Financial Sector Development and Economic Growth for African Countries

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Abstract

This study addresses the key research question of whether differences in financial development are significantly associated with differences in economic growth for 13 African countries using panel data from 1984 to 2002. A base model first regressed real per capita growth on control variables. Thereafter, financial sector development variables are introduced progressively. The Hausman's specification test favours the fixed effect model. The most plausible model shows that financial sector development variables contribute greatly in explaining economic growth. High co-efficients are associated with financial development variables. Thus, efforts of developing the financial sector should be emphasized particularly in African economies in order to achieve economic growth.

Abbreviations and Acronyms

CPI	Consumer Price Index
GDP	Gross Domestic Product
GDS	Gross Domestic Savings
GNP	Gross National Product
ICRG	International Country Risk Guide
IMF	International Monetary Fund
MFI	Microfinance Institution
MSE	Micro and Small Enterprise
OTC	Over the Counter
PD	Primary Dealers
PSSP	Public Sector Stakeholders Partnership
RIPCG	Real Income Per Capita Growth
SACCOs	Savings and Credit Co-operative Societies
UNDP	United Nations Development Programme

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1.   Introduction

The relationship between financial sector development[1] and economic development has been the subject of booming literature in recent years (Kelly and Mavrotas, 2003). However, there are mixed views on the relationship between them. Lukas (1988) asserts that economists 'badly over-stress' the role of financial factors in economic growth, while Chandavarkar (1992) holds that development economists frequently express their scepticism about the role of financial systems by ignoring it. According to Gurley and Shaw (1955), the observable difference between the developed and the underdeveloped economies is due to the role financial intermediaries play in improving the efficiency of inter-temporal trade, thus enhancing general economic activity. Levine (1996), on the other hand, argues that the preponderance of theoretical reasoning and empirical evidence suggests a positive, first order relationship between the two. Although financial development is positively correlated with successful real growth, it is not clear which one 'leads' (Patrick, 1966; and McKinnon, 1988). Greenwood and Javanovic (1990) held a neutral view that financial and economic developments are jointly determined. McKinnon-Shaw (1973), however, observes that financial repression constrains economic growth.

Various studies find a close link between financial deepening, productivity and economic growth, and conclude that policies affecting the financial sector have substantial effects on the space and pattern of economic development[2] (Goldsmith, 1969 and King and Levine, 1993). This raises key research questions: 'why is financial system development important for the growth of the economies?; and why is financial system development difficult?' (African Center for Economic Growth, 2001). Other research questions are whether differences in financial development and structures are significantly associated with differences in economic growth, given the recent efforts made by developing economies to revitalize their financial systems in the reform period. Attempts have

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[1] In the money demand literature, financial development can be interpreted as a reduction in the transaction costs of converting non-liquid assets to liquid assets (Nouriel and Xavier, 1991).

[2] For instance, it is estimated that policies that would raise the M2/GDP ratio by 10 per cent would increase the long term per capita growth rate by between 0.2 per cent and 0.4 per cent points (World Bank, 1994).

[3] Levine (1996) notes that cross country case study, industrial level, and firm level analyses document extensive periods when financial development (or the lack thereof) crucially affects the speed and pattern of economic development.

been made to answer these questions both at individual and cross country studies.[3] However, Oshikoya (1992) notes that while financial sector reforms in the context of structural adjustment programme have been instituted in several African countries, country specific policy research, which is indispensable in understanding the mechanics of the financial sector's contribution to economic development in the region, has lagged behind. Thus, this study examines the relationship between financial development and economic growth in 13 African countries (Botswana, Egypt, Ethiopia, Ghana, Kenya, Morocco, Nigeria, South Africa, Tanzania, Tunisia, Uganda, Zambia, and Zimbabwe) chosen on the basis of data availability. If an important empirical relationship between the two exists for these countries, this would be a strong justification for comprehensive financial policies.

The rest of the paper is organized as follows: Section two highlights the countries' key financial development indicators and their experiences with financial liberalization. Section three reviews both the theoretical arguments for the relationships between financial development and growth and the empirical evidence from various studies, while the empirical analysis and results are in Section four. Section five concludes the study and provides policy recommendations.

2.   Countries Experiences with Financial Sector Development and/or Liberalization

Recent literature in finance has treated financial liberalization as a component of financial development. Table 2.1 presents some of the average pre- and post-financial reforms macroeconomic and financial development indicators for selected countries considered in this study. There are mixed country results with regard to financial sector development before and during the reform period. However, the trend shows that reforms have impacted positively on financial sector development. For instance, private sector credit, as a proportion of total domestic credit, improved for all countries. However, in post-reform period, private sector credit as a proportion of GDP worsened in Nigeria and Tunisia. In Egypt and Zimbabwe, stock market capitalization as a proportion of GDP recorded an improved situation. This is a strong indicator of development of long term capital market.

Table 2.1: Average macroeconomic and financial performance indicators for selected African countries before and after financial reforms

Country	Pre and post financial reform periods	GDP per capita growth (%)	Inflation (%)	Gross domestic savings/ GDP (%)	Gross fixed capital formation/ GDP (%)	M2/ GDP (%)	Interest rates spread (%)	Private sector credit/ Total domestic credit	Stock market capitali zation/ credit /GDP (%)	Private sector credit/ GDP (%)	Degree of financial repression	Stock market capitaliza- tion/ GDP (%)
Botswana*	Pre (1979-1980)	8.165	1.623	26.4	32.99	25.19	3.475		12.795	11.97	2.613	n.a.
	Post (1981-2002)	4.622	4.618	38.07	27.19	23.39	3.567	n.a.		11.98	1.966	13.87
Egypt	Pre (1979-1991)	2.961	3.612	15.3	27.42	75.27	3.69	0.251		30.40	4.419	5.15
	Post (1992-2002)	2.436	4.941	12.05	17.62	76.80	4.846	0.468		46.00	2.041	21.36
Ghana	Pre (1979-1983)	-6.294	0.375	4.52	4.97	14.96	7.5	0.091		2.04	14.296	n.a.
	Post (1984-2002)	1.967	7.943	6.68	17.2	16.92	6.32	0.262		3.05	5.680	13.75
Kenya	Pre (1979-1989)	0.903	1.294	16.11	16.6	28.03	3.626	0.596		29.89	5.934	5.78
	Post (1990-2002)	-0.716	6.807	12.61	15.5	38.17	11.189	0.584		31.37	3.497	15.81
Nigeria	Pre (1979-1987)	-4.03	0.240	22.71	22.63	36.28	2.28	0.434		20.24	7.930	n.a.
	Post (1988-2002)	0.812	8.294	23.9	19.66	18.84	7.208	0.603		11.91	3.523	7.92
South Africa	Pre (1979-1983)	0.453	1.634	31.59	26.54	51.23	4.613	0.729		60.90	4.956	n.a.
	Post (1984-2002)	-0.381	5.228	21.63	17.44	50.59	4.100	0.832		98.82	2.304	144.44
Tanzania**	Pre (1979-1986)	-0.096	0.681	n.a.	na	n.a.	8.349	0.149		n.a.	7.664	n.a.
	Post (1987-2002)	-0.995	6.518	3.00	18.43	18.71	14.22	0.347		7.99	5.399	2.93
Tunisia	Pre (1979-1985)	2.313	3.277	24.19	30.85	39.91	4.27	0.869		55.73	1.364	n.a.
	Post (1986-2002)	2.26	3.482	22.98	25.77	47.65	2.927	0.909		23.73	0.366	11.12
Uganda*	Pre (1979-1980)	n.a	n.a	4.00	n.a.	13.12	4.00	0.219		4.00	n.a	n.a
	Post (1981-2002)	2.218	4.837	4.33	14.65	11.69	5.52	0.391		5.19	5.127	0.64***
Zimbabwe	Pre (1979-1991)	1.613	0.517	16.06	16.26	21.99	7.501	0.481		21.31	11.600	16.56
	Post (1992-2002)	-2.108	37.856	15.1	17.23	22.95	11.968	0.611		31.43	3.614	48.22

*Sources: Authors' calculations from IMF's International Financial Statistics (2004) and World Development Indicators (2004) data and some for Kenya from various issues of CBK's Statistical Bulletins, Economic Surveys, Statistical Abstracts and KIPPRA's Analytical Data Compendium (2002); Mwega (1995); Chidozine (1995); Ndung'u and Ngugi (2000); and Ngugi (2003). * For Botswana and Uganda, the financial reforms start period are not actual but estimated as 1980; ** The pre-financial reforms real per capita GDP for Tanzania is for the period 1985-86; *** Uganda Stock market capitalization/GDP (%) data is for year 2001 only; n.a – means not available; degree of financial liberalization measures, real lending interest rate and has been calculated using fishers formula, defined as [(Lending interest –inflation)]/(1+ Inflation).*

3.   Literature Review

3.1   An Overview

Economic history is replete with examples illustrating the importance of financial markets for growth. Hicks (1969) and North (1981) argued that the distinguishing feature of industrial revolution was not particularly due to development of new technologies but because, for the first time, implementation of technical advances became a highly capital intensive process. Similarly, Bagehot (1873) holds that England's success in development was due to the superiority of its financial markets, while Schumpeter (1912) contends that well functioning banks spur technological innovation by funding those entrepreneurs with the best chances of successfully implemention of innovative products and production processes. The idea that financial structure and output determination are interrelated can easily be traced to the great depression era when financial system and real economic activity collapsed simultaneously. According to Nouriel R. *et al* (1991), quoting Fishers (1933), the collapse was caused by the high leverage of the borrowing[4] class in the wake of prosperity preceding 1929. His estimates showed that by March 1933, real debt burden increased by roughly 40 per cent due to the sharp decline in prices and incomes. While analyzing the relative importance of monetary versus financial factors in the great depression, Bernanke (1983) concludes that the collapse of the financial system was an important determinant of its depth and persistence, and that monetary forces alone were 'quantitatively insufficient' to explain these phenomenon.

3.2   Link between Financial Liberalization, Development and Economic Growth

Financial liberalization involves letting the market forces drive the financial sector and thus reducing the active participation and regulation of the government. In so doing, the private sector paradigm takes centre stage, where issues of efficiency, quality, effectiveness and healthy competition are embraced. It is expected that with financial liberalization, finance will play its intermediation role more effectively,

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[4] In Fishers words, "debts were great enough to not only 'rock the boat' but to start it capsizing".

and this eventually leads to financial development. Callier (1991) argues that reform is needed if the financial system in Sub-Saharan Africa is to overcome financial distress and restore confidence. These were the basis of financial reforms in Africa and other developing countries. Indeed, empirical works have clearly shown the benefits of liberalization. For example, Gerard and Demirguc-Kunt (1998) note that various World Bank studies done in various developing countries[5] show that financial markets free from government intervention, provide more long term finance to better quality firms and attempt to monitor lower quality firms more closely by using short term debt. These studies conclude that government interventions in the financial sector generate large costs by funding inefficient borrowers and crowding out private credit intermediaries. Further, Nouriel and Xavier (1991) and Easterly (1990) present evidence that real interest rate, being used as a proxy for financial repression, significantly affects growth rate negatively.

Models linking the financial sector and economic growth

Both the Harrod-Domar and basic neoclassical growth models reveal that the financial sector affects growth through savings and investment. Harrod and Domar put a strong case for capital accumulation and formation, which they argue, arise from savings. They hold that for a country to realize growth, it should save about 15 per cent of its GNP and then invest it. The model makes three assumptions: savings and investments are important for growth and are increasing functions of income; the growth of labour force is exogenous as it is determined by population growth; and the production function is homogeneous of degree one in capital and labour, implying that there are constant returns to scale. The basic neoclassical growth model takes the same analysis as the Harrod-Domar model but assumes that capital and labour are substitutable.

Another simplified theoretical framework is offered by some related models, which analyze the relationship between the financial sector and economic development. For example, Pagano (1993) and Murinde (1996) use a simple (AK) endogenous growth model. The model assumes a closed economy with no government, but with costs of intermediation such that capital market equilibrium is achieved when gross savings

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[5] For instance, in Columbia by Calomiris *et al.* (1996), in India by Schiantarelli and Sembenelli (1996) and Ecuador by Jaramillo and Schiantarelli (1996).

(excluding transaction costs) equal gross investment. It is hypothesized in the model that financial development will affect economic growth through savings rate, proportion of savings channeled for investment, and the social marginal productivity of investment. Although the model suggests the need to reduce transaction costs, Pagano (1993) points out that the relationship between stock market development and economic growth could be ambiguous depending on the channel of interaction.

An extension of the basic AK model is offered by Atje and Jovanovic (1993) and Greenwood and Jovanovic (1990) by incorporating insights from the Mankiw, Romer and Weil (1992). The model assumes technology and population growth are exogenously determined. The model predicts that the stock market enhances economic growth because it increases the amount of savings used for investment. In general, there are various ways in which the financial system can influence the capital stock for growth purposes: Financial institutions can encourage more efficient allocation of a given total amount of tangible wealth (capital in a broad sense), by bringing about changes in its ownership and composition, and through intermediation among various types of asset holders. They can also encourage a more efficient allocation of new investment from relatively less to relatively more productive uses by intermediating between savers and entrepreneurial investors. Finally, they induce an increase in the rate of accumulation of capital by providing increased incentives to save, invest and work. Arestis and Demetriads (1998), however, argue that specific institutional factors are likely to influence the casual nature of the relationship between financial development and economic growth, which is therefore expected to vary across countries.

3.3   Measuring Financial Development

Measuring financial sector development is a complicated procedure, since there is no concrete definition of financial development (Kelly and Mavrotas, 2003). Levine (1996) argues that in measuring financial development, researchers often do not account sufficiently for international trade in financial services.[6] Bandiera *et al* (2000) argue

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[6] Davis and Huttenback (1986) note that during the 19th century, England was able to 'export' financial services (as well as financial capital) to many economies with underdeveloped financial systems.

[7] Laporta *et al* (1996) and Engerman and Sokoloff (1996), respectively, hold that differences in legal tradition and national resource endowments that produce different political and institutional structures may be incorporated into future models of financial development.

that an ideal index of financial sector development should attempt to measure the various aspects of the regulatory and institutional building process[7] in financial sector development. Demirguc and Maksimovic (1996a and 1996b), in analyzing the debt equity ratios of 30 industrial and developing countries from 1980 to 1991, held that the ratio of bank assets to GDP is an indicator of banking development.

Thorsten *et al* (1999) broadly categorize the financial development measures into five: relative size measures (Central bank assets/total financial assets and deposit money bank assets/total financial assets); absolute size measures (Central bank assets/GDP, deposit money bank assets/GDP, stock market capitalization/GDP); measures of activity of financial intermediaries (private credit by deposit money banks/GDP, private credit by deposit money banks and other financial institutions/ GDP); measures of efficiency (net interest margin given as bank's net interest revenue/total assets, overhead costs equals bank's overhead costs/total assets, and stock market turnover ratio given by total shares traded/market capitalization); and measures of market structure (concentration measure given by three largest bank assets/total bank sector assets, foreign bank penetration, which is given by the number of foreign banks or foreign banks' share/assets divided by the total number of banks or total banks' assets).

3.4 Empirical Relationship between Financial Liberalization, Financial Development and Growth

Goldsmith (1969) uses the value of financial intermediary assets divided by GNP to gauge financial development. Using data of 35 countries from 1860 to 1963, he observes a rough parallelism between economic and financial development. The study also indicates that periods of more rapid economic growth were accompanied, though not without exception, by an over average rate of financial development. Although he cautions that there is no possibility of establishing with confidence the direction of the casual mechanism, his results depend on several decades. Therefore, changes in financial systems may have greatly influenced the results. But Levine (1996) points out several weaknesses in Goldsmith's (1969) results, such as lack of systematic control and failure to examine whether financial development is associated with productivity growth and capital accumulation.

In an attempt to overcome these weaknesses and to examine whether finance simply follows growth, King and Levine (1993b) studied if the value of financial depth in 1960 predicts the rate of economic growth, capital accumulation, and productivity improvements over the next 30 years. The results indicate that depth in 1960 is statistically correlated with each of the growth indicators averaged between 1960 and 1989. They found that the initial level of financial development is a good predictor[8] of subsequent rates of economic growth, physical capital accumulation, and economic efficiency improvements over the next 30 years even after controlling income, education, political stability, and measurers of monetary, trade and fiscal policy, which are associated with long run growth. They therefore concluded that finance does not merely follow growth and the relationship between initial level of financial development and growth is economically large. They further noted that the strong link between financial development and the rate of long run economic growth does not simply reflect contemporaneous shocks that affect both financial development and economic performance. There is a statistically significant and economically large empirical relationship between them. Furthermore, they argued that insufficient financial development has sometimes created 'poverty trap'.

While summarizing growth literature in Africa, Collier and Gunning (1997) focused on other studies and the factors that constrain growth in Africa. The growth constrain factors identified included lack of openness to trade, such as restrictive trade policies; natural barriers such as lack of harbours, dependant on natural resources (Dutch disease); financial repression; deficient public services; and lack of social capital, for example legal system control over corruption, weak contracts enforcement and lack of trust among citizens due to ethnic fractionalization. Other growth constraints include the political situation, and deterioration in the external environment such as terms of trade, climate, and offsetting effects of aid flow.

Relationship between measures of financial repression, economic growth and causality tests

Nouriel and Xavier (1991) used the basic Barro (1991) model to test three hypotheses. Firstly, to establish the relationship between the degree of

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[8] Financial sector development tends to Granger-cause economic performance (Wachtel and Rousseau, 1995; and Neusser and Kugler, 1996) but disagreement exists (Jung, 1986 and Atestis and Demetriades, 1995).

financial development and economic growth. Secondly, to test whether after controlling the usual determinants of growth[9], the degree of financial repression explains the cross country differentials in rates of economic growth. Thirdly, to test whether the significant regional dummies for Latin American growth found by Barro (1991) are explained by measures of financial repression in that region. Using cross country data for 98 countries between 1960 and 1985, they introduced financial repression variable (proxied by real interest rate) and found that low real interest rates are correlated with low economic growth. In their further analysis with 53 countries and a dummy[10] of financial repression, the dummy variable had the right sign (negative) and was statistically significant. The results showed that a higher degree of financial repression led to lower economic growth by 1.4 per cent. When they introduced a composite index dummy[11] of distortions in the financial and factor markets and trade, the distort co-efficient had the expected negative sign and was statistically significant, implying that overall financial, trade and other distortions is associated with lower per capita growth (indeed this resulted to a reduction in growth rate of 3.1% per year). The results further suggested that policies of financial repression explain why the Latin American region appeared to have grown relatively slower than the rest of the world over the study period. These results were consistent with previous studies on the effect of financial repression on economic performance that, even after controlling other determinants of growth, a high degree of financial underdevelopment and/or financial repression would lead to lower economic growth.

Levine (1996) postulates that the theory and evidence make it difficult to conclude that the financial system merely and automatically responds to industrialization and economic activity, or that financial development is an inconsequential addendum to the process of economic growth. He also adds that any statements about causality of financial development and economic growth are and will remain largely impressionistic and specific to particular countries and specific periods. Nonetheless, he contends that the body of country studies suggests that while financial systems respond to demands from the non-financial sector, well

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[9] According to the authors, these include initial income, measures of human capital, size of the government, political and institutional variables.

[10] The dummy took value 1 when real interest rates are positive, 2 when negative but higher than minus 5% and 3 when lower that minus 5%.

[11] The dummy took value 1 when the overall distortions degree is low, 2 when medium and 3 when it is high.

functioning financial systems have, in some cases during some time periods, spurred economic growth.

Further, Levine (1996) notes that financial development may predict growth simply because financial systems develop in anticipation of future economic growth, and that the differences in political systems, legal traditions or institutions may be driving both financial development and economic growth rates. For instance, Haber (1991 and 1996) showed that when Brazil overthrew the monarchy in 1889 and formed the first republic, it also dramatically liberalized restrictions on the Brazilian market, thus giving more firms easier access to external finance and as a result, industrial concentration fell and industrial production boomed. In contrast, he notes that while Mexico also liberalized financial sector policies, the liberalization was much milder under the Diaz dictatorship (1877-1911), which relied on the financial and political support of a small in-group of powerful financial capitalists. As a result, the decline in concentration and the increase in economic growth were weaker in Mexico[12] than in Brazil.

Relationship between financial sector growth indicators and economic growth

Levine and Zervos (1996) find a significant relationship between stock market development and long-run economic growth using the following model:

$$Growth = \beta X + \lambda(stock) + \mu$$

where *Growth* is measured as real per capita growth rate averaged over the relevant period; *X* is a set of control variables, including initial real per capita GDP, initial secondary school enrolment rate, number of revolutions and coups, ratio of government consumption expenditure to GDP, inflation rate, and the black market exchange rate premium; *stock* is the index for growth of the stock market; β is a vector of coefficient on variable *X*; λ is the estimated coefficient of stock market growth; and μ is an error term.

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[12] Levine (1996) notes that these political and legal impediments to financial development are apparently difficult to change. In Mexico, the largest three banks controlled the same fraction of commercial banking activity in 1996, about two thirds, as they did one hundred years ago. Also, Mexico has the lowest ranking of legal protection of minority shareholder rights of any country as is in La Porta *et al* (1996), where there is a detailed comparison of 49 countries, which may facilitate concentration of economic decision making.

4.   Empirical Analysis

4.1   Analytical Framework

To analyze the relationship between economic growth and financial sector development, we assume the following model.

$$Y=f(A, K, L) \dotfill (1)$$

where A=Technology, K=Capital, and L=Labour

Equation 1 can be expressed in per capita terms so that

$$\frac{Y}{L} = f(\frac{A}{L}, \frac{K}{L}, 1) \dotfill (2)$$

Assuming a Cobb-Douglas function, equation 2 can be expressed as

$$y_t = a_t k_t$$

where y is Y/L; a is A/L and k is K/L.

The model assumes that investment is defined by

$$I_t = (K_t - K_{t-1}) \dotfill (3)$$

and

$$I=S \dotfill (4)$$

$$S=sy \dotfill (5)$$

where s is marginal propensity to save.

Change in technology overtime is defined as

$$(a_t - a_{t-1}) = g_a a_t \dotfill (6)$$

where g_a is the rate of technological change

The rate of growth of per capita is defined as

$$\frac{1}{v}\frac{dy}{dt} = g_a + as \dotfill (7)$$

Thus, the model assumes that the rate of per capita growth is defined by the savings rate and the rate of change in technology. Assuming there is an imperfect financial market, then not all of the savings may be channeled to investment. Thus, following Pagano (1993), we assume that a proportion of savings (1-δ) leaks out of the system. Thus, the rate of per capita growth is defined as:

$$\frac{1}{v}\frac{dy}{dt} = g_a + a\delta s \quad \text{...(8)}$$

Financial sector development is assumed to affect growth through the amount of savings put in investment (δs) and the technological development (g_a). King and Levine (1993) and Beck *et al* (2000) suggest that financial systems are important for productivity, growth and development. Well functioning institutions and markets augment technological innovation and capital accumulation, hence economic growth (Goldsmith, 1969; McKinnon, 1973; Shaw, 1973; Boyd and Prescott, 1986; Greenwood and Jovanovic, 1990; and King and Levine, 1993). Well functioning financial markets lower the costs of transaction, increasing the amount of savings put into investment. They also allow for capital to be allocated to projects that yield the highest returns and therefore enhance economic growth rates. McKinnon (1973) indicates that development of capital market is necessary and a sufficient condition to foster the adoption of best practice technologies and learning by doing.

However, development of all financial institutions and markets has different magnitudes of impact given the different services they provide (Levine and Zervos, 1998). It is also important to note that enhanced financial development reduces the cost of external finance to the firms, promoting growth (Rajan and Zingales, 1998). Further, Wurgler (2000) shows that even if financial development does not lead to higher levels of investment, it allocates existing investment better and therefore promotes economic growth. Thus, our model, borrowing from Levine and Zervos (1996) becomes:

$$\delta s_t = f(FD_t) = \alpha_o + \alpha_1(FD_t) + \mu_t \text{..(9)}$$

$$g_{at} = f(FD_t) = \beta_o + \beta_1 (FD_t) + \eta_t \text{...(10)}$$

Thus,

$$g_y = f(FD_t) = \lambda_o + \lambda_1 (FD_t) + \varepsilon_t \text{.......................................(11)}$$

where g_y is growth in per capita; $\lambda_o = \alpha_o + \beta_o$; $\lambda_1 = \alpha_1 + \beta_1$

FD is financial sector development and is the error term with the usual properties. It is also important to note that growth is not only attributable to financial sector development. Thus, we have control variables (*CONTROL*) that include macroeconomic stability proxied by inflation (*INF*), and currency stability (*EXR*). The openness of the economy is also important especially with the emphasis on export-led growth (*EXP*) and the reliance on imported inputs (*IMP*).

Other factors include institutional quality including democratic accountability (*DEMAC6*); population growth (*POP*); and government consumption expenditure (*GCON*). Thus, the growth model is defined as:

$$g_y = \lambda_o + \lambda_1(FD_t) + \lambda_2(CONTROL) + \varepsilon_1 \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(12)$$

4.2   Variables and Data Measurement

The dependent variable

Real Income Per Capita Growth *(RIPCG)* is the dependent variable estimated as the rate of percentage annual growth of real per capita income. Per capita income is the ratio of constant gross national income to population.

The independent variables

The independent variables are broadly classified as financial sector development variables and other economic growth determinants that act as control variables (Table 4.1).

Data

The study covers 13 African countries[13] selected by the availability of data between 1984 and 2002. The data is collected from IMF's International Financial Statistics, World Bank development indicators; UNDP human development indicators; and International Country Risk Guide (ICRG). However, some Kenyan data are supplemented from government database (especially Economic Surveys and Statistical Abstracts. The data used from various sources include:

a) IMF's International Financial Statistics (2004 CD ROM)

Nominal lending and savings deposit interest rates, M2, nominal exchange rate to US$ (end of period data), real exchange rate, exports (of goods and services), and imports (of goods and services).

b) World Bank development indicators/UNDP human development indicators

GDP, Gross national income per capita growth, annual population growth rate, CPI inflation, ratio of government expenditure on consumption to total government expenditure, and gross domestic savings.

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[13] These are Botswana, Egypt, Ethiopia, Ghana, Kenya, Morocco, Nigeria, South Africa, Tanzania, Tunisia, Uganda, Zambia, and Zimbabwe.

Table 4.1: Independent variables

Variable	Variable definition and measurement	Proxing for	Expected sign
(A) Financial sector development variables			
LENDINT	Nominal average annual lending interest rate	Cost of accessing financial resources	-ve
DEPINT	Nominal average annual savings deposit rates of interest	Efficiency of mobilization of financial resources	+ve
SPREAD	Difference between nominal lending and savings deposit rates of interest	Financial intermediation efficiency	-ve
LINTSPREAD	Interaction between LENDINT and SPREAD obtained as product between the two	Quality of financial services	-ve
FINREP	Real interest rate = [(Savings Deposit interest rate –inflation)]/(1+ Inflation)	Financial repression	-ve
DEPTH	Ratio of broad money (M2) to GDP (M2/GDP)	Measures the degree of monetization of the economy	+ve
FINDEPTH	Is the product of FINREP and DEPTH	Financial depth of the economy	+ve
SAVE	Gross Domestic Savings (GDS)/GDP. GDS = GDP - total consumption	Degree of financial resource mobilization	+ve
(B) Control variables			
INF	Consumer Price Index (CPI) - Laspeyers inflation index	Macroeconomic stability	-ve
GCON	Government consumption/ total gross expenditure	Size of the government	-ve
NOMEXR	Nominal exchange rate between a local currency to US$	A measure of competitiveness of the economy	-ve
RER	Real exchange rate = NOMEXR* (Foreign inflation/domestic inflation) with trade weights	A measure of competitiveness of the economy	-ve
EXP	Total exports (goods and services account)/GDP	Openness of the economy	+ve
IMP	Total imports of goods and services/GDP	Degree of reliance on imports in an open economy	-ve
EXPIMP	Product of EXP and IMP	Measures overall openness of the economy	+ve
POP	Percentage annual population growth rate	Measure of population growth	-ve
DEMAC6	ICRG democratic accountability index	Responsiveness of a government to its people	+ve

c) International Country Risk Guide (ICRG)

Democratic accountability index *(DEMAC6)* is one of the 12 predetermined perceptions on political risk components that have been developed by International Country Risk Guide (ICRG) since 1984 for 145 countries. The risk ratings are produced on the current month (during the assessment) rating and as one-year and five-year forecasts. All the indexes have inverse relationship with the level of risk, i.e. the higher the index, the lower the risk.

4.3   Econometric Analysis

The present study makes use of panel data of 13 African countries between 1984 and 2002. This is consistent with the provision that panel data studies sample many individuals (groups) over a relatively short period of time as opposed to pooled cross section time series where groups are studied over a relatively long period of time. Panel data studies often assume that parameters are the same for all units (in the case countries). This may be due to differences among groups, than forcing them to be homogeneous. The estimated parameters are an average of individual group parameters.

   The central focus of panel data is heterogeneity across units and they are typically modeled as specific to the period in which they occur and not carried across a period within a cross section unit. Thus, the time effects are often viewed as 'transitions' or 'discrete changes of state.'

4.4   Empirical Results

4.4.1   Summary statistics

The summary statistics for the 13 African countries between 1984 and 2002 are presented in Table 4.2. For each variable, the maximum number of observations are 247 (13 countries by 19 years). All the variables have the expected minimum values (negative or positive). However, the maximum, mean values and the standard deviation of both nominal and real exchange rates are found to be unexpectedly very high. This could partly be due to differences in trade weights among countries as per the definition of real exchange rate and high volatility of exchange rate among the 13 countries in relation to the US$. In particular, the exchange rates for Ghana and Zimbabwe in relation to the US$ have been very high.

4.4.2 Pearson's correlations analysis

Pearson's correlations (Annex Table 1) reveal that variables obtained as products are highly correlated with the respective variables, have the expected signs and are significant at either 5 per cent or 1 per cent levels. For instance, EXP and IMP have correlations of 0.95 and 0.9 with EXPIMP respectively, while FINDEPTH has 0.87 correlation with FINREP. This implies that using the derived variables in the analysis is as good as using the individual variables. NOMEXR and RER have 0.95 correlation. In addition, INF, FINDEPTH and LINTSPREAD have high correlations with other variables. For instance, INF has -0.91, -0.69, -0.68, and -0.85 correlations with FINREP, LINTSPREAD,

Table 4.2: Summary statistics for the pooled data

	N	Minimum	Maximum	Mean	Std. Deviation
RIPCG	242	-0.14	0.17	1.09E-02	4.11E-02
SPREAD	218	-0.36	1.13	7.30E-02	0.1048
FINREP	211	-0.6	0.18	-3.46E-02	0.1296
LENDINT	203	-0.55	0.27	1.76E-02	0.1405
DEPTH	226	0.07	0.89	0.3769	0.2026
SAVE	241	-0.05	0.5	0.1547	0.1051
INFL	245	-0.1	2	0.218	0.3187
NOMEXR	247	0.7	8438.82	356.3584	1047.0482
RER	246	0.02	32982.98	786.6032	3438.7759
EXP	229	0.05	0.89	0.2637	0.1442
IMP	229	0.08	0.6	0.2936	0.1022
EXPIMP	229	0.15	1.4	0.5573	0.2284
GCON	241	0.06	0.38	0.1605	6.42E-02
POP	247	-0.03	0.04	2.52E-02	7.12E-03
DEMAC6	247	0.08	0.83	0.4837	0.1727
LINTSPRE	203	-0.29	0.05	7.15E-04	2.62E-02
FINDEPTH	190	-0.15	0.08	-3.89E-03	3.25E-02

RIPCG is Real Income Per Capita Growth; LENDINT and DEPINT are the nominal average annual lending and savings deposit rates of interest; SPREAD is the difference between the two interest rates; LINTSPREAD is interaction between LENDINT and SPREAD obtained as a product between the two; FINREP is the real interest rate=[(Savings deposit interest rate–inflation)]/ (1+ Inflation); DEPTH is the ratio of broad money (M2) to GDP (M2/GDP); FINDEPTH is the product of FINREP and DEPTH; SAVE is Gross Domestic Savings (GDS)/GDP; GDS=GDP-total consumption; INF is Consumer Price Index (CPI)-Laspeyers inflation index; GCON is Government consumption/ total gross expenditure; NOMEXR is nominal exchange rate between a local currency to US$; RER is Real exchange rate=NOMEXR*(Foreign Inflation/ Domestic Inflation) with trade weights; EXP is total exports (goods and services account)/GDP; IMP is total imports of goods and services/GDP; EXPIMP is Product of EXP and IMP; POP is percentage annual population growth rate; and DEMAC6 is ICRG Democratic Accountability index.

FINDEPTH and LENDINT, respectively. FINDEPTH is correlated with LINTSPREAD, LENDPSC and LENDINT at 0.61, 0.7, and 0.82 levels, respectively, while LINTSPREAD is correlated with LENDINT (0.63). Other variables with high correlations are EXPIMP and GCON (0.62) and SAVE and EXP (0.84).

4.4.3   Explaining economic growth across Africa

The regression results shown in Table 4.3 have been obtained using STATA (Version 8) software using fixed effect panel data estimation technique. In all the models I-IV, the dependent variable is the real income per capita growth (ripcg). Model I presents the base model with the traditional and institutional quality variables. The overall model is statistically significant as evidenced by the F-statistic, but some regressors are not significant and RER has an unexpected sign. However, POP, INF and GCON are statistically significant at 1 per cent, 5 per cent and 10 per cent levels, respectively. Model II adds SAVE variable to Model I. SAVE is considered both as a traditional as well as a financial development variable. The inclusion of SAVE does not significantly alter the expected signs and levels of significance of the other regressors, but it improves the explanatory power of the model from 11 per cent to 15.8 per cent. The regressor SAVE has the expected positive sign and is statistically significant at 1 per cent level.

Model III adds two more financial sector development explanatory variables to model II. Apart from RER, which is insignificant, all the other explanatory variables have the expected signs and are statistically significant at various levels.

A Hausman's specification test favours the fixed effect model (Table 4.4). This implies that the constant term in the panel data is influenced more by the individual country effects component rather than the time component, which proxies for technological development.

The fixed Model III with overall explanatory power of 36.7 per cent as evidenced by the R-squared is significant (see the F(9,147)-statistics P-value of 9.48). Given that Model III has improved R-squared from 15.8% reported in model II to 36.7% implies that financial development variables contribute greatly in explaining economic growth. Indeed, the high coefficients associated with FINDEPTH and LINSPREAD attest to this fact. Thus, efforts of developing financial sector should be emphasized, particularly for the African economies, for greater economic growth.

Table 4.3: Regression results

Dependent Variable = ripcg	Model I	Model II	Model III
Constant	0.044318(0.075*)	0.0331759(0.176)	0.0128124(0.632)
Infl	-0.0242154(0.033**)	-0.0219077(0.048**)	-0.0993556(0.000***)
rer	-0.0000036(0.614)	-0.00000496(0.477)	0.0000219(0.151)
expimp	0.0362324(0.163)	0.0086208(0.746)	0.0667822(0.022**)
gcon	-0.1375764(0.097*)	-0.1785326(0.030**)	-0.1657789(0.050**)
pop	-1.443676(0.001***)	-1.698477(0.000***)	-2.130949(0.000***)
Decac6	0.0252451(0.246)	0.0291173(0.171)	0.0521155(0.025**)
Save		0.2352113(0.001***)	0.2433931(0.002***)
findepth			0.2912264(0.028**)
lintspread			-2.497738(0.000***)
R²	0.1096	0.1575	0.3673
F-Statistics/Wald Chi² (9)	4.14 (6,202) (0.0006)	5.37 (7,201) (0.0000)	9.48 (9, 147) (0.0000)
F Test that all u_i = 0	2.24 (12,202) (0.0111)	2.54 (12,201) (0.0038)	3.27 (12,147) (0.0003)
No. of groups	13	13	13
No. of observations	221	221	169
Minimum	12	12	5
Average	17	17	13
Maximum	19	19	19

The numbers in parenthesis are the P-values, *, **, and *** implying significance at 10%, 5%, and 1% levels, respectively.

Table 4.4: Hausman's specification test (Co-efficients)

Y = RIPCG	Fixed effects	Random effects	Difference
infl	.0993556	.0810104	.0183452
rer	.0000219	.0000336	-.0000117
expimp	.0667822	.0503988	.0163834
gcon	-.1657789	-.2111368	.0453579
pop	-2.130949	-1.669245	-.461704
demac6	.0521155	.020125	.0319905
save	.2433931	.1278419	.1155512
findepth	.2912264	.2871821	.0040443
lintspread	-2.497738	-2.203207	-.2945312

Test: Ho: difference in co-efficients not systematic

chi²(9) = (b-B)'[S^(-1)](b-B), S = (S_fe - S_re) = 89.64, Prob>chi2 = 0.0000

RIPCG is Real Income Per Capita Growth; LENDINT and DEPINT are the nominal average annual lending and savings deposit rates of interest; SPREAD is the difference between the two interest rates; LINTSPREAD is interaction between LENDINT and SPREAD obtained as product between the two; FINREP is the real interest rate=[(savings deposit interest rate-inflation)]/(1+Inflation); DEPTH is the ratio of broad money (M2) to GDP (M2/GDP); FINDEPTH is the product of FINREP and DEPTH; SAVE is Gross Domestic Savings (GDS)/GDP. GDS=GDP-total consumption; INF is Consumer Price Index (CPI)-Laspeyers inflation index; GCON is Government consumption/total gross expenditure; NOMEXR is nominal exchange rate between a local currency to US$; RER is Real exchange rate=NOMEXR*(Foreign Inflation/Domestic Inflation) with trade weights; EXP is total exports (goods and services account)/GDP; IMP is total imports of goods and services/GDP; EXPIMP is Product of EXP and IMP; POP is percentage annual population growth rate; and DEMAC6 is ICRG Democratic Accountability index.

5. Conclusion and Recommendations

This study has established that for the 13 African countries sampled, financial sector development contributes greatly in explaining economic growth. Thus, for African economies to grow economically, development of the financial sector should be given priority.

Among the specific measures that ought to be taken to develop African financial sectors include the development of comprehensive financial policies for the respective countries. Other issues to be considered for the development of this crucial sector include:

a) Increased access to financial services (financial deepening)

To enhance access to diverse financial services by the underserved sections of the population, the traditional financial service providers should be encouraged by for example providing them with incentives such as provision of the infrastructural support services in the rural areas to downscale. However, of more importance is the support of non-traditional financial service providers such as Credit Unions/ Savings and Credit Cooperative Societies (SACCOs) and Microfinance Institutions (MFIs), whose edge has been on those areas that hitherto lacked financial services to enable them expand on their outreach and deepen their services. Addressing contraints facing the non-traditional financial service providers will greatly improve accessibility of affordable financial services to the Micro and Small Enterprises (MSEs).

b) Financial information disclosure and use

Monetary authorities should make financial institutions to reveal information to their customers and the public, while the public should be sensitized to use such information for informed decision making. This should include disclosure of information related to product price redress mechanism and disclosure of factors relevant to risk. Indeed, Chang (1999) commenting on the 1998 banking crisis concluded that due to financial contagion, international concerted efforts are necessary to prevent occurrence of future financial crises. He proposes full information disclosures, an early warning system, and some restrictions on capital flows to emerging markets.

c) Limited government involvement/intervention

Despite most African financial sectors being liberalized, in times of extreme financial crises/distress, it may be necessary for the respective governments to intervene. Indeed, Caprio and Summers (1993) argue that 'in no country is it convincing that the government will let large financial institutions collapse without taking some kind of action'. Examples abound: during the well known episodes of bank failures in the 1980s and 1990s, even industrial country governments, including those from Scandinavian to Japan, intervened. Specifically, in the US, the government injected liquidity at a time of the 1987 stock market crash, with estimates of up to US$ 10 billion in the days immediately after, and an even larger sum before it.

Governments should also divest from the financial sector and play the facilitation and regulatory roles more under the Public Sector Stakeholders Partnership (PSSP). This is on the premise that there is more efficiency in the private sector. However, privatization of government owned financial institutions need to be coupled with building of institutions that have presence in the rural areas, and are underserved and able to play the mandate of financial institutions, hitherto owned by the government, in terms of outreach.

d) Development of long term financial instruments

To diversify sources of long term capital so as to improve accessibility and affordability of long term finance, there is need to develop the underdeveloped government and corporate bonds' market and increase their outreach. It is therefore important that the regulators find ways to provide effective oversight without interfering with the bonds' market development. For instance, evidence shows that there is great potential in the local debt market in Kenya, and infrastructural issues such as automation, credit rating, junk bonds, commercial paper, Over-the-Counter (OTC) market and Primary Dealers (PDs), if in place, would spur further development of the bonds market. To encourage the small and medium sized enterprises to contribute to long term financial intermediation, there is need for a second tier window.

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Annex

Annex Table I: Pearson's Correlations

Variables	RIPCG	SPREAD	FINREP	LENDINT	DEPTH	SAVE	INFL	NOMEXR	RER	EXP	IMP	EXPIMP	GCON	POP	DEMAC6	LINTSPREAD	FINDEPTH
RIPCG	1.00																
SPREAD	-0.05	1.00															
FINREP	0.32[a]	-0.16[b]	1.00														
LENDINT	0.27[a]	-0.05	0.95[a]	1.00													
DEPTH	0.06	-0.15[b]	0.24[a]	0.20[a]	1.00												
SAVE	0.21[a]	0.12	0.04	0.07	0.07	1.00											
INFL	-0.25[a]	-0.17[b]	-0.91[a]	-0.85[a]	-0.35[a]	-0.24[a]	1.00										
NOMEXR	0.06	0.36[a]	0.10	0.25[a]	-0.40[a]	-0.30[a]	0.02	1.00									
RER	0.05	0.25[a]	0.10	0.19[a]	-0.33[a]	-0.20[b]	0.01	0.95[a]	1.00								
EXP	0.18[a]	0.21[a]	0.07	0.07	-0.01	-0.12	0.02	0.01	-0.27[a]	1.00							
IMP	0.17[b]	0.03	0.08	0.05	0.10	0.84[a]	-0.12	-0.12	-0.02	-0.20[a]	1.00						
EXPIMP	0.19[a]	0.14[b]	0.13	0.16[b]	0.04	0.44[a]	-0.13	0.01	-0.12	0.01	0.71[a]	1.00					
GCON	-0.01	0.08	0.10	0.10	0.10	0.73[a]	-0.18[a]	-0.13	-0.02	-0.12	0.95[a]	0.90[a]	1.00				
POP	-0.17[a]	-0.09	0.10	0.04	0.04	0.74[a]	-0.30[a]	-0.12	-0.30[a]	-0.22[a]	0.70[a]	0.38[a]	0.62[a]	1.00			
DEMAC6	0.07	-0.07	-0.23[a]	-0.27[a]	-0.08	-0.05	0.20[a]	0.20[b]	-0.12	-0.17[a]	-0.15[b]	-0.21[a]	-0.19[a]	0.04	1.00		
LINTSPREAD	0.06	0.11	0.20[a]	0.22[a]	0.26[a]	0.30[a]	-0.05	-0.01	0.04	0.04	0.29[a]	0.20[a]	0.27[a]	0.32[a]	-0.08	1.00	
FINDEPTH	0.29[a]	-0.04	0.87[a]	0.79[a]	0.82[a]	0.17[b]	-0.68[a]	0.04	0.05	-0.01	0.02	0.01	0.02	0.08	-0.32[a]	0.61[a]	1.00

[a]Correlation is significant at the 0.01 level (2-tailed) and [b]Correlation is significant at the 0.05 Level (2-tailed) *RIPCG* is Real Income Per Capita Growth; *LENDINT and DEPINT* are the nominal average annual lending and savings deposit rates of interest; *SPREAD* is the difference between the two interest rates; *LINTSPREAD* is interaction between *LENDINT* and *SPREAD* obtained as product between the two; *FINREP* is the real interest rate = [(Savings deposit interest rate –inflation)]/(1+ Inflation).; *DEPTH* is the ratio of broad money (M2) to GDP (M2/GDP); *FINDEPTH* is the product of *FINREP and DEPTH*; *SAVE* is Gross Domestic Savings (GDS)/GDP. GDS = GDP - total consumption.; *INF* is Consumer Price Index (CPI) - Laspeyers inflation index; *GCON* is Government consumption/total gross expenditure; *DEPTH* is the product of *FINREP and DEPTH, SAVE* is Gross Domestic Savings (GDS)/GDP. GDS = GDP - total consumption.; *NOMEXR* is nominal exchange rate between a local currency to US$ *RER* is Real exchange rate = NOMEXR*(Foreign Inflation/Domestic Inflation) with trade weights; *EXP* is total exports (goods and services account) /GDP; *IMP* is total imports of goods and services/GDP; *EXPIMP* is Product of *EXP and IMP*; *POP* is Percentage annual population growth rate; and *DEMAC6* is ICRG Democratic Accountability Index.