instrument in the level regressions. The panel GMM estimator is based on the assumption of no second-order autocorrelation in the first differenced residuals.

Findings and Discussions

The basic statistics examined in this paper are the means and standard deviations of the variables. The average values of broad money supply (BMS) is 511067 the overall deviation from this average value in the 48 Sub-Saharan African countries is 606.7356. The deviation between the countries is 86.70174 while there is a deviation of 600.6746 within the countries. At the same time the number of commercial bank branches (NCBB) is averaged at 6.201925 with deviations of 6.91629, 0.6439639 and 6.887043 for overall, between and within respectively.

Table 4.1: Summary of Descriptive Statistics for Variables

Variables		Means	Std. Dev	Min	Max	Observations
BMS	overall	51.1067	606.7356	.267337	18347.09	N = 1776
	between		86.70174	25.54437	415.1476	n = 37
	within		600.6746	361.1236	17983.05	T = 48
NCBB	overall	6.201925	6.91629	.1320796	53.34775	N = 1776
	between		.6439639	4.614117	7.510828	n = 37
	within		6.887043	-.6593742	52.22467	T = 48
BD	overall	511.972	527.6661	1.300208	3166.135	N = 1776
	between		24.78085	459.2634	580.2386	n = 37
	within		527.0993	-41.52104	3204.089	T = 48
BCPS	overall	17.83474	15.34565	.1542184	106.2603	N = 1776
	between		3.11101	13.85592	24.56445	n = 37
	within		15.0355	4.136638	100.8224	T = 48
IRS	overall	9.162838	15.65139	-8.854167	457.4583	N = 1776
	between		2.651912	6.603116	17.38688	n = 37
	within		15.43112	11.86404	449.2343	T = 48
SMC	overall	35.53608	35.49157	.0092866	321.9836	N = 1776
	between		1.658246	30.91753	38.95926	n = 37
	within		35.45384	1.437249	319.2087	T = 48
EPI	overall	101.6392	71.90138	-465.3688	2037.67	N = 1776
	between		9.975084	86.09205	140.6841	n = 37
	within		71.22458	449.8217	2001.067	T = 48
FD	overall	-9.47e-08	.9999999	-1.17987	4.97827	N = 1776
	between		.1215548	.1768688	.2988767	n = 37
	within		.9927817	-1.343611	5.038661	T = 48
FL	overall	1.91e-07	.9999999	-3.35653	21.14948	N = 1776
	between		.1635611	-.1301248	.5425737	n = 37
	within		.9868921	3.259522	20.63384	T = 48

Source: Computed by Authors Using Stata 13.0

An overall examination of descriptive statistics reveals that Broad Money Supply (BMS), number of commercial bank branches (NCBB), Bank deposits (BD), interest rate spread (IRS) and stock market capitalization (SMC) present very high deviations from their average values. This justifies that these variables are not normally distributed and hence proper treatment of these variables is required for their usage in a regression model. Bank credit to private sector (BCPS), economic performance index (EPI), the indicator of financial development(FD) and that of financial liberalization (FL) are not too spread or far away from their average values as their deviations are small. In this paper, the pre-test for the problem of multicollinearity was conducted and presented below.

Table 4.2: Pair-wise Correlation Metrics

	BMS	NCBB	BD	BCPS	IRS	SMC
BMS	1.0000					
NCBB	0.0004 0.9868	1.0000				
BD	-0.0018 0.9380	0.5435 0.0000	1.0000			
BCPS	-0.0021 0.9305	0.3631 0.0000	0.5002 0.0000	1.0000		
IRS	0.0271 0.2530	-0.0357 0.1324	-0.0940 0.0001	-0.0955 0.0001	1.0000	
SMC	-0.0161 0.4971	0.0644 0.0067	0.2205 0.0000	0.2883 0.0000	-0.0034 0.8863	1.0000

Source: Computed by Authors Using Stata 13.0

The leading diagonals present correlation values of 1.000 showing that each of the variables in this paper is perfectly collinear to itself. The correlation between the explanatory variables are all less than 0.5 (except for bank deposits and bank branches) showing that the correlation amongst the explanatory variables is weak. This indicates the absence of the problem of multicollinearity in the regression model in this paper. Data with time series elements contain unit root due to the stochastic time trend inherent in the data. Test for unit root problem is presented below.

Table 4.3: Harris-Tzavalis Panel Unit-Root Test for Variables

Variables	Level	First Difference
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	Statistics	P-Values	Statistics	P-Values	Implied Order of Integration
EPI	-0.1776	0.0000			(0)
NCBB	0.9698	1.0000	0.0025	0.0000	(1)
BD	0.9589	0.9992	0.0194	0.0000	(1)
BCPS	0.9110	0.1994	0.0150	0.0000	(1)
FD	0.9693	1.0000	0.0981	0.0000	(1)
BMS	0.4704	0.0000			(0)
IRS	0.5792	0.0000			(0)
SMC	0.8460	0.0000			(0)
FL	0.5325	0.0000			(0)

Source: Computed by Authors Using Stata 13.0

The results of the Harris-Tzavalis panel unit root test for the stationarity of variables indicates that economic performance index, Broad Money Supply, interest rate spread, stock market capitalization and the index of financial liberalization are stationary at level as these variables are significant at 1 percent. At the same time, the indicators of financial development such as number of commercial bank branches, bank deposits, bank credit to private sector and the index of financial development become stationary after the first difference. We therefore reject the null hypothesis and conclude that panels do not contain unit root and are thus stationary.

Table 4.4: Principal Component Analysis for Financial Development

Correlation Matrix				
		BCPS	BD	NCBB
Correlation	BCPS	1.000	.500	.363
	BD	.500	1.000	.543
	NCBB	.363	.543	1.000
Sig. (1-tailed)	BCPS		.000	.000
	BD	.000		.000
	NCBB	.000	.000	
Determinant = .520				
KMO and Bartlett's Test				

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.				.649		
Bartlett's Test of Sphericity	Approx. Chi-Square		1159.471			
	Df		3			
	Sig.		.000			
Communalities						
	Initial	Extraction				
BCPS	1.000	.579				
BD	1.000	.739				
NCBB	1.000	.623				
Extraction Method: Principal Component Analysis.						
Total Variance Explained						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.942	64.728	64.728	1.942	64.728	64.728
2	.639	21.308	86.036			
3	.419	13.964	100.000			
Extraction Method: Principal Component Analysis.						
Component Matrix						
	Component					
	1					
BCPS	.761					
BD	.860					
NCBB	.790					
Extraction Method: Principal Component Analysis.						
1 components extracted.						

Source: Computed by Authors Using SPSS Version 23.0

The correlation matrix shows that the variables are significantly correlated and hence need to be transformed to uncorrelated variables. The KMO and Bartlett's tests are globally significant at 1 percent showing that the sample is adequate and that there is sphericity. The communalities show that 57.9 percent, 73.9 percent and 62.3 percent is extradited for bank credit to private sector, bank deposits and number of commercial bank branches respectively. The first principal component has a variance of 1.942 and accounts for 64.728 percent of the variation in all the regressors. The second principal component has a variance of 0.639 and accounts for 21.308 percent of variations in all regressors. Finally, the third principal component has a variance of 0.419 and accounts for 13.964 percent of variations in the regressors. It is clear that although there are three principal components, only the first principal component is quantitatively important. Since only one principal component is extracted, the solution cannot be rotated.

Table 4.5: Principal Component Analysis for Financial Liberalization

Correlation Matrix ^a				
		BMS	SMC	IR
Correlation	BMS	1.000	-.016	.027
	SMC	-.016	1.000	-.003
	IR	.027	-.003	1.000
Sig. (1-tailed)	BMS		.249	.127
	SMC	.249		.443
	IR	.127	.443	
Determinant = .999				
KMO and Bartlett's Test				
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.				.502
Bartlett's Test of Sphericity	Approx. Chi-Square			1.783
	Df			3
	Sig.			.619
Communalities				
	Initial	Extraction		
BMS	1.000	.491		
SMC	1.000	.163		

IR	1.000	.379				
Extraction Method: Principal Component Analysis.						
Total Variance Explained						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.033	34.438	34.438	1.033	34.438	34.438
2	.997	33.234	67.672			
3	.970	32.328	100.000			
Extraction Method: Principal Component Analysis.						
	Component					
	1					
BMS	.701					
SMC	-.404					
IR	.615					
Extraction Method: Principal Component Analysis.						
1 components extracted.						

Source: Computed by Authors Using SPSS Version 23.0

The correlation shows that Broad Money Supply, interest rate spread and stock market capitalization are correlated and thus need to be transformed to uncorrelated variables. The KMO justifies that there is sample adequacy while the Bartlett's test reveals that there equality of variance between all pairs of the independent variables. Communalities show that 0.491, 0.163 and 0.379 are extracted for Broad Money Supply, stock market capitalization and interest rate spread respectively. The first principal component has a variance of 1.033 and accounts for 34.438 percent of variations in all regressors. Principal component two has a variance of 0.997 accounting for 33.234 percent of changes in all regressors. The last principal component presents a variance of 0.970 accounting

for 32.328 percent of variation in all regressors. Again, only one principal component is extracted and hence, the solution cannot be rotated.

Table 4.6 Pedroni Residual Cointegration Test

Series: ECP FD FL FD					
Date: 04/13/19		Time: 14:18			
Sample: 1980 2016					
Included observations: 1776					
Cross-sections included: 34 (14 dropped)					
Null Hypothesis: No cointegration					
Trend assumption: No deterministic trend					
Automatic lag length selection based on SIC with a max lag of 8					
Newey-West automatic bandwidth selection and Bartlett kernel					
Alternative hypothesis: common AR coeffs. (within-dimension)					
		Statistic	Prob.	Weighted	
Panel v-Statistic		-5.036477	1.0000	Statistic	Prob.
Panel rho-Statistic		-12.76223	0.0000	-4.201300	1.0000
Panel PP-Statistic		-33.81205	0.0000	-8.709648	0.0000
Panel ADF-Statistic		-27.71631	0.0000	-18.43454	0.0000
				-19.65921	0.0000
Alternative hypothesis: individual AR coeffs. (between-dimension)					
		Statistic	Prob.		
Group rho-Statistic		-6.469483	0.0000		
Group PP-Statistic		-23.97042	0.0000		
Group ADF-Statistic		-18.23832	0.0000		

Source: Computed by Authors Using E-Views Version 8.0

The Pedroni residual cointegration test is aimed at examining if there is a long run relationship between economic performance, financial development and financial liberalization in Sub-Saharan African countries. The findings presented shows that the null hypothesis of no co integrating relationship existing between economic performance, financial development and financial liberalization in Sub-Saharan African countries is rejected at 1 percent level of significance. This implies

therefore that the combination of the non-stationary time series is stationary at levels.

Table 4-7: Arellano-Bond Dynamic Panel-Data Findings

(1)		(2)		(3)	
ECP		FD		FL	
VARIABLES	Coeff. (Std. Err.)	VARIABLES	Coeff. (Std. Err.)	VARIABLES	Coeff. (Std. Err.)
L.ecp	-0.222*** (0.000702)	fl	-0.00700** (0.00311)	ecp	-3.87e-05*** (1.85e-06)
L2.ecp	-0.173*** (0.000977)	L.fd	0.887*** (0.0170)	L.fl	0.587*** (0.000855)
L3.ecp	-0.174*** (0.000905)	L2.fd	-0.0721*** (0.00800)	L2.fl	-0.518*** (0.000536)
L4.ecp	-0.0907*** (0.000870)	L3.fd	-0.0278*** (0.00871)	L3.fl	0.295*** (0.000974)
L5.ecp	-0.0716*** (0.000457)	L4.fd	0.0692*** (0.00998)	L4.fl	-0.378*** (0.00123)
L6.ecp	0.313*** (0.000658)	L5.fd	-0.0643*** (0.00758)	L5.fl	0.139*** (0.00137)
L7.ecp	-0.161*** (0.000533)	L6.fd	-0.00101 (0.0165)	L6.fl	-0.255*** (0.00103)
L8.ecp	-0.138*** (0.000556)	L7.fd	-0.0553*** (0.0181)	L7.fl	0.0588*** (0.00358)
fd	-3.135*** (0.290)	L8.fd	0.0726*** (0.00934)	L8.fl	-0.220*** (0.000200)
fl	0.234 (0.220)	ecp	1.81e-06 (3.22e-06)	fd	-0.195*** (0.0120)
Constant	175.6*** (4.161)	Constant	0.00513 (0.00747)	Constant	0.0131 (0.0297)
Observations	1,344		1,344		1,344
Number of id	48		48		48
Wald chi2(10)=4.73e+10 Prob > chi2 = 0.0000		Wald chi2(10)= 29437.74 Prob > chi2 = 0.0000		Wald chi2(10)= 3.38e+08 Prob > chi2 = 0.0000	

Source: Computed by Authors Using Stata 13.0

The maximum lags are based on Schwarz information criterion (SIC) automatically selected 8 lags which is less than one-third of the total time period as indicated by Holtz-Eakin et al (1988). The lagged values for the economic performance index have the capacity to decrease economic performance of the current period except

for the sixth lag of the economic performance index which has the capacity to increase the economic performance index. This can be explained by the fact that most of the sub-Saharan African countries had very low values for the economic performance index. Most of the countries had a score of less than 50 percent. The deteriorating situation has the capacity to retard the coming year economic performance index. This is significant at the 1 percent level of significance. Financial development index has the capacity to decrease the economic performance index of Sub-Saharan African countries by 3.135%, and it is significant at 1 percent level of significance. This finding is so because financial development through increase in number of commercial bank branches, broad money supply and bank deposits has the ability to reduce financial insecurity which will thereby cause a reduction in the aggregate savings level (Pagano, 1993; Levine, 1997). A fall in total savings in Sub-Saharan Africa will decrease the volume of total investments and thus reducing gross domestic product which the economic performance index (IMF, 2013) is constructed from. This channel therefore justifies that the economic performance index will decrease within the framework of financial development in Sub-Saharan Africa. Financial liberalization in Sub-Saharan Africa has the capacity to improve the economic performance index by 0.234. This is in agreement with the findings of Obamuyi (2009) who examined the relationship between interest rates liberalization and economic growth in Nigeria. These findings of the economic performance model are globally significant at 1 percent given the probability value of the Wald χ^2 (3) which is acting as the F-ratio in this case.

At the same time, the first lag, fourth lag and eight lag value of financial development has the ability to improve the current period financial development, while the other lagged values of financial development has the ability to decrease the current period financial development in Sub-Saharan African countries. The findings are significant at the 1 percent level. The economic performance of the current period in Sub-Saharan Africa has the ability to cause financial development to increase by $1.81e-06$, while surprisingly financial liberalization has the capacity to decrease economic performance by 0.007 may be because these policies reduce the government's interference in financial markets leading to the privatizing of state-owned banks (Galindo et al, 2000). The finding that financial development improves economic performance is in agreement with those of Gehringer (2013) and Balamoune-Lutz (2003) that obtained a clear positively significant effect of the growth-led hypothesis. These findings are statistically

significant at the 1 percent level of significance except for the causal link between economic performance of the current period and financial development that is statistically insignificant. The financial development model is also globally significant at 1 percent level of significance given the probability value of the Wald Chi² (3) statistic which is acting as the F-ratio in this case.

Within the ambits of the same period, the first lag, third lag, fifth lag and seventh lagged values of financial liberalization cause the current period financial liberalization to improve, while the second, fourth, sixth and eighth lagged values will decrease the current period financial liberalization. The current period economic performance in Sub-Saharan Africa will decrease financial liberalization by 3.87e-05 while financial development decreases financial liberalization of the current period in Sub-Saharan Africa by 0.195. These findings are so because liberalizing the financial system for when there are high rates of unemployment, high inflation rate and high level of deficit might likely retard financial development as more is captured by these economic problems. These findings are statistically significant at the 1 percent level of significance. The financial liberalization model is globally significant at the 1 percent level of significance given the probability value of the Wald Chi²(3) statistics.

Conclusion and Policy Prescriptions

This paper has found a long run causal link between financial liberalization, financial development and economic performance in Sub-Saharan African countries. Specifically, the paper finds a negative causal link between financial liberalization and financial development. Surprisingly, the paper finds out that financial development negatively causing economic performance but economic performance positively causing financial development. The paper also finds financial liberalization positively causing economic performance but economic performance surprisingly has a negative effect on financial liberalization. Policy perspectives of this paper are therefore that; caution should be taken in liberalizing the African financial sector hoping to improve economic performance.. The extent to which interest rate, bank credit to private sector and the stock market is liberalized should be done with caution. Policy reforms towards liberalizing the financial sector and financial sector development strategies should take into account the level of economic performance in terms of change in real gross domestic product considering the volume of unemployment, the inflation rate and the budget deficit as a percentage of gross domestic product of the

country. This paper therefore strongly recommends that improvements in the economic performance of Sub-Saharan African countries, policy reforms in the context of the financial sector should be implemented alongside other strategic policies towards reducing boosting investments to curb down unemployment, policy towards curbing inflation rates and policy to reduce budget deficits.

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