FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH: KENYA'S EXPERIENCE

*Nicholas Odhiambo**

ABSTRACT: This paper takes a fresh look at the causal relationship between financial development and economic growth in Kenya. In this study, Hsiao's (1979, 1981) test procedure, which combines both Akaike's (1969) final prediction error and Granger (1969) causality test is used. Using two alternative variables as proxies for both financial development and economic growth, the study finds a bi-directional causality pattern prevailing between monetisation variable (M2/GDP) and real per capita income (y/N). However, when a similar test is performed between currency ratio variable (CC/M1) and gross investment ratio (Inv/GDP), a distinct supply-leading response is found to be dominant. The study therefore, concludes that financial development has a first class positive impact on economic growth in Kenya, regardless of which variable is used as a proxy.
(Key words: Kenya, Financial development, Growth, Granger causality, final prediction error, and Hesiao's test)

BACK-GROUND

By the standards of developing countries, Kenya is considered to have one of the most developed financial systems in Sub-Saharan Africa. In the mid 1980s, Kenya's financial sector comprised of about 24 commercial banks, 54 near-bank financial institutions (NBFIs), 207 hire purchase companies, 32 building societies, 53 insurance companies and over 1,000 savings and credit cooperative societies.

In November 1998, the banking system had 55 commercial banks, 16 NBFIs, 4 building societies and 2 mortgage finance companies. The number of foreign exchange bureaux also increased from 37 in November 1997 to 44 in November 1998.

While financial sector development has shown an upward trend, the growth of real GDP on the other hand, has taken a different trend in Kenya. The Gross domestic product growth rate has been very erratic with the highest, about 7.9% recorded in 1976/77 during the coffee boom and the lowest, about 0.2% recorded in 1992/93. In 1995 the situation however, improved when the GDP growth rate recorded increased to 4.9%. By 1997, the real GDP growth rate recorded had declined again to 2.4%, and in 1998 the GDP growth rate recorded reached 1.8%.

The critical question in economic theory today, is that, if both the financial and real sectors of the economy are important, which of the two sectors should be developed first? In other words, which sector, financial or real, leads in the dynamic process of economic growth? The answer to this question lies heavily on the direction of causality between the two sectors. If financial development drives economic growth, the financial sector should indeed be developed first. If the converse is true, then the real sector of the economy should be developed first.

In this paper, I intend to investigate empirically, using Hsiao's test procedure, the direction of causality between financial development and economic growth in Kenya. That is, whether financial development leads to economic growth (supply-leading) or it's the economic growth, which impacts on financial development (demand-following response). This study will therefore provide an insight on which sector of the economy should be developed first in Kenya.

THE ORIGIN OF MONETARY ECONOMY

Before the 1930s Keynesian revolution, money was generally regarded as a neutral commodity, which had no effects on real variables such as out-put, and real investment. During this period, an economy was believed to have two sectors: the real sector and the financial (monetary) sector. However, because the economy

* The author of the article is currently doing a *Ph.D.*(Economics) degree by research at the University of Stellenbosch, South Africa. The views expressed in this paper are however, his own.

was so dichotomised, it was thought that the real sector was independent of the financial sector. Consequently, a change in money was thought to affect only variables such as prices, nominal income, nominal investment, and nominal wages among others. To a greater extent, these views prevailed even after the Second World War, and that is why the first neo-classical models of growth such as: Solow (1956, 1970); Swan (1956); Harrod (1948, 1959) were mainly based on barter economy. In all these situations, money was considered to be neutral in the framework of a general equilibrium, and therefore, it was expected that, after a situation of monetary disturbance, the original values of the variables would be restored.

Contrary to the above theories, models introduced by Tobin (1965), Johnson (1967), Sidrauski (1967), Levhari and Patinkin (1968), Marty (1968) and Hadjimichalakis (1972) showed that money was not neutral. The introduction of money in a Solow-Swan type of growth model led to a change in long-run output per capita and long-run capital labour ratio in the steady state equilibrium, which shows that money maters.

What was not clear by then, was the direction of change. In some models, particularly Levhari and Patinkin's (1968), the direction of change of steady state variables was indeterminate in moving from a batter to a monetary economy. However, according to Patrick (1966), financial intermediation enhances economic growth by among other things, transferring resources from traditional sector to the modern sector of the economy.

Indeed, it is very difficult to conclude on the direction of causality between financial development and economic growth. Moreover, some models of macroeconomics in the developing mixed economy still retain the perception that finance will always adjust passively to real changes and that aggregate savings are invariant to interest rate charges (See Toye, 1992; FitzGerald, 1990).

SUPPLY-LEADING VERSUS DEMAND-FOLLOWING RESPONSE (A CONTROVERSY)

The direction of causality between financial development and economic growth has recently received emphasis from numerous empirical works in sub-Saharan Africa countries. For a very long time, it has been assumed that financial development is very important for economic growth and therefore leads to economic growth (supply leading phenomenon). Little had been discussed on the converse, where economic growth can also drive the development of financial sector, i.e. demand-following effect. However, in practice, there is likely to be an interaction between supply-leading and demand-following phenomena.

Patrick's (1966) hypothesis, for example, argues that the direction of causality between financial development and economic growth changes over the course of development. In his view, financial development is able to induce real innovation of investment before sustained modern economic growth gets under-way, and as modern economic growth occurs, the supply leading impetus gradually becomes less and less important as the demand following financial response becomes dominant. As Patrick puts it, this sequential process is also likely to occur within and among specific industries or sectors. For instance, one industry may initially be encouraged financially on a supply-leading basis and as it develops have its financing shift to demand - following, while another may remain in the supply-leading phase. This would be more related to the timing of the sequential development of industries, particularly in cases where the timing is determined more by governmental policy than by private demand forces (Patrick, 1966:177).

According to the demand following phenomenon, lack of financial growth is a manifestation of lack of demand for financial services. Therefore, as the real side of the economy develops, its demands for various new financial services materialise, and these are met rather passively from the financial side. In the second view called supply-leading phenomenon, financial sector precedes and induces real growth by channelling scarce resources from small savers to large investors according to the relative rate of return. (See also Woo, 1986).

LITERATURE SURVEY

Choe and Moosa (1999) in a recent study examine the relationship between the development of financial systems and economic growth using Korea as a case study. Their study mainly focuses on the relative development of financial intermediaries and capital markets, and their impact on the portfolio behaviour of the household and business sector. The study finds that financial development in general leads to economic growth and that financial intermediaries are more important than capital markets in this relationship.

Rajan and Zingales (1998) investigate whether financial development facilitates economic growth by scrutinising the rationale that financial development reduces the costs of external finance to firms. The result of their study suggests that financial development has a substantial supportive influence on the rate of economic growth. Specifically, the study finds that industrial sectors that are relatively more in need of external finance develop disproportionately faster in countries with more developed financial markets. Akinboade (1998) examines the direction of causality between financial development and related growth in Botswana during the period 1972-1995. The study finds evidence of a bi-directional causality between financial development and per capita income. The author concludes that economic and financial development in Botswana appears to complement each other.

Gregorio and Guidotti (1995) examine the empirical relationship between financial development and economic growth. The empirical findings of this study suggest that, by and large, financial development leads to improved growth. However, the effects vary across countries and overtime. According to this study, the main channel of transmission from financial development to economic growth should be based on the efficiency of investment, rather than its level.

King and Levine (1993) use an endogenous growth model to examine how financial systems affect economic growth. According to the findings of this study, better financial systems improve the possibility of successful innovation, and thereby accelerating economic growth. Likewise, the financial sector distortions reduce the rate of economic growth by reducing the rate of innovation. The study concludes that financial systems are important for productivity growth and economic development.

Wood (1993) examines the causal relationship between financial development and economic growth in Barbados during the 1946-1990 period. Using Hsiao's (1979) test procedure, the study finds a bi-directional causal relationship between financial development and economic growth. The results of this study however, provides no support for Patrick's hypothesis, which asserts that the supply leading effect dominates during the early stage of development and that as the modern sectors of the economy develop, the demand following response becomes dominant.

Crichton and De Silva (1989) while examining the progress of financial intermediation resulting from economic growth in Trinidad and Tobago find that there is a definite positive correlation between economic growth and financial development at least, between 1973-1982. However, the study concludes that "while changes in the real sector clearly impacted on the financial system, it is not clear to what extent financial intermediaries may have in turn, aided the growth process through their ability to allocate savings efficiently to the most productive sectors of the economy".

Woo (1986) investigates the international evidence on the causal relationship between financial development and economic growth using annual data from 56 countries. Using both simple and unidirectional concepts of causality, he found evidence of supply-leading pattern to be more frequent in less developed countries (LDCs) than demand-following pattern. According to this study, LDCs are characterised by the causal direction running from financial development to economic growth, and developed countries by the reverse causal direction, regardless of which causality concept is employed.

Hyuha (1982) concludes that financial intermediaries in developing countries enhance

economic growth mainly through their role in the saving-investment process. They transfer resources from the traditional sectors of the economy to the modern sectors. Based on Uganda's experience, Hyuha (1982, 1984) found financial liberalisation in Uganda to be both supply-leading and demand -following, and therefore conforming to a bi-directional causality pattern.

Adewunmi (1981) conducts a study to find out how efficiently the Nigerian commercial banks operate their loan functions and how this contributes towards the general economic development. While investigating the relationship between the monetary and the real sector, the author found a strong relationship between the monetary and the real sector of Nigerian economy, which also implies that money maters in Nigeria.

METHODOLOGY

Causality Tests

In this study, the Hilo's (1979,1981) test procedure, that combine both the Granger (1969) causality test and Akaike's (1969 a, 1969 b) final prediction error (FPE) has been used. Granger's definition of causality is based on the notion that the future cannot cause the past but the past can cause the future. The Granger definition is that: X causes Y, given R_t, if Y_{t+1} can be predicted better (in a mean-squared-error sense) using past values of X (Xs, S [t) than by not using it. Where R_t is the universe of information up to and including period t. That is, compare the forecasting ability of R_t with and without X; if past values of X significantly contribute to forecasting Y_{t+1}, then X is said to Granger cause Y. Similarly, causality from Y to X can also be defined in the same way.

In estimating the causal relationship between financial development and economic growth, the following bivariate statistical equations are employed;

$$(1) \quad Y_t = \mu + \sum_{j=1}^{r} \alpha 1j Y_{t-j} + \sum_{j=1}^{n} \beta 1j FD_{t-j} + \varepsilon t$$

$$(2) \quad FD_t = \beta + \sum_{j=1}^{p} \alpha 2j FD_{t-j} + \sum_{j=1}^{q} \beta 2j Y_{t-j} + \eta_t$$

Where Y_t and FD_t are economic growth and financial development respectively for the sample t = 1, 2,.....T, while, ε_t and n_t are white noise error processes and *r, n, p* and *q* denotes the number of lagged growth and financial development variables in the regression.

The Granger causality-testing procedure is based on the Ordinary Least Square of equations 1 and 2 and the conventional Fisher-Snedecor F-test of joint statistical significance. The statistical methodology employed in this study focuses mainly on the lag-length parameterisation on the individual time series. When employing this method, lag-length selection is usually done in an ad-hoc manner and all variables are constrained to the same lag-length. Hsiao (1979,1981) consider this ad hoc choice of lag-length to be problematic. He therefore, proposed a test procedure that combines both Akaike's (1969a, 1969,b) final prediction error (FPE) and Granger's (1969) definition of causality to determine the optimum lag for each variable and the causal relationships (see also Wood, 1993).

In the first step of Hsiao's procedure, a series of autoregressive regressions is performed on the dependent variable, beginning with one lag and adding one more lag in each succeeding regression. That is, for the growth variable we estimate m regression of the form;

$$(3) \quad Y_t = \mu + \sum_{j=1}^{m} \alpha_{t-1} Y_{t-j} + \varepsilon_t$$

The value of m in the above equation ranges from 1 to m, where m is the maximum lag length. For each regression a FPE is computed in the following manner:

$$(4) \quad FPE(m) = (T+m+1)/(T-m-1) * SSE(m)/T$$

In the above equation, T is the sample size, and *FPE (m)* and *SSE (m)* are the final prediction error and the sum of squared errors, respectively. The optimum lag, m*, is the lag length which produces the lowest FPE.

The next step is to treat economic growth (Y) as the only output of the system and financial development (FD) as the manipulated (input)

variable, which controls the outcome of Y. From the above step, the following s regressions will be estimated:

$$(5)\quad Y_t = \mu + \sum_{j=1}^{m^*} \alpha_{t-j} Y_{t-j} + \sum_{j=1}^{s} \beta_{t-j} FD_{t-j} + \varepsilon_t$$

Where (S) represents the maximum lag length and ranges from 1 to s

From equation (5), the final prediction error for each regression can be computed as follows:

$$(6)\quad FPE(m^*,s) = (T + m^* + s + 1)/(T - m^* - s - 1) x SS(m^*,s)/T$$

The chosen optimal lag-length for FD, s* is the length which produces the smallest FPE.

In order to test for the causality, the final prediction errors (FPEs) obtained from step 1 and 2 are compared. If FPE (m*) is less than FPE (m*,s*), then a uni-dimentional autoregressive representation for growth is used, and it is said that financial development does not Granger-cause growth. If the converse is true then financial development causes growth. Once the test has been performed with economic growth as the output variable, a similar test for financial development, treating growth as the manipulated variable is undertaken.

Data Source

The study utilises annual time series data which covers the period 1968 to 1998. The data used in the study are obtained from different sources, which include various series of Kenya's Statistical Abstracts, Economic Survey, Development Plans and Sessional Papers. In addition, different volumes of International Financial Statistics (IFS) Yearbooks supplemented the local data. Further secondary data was obtained from Central Bank of Kenya publications and World Bank reports among others.

MEASUREMENTS OF FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH

The quantitative measurement of both financial development and economic growth are bound to be imperfect since these developments are multidimensional and are highly qualitative. In particular, the measurement of financial development seems more controversial because countries differ considerably in both their institutional and financial structures. In this study, two alternative proxies of financial development are employed. The first measure of financial development is the ratio of M2, a broad definition of money, to gross domestic product (GDP), which is widely regarded as monetization variable. This monetisation variable is designed to show the real size of the financial sector of a growing economy. The ratio is therefore expected to increase over time if the financial sector develops faster than the real sector, on one hand, and decrease if the financial sector develops slower than the real sector, on the other. The second measure of financial development employed in the study is the currency ratio defined as the ratio of currency to the narrow definition of money M1 (the sum of currency and demand deposit). The motivation for including currency ratio in this study is because the variable is normally used as a proxy for the complexity of the financial structure[1] . At early stages of the economy, a decrease in the currency ratio will accompany real growth since there will be more diversification of financial assets and liabilities within the economy and more transactions will be carried in non-currency. The two variables, monetization variable, together with the currency ratio, are expected to capture both quantitative and qualitative developments of the financial sector in Kenya, respectively. Throughout this study, monetisation variable (M2/GDP) has been used as the first proxy of financial development (defined as FD1), while the currency ratio (CC/M1) has been used as the second proxy (defined as FD2). On the side of economic development, real per capita Income (y/N) has been used as the first proxy (defined as ED1), while gross domestic investment dived by GDP (Inv/DGP) has been used as the second proxy (defined as ED2).

EMPIRICAL RESULTS

Results of Stationarity Tests

Just like in other time series data, the variables; ED1, FD1, ED2, and FD2 were tested for

stationarity before running the Granger (1969)-causality test. Table 1 give a summary of the unit root tests performed at level.

The above unit root test shows that the ED1 and FD2 variables are stationary at level [i.e. I (0)], while ED2 and FD1 variables are non-stationary. The next step in this case, therefore, is to difference the non-stationary variables once in order to perform a stationary test on their first difference. The results of stationarity tests on differenced variables are presented in Table 2

The above results indicate that both ED2 and FD1 variables are stationary after first difference. The DF, ADF and SBDW reject the null hypothesis of unit root test. This therefore shows that the variables are integrated of one [i.e. I(1)]. The implication here is that, the regression of ED1 and FD2 variables will be performed at levels, while those of ED2 and FD1 will be performed on first difference.

Results of Causality Test (Hsiao's Test Procedure)

In this analysis, two steps are employed. In the first step, a series of autoregressive regressions on the dependent variable (i.e. ED1, FD1, ED2, and FD2) are performed, beginning with one lag and adding one more lag in each succeeding regression until an optimal lag is obtained. Optimal lag in this case refers to the lag which produces the lowest final prediction error (FPE).

In this study, two different causality tests were conducted, namely; the causality test between ED1 and FD1, and the causality test between ED2 and FD2. Table 3 shows the final prediction error of on-dimensional autoregressive process for EDI and FDI.

Table 1: *Stationarity Test of Variables at Level - Granger Causality Function*

Variable	DF	ADF	Stationarity Status
ED1 (Ly/N)	-5.321	-2.37	I (0)
FD1(LM2/GDP)	-1.467	-1.048	I (1)
ED2 (LInv/GDP)	-0.1725	0.2601	I (1)
FD2 (LCC/M1)	-5.212	-2.043	I (0)

Critical values for DF and ADF are: DF: 5%=-1.954; 1%=-2.65; ADF:

Table 2: *Stationarity Tests of Variables on first Difference*

Variables	DF	ADF	DW	SBDW	Order of Integration
DLED2	-4.481	-3.749	2.13	1.796	I (1)
DLFD1	-4.946	-2.67	1.98	2.036	I (1)

Critical Value: DF: 5%=-1.954; 1%=-2.65; ADF:

[1]See for example, W.S.Jung (1993), Vogel and Buser (1976).

Results of Causality Test Between Monetisation Variable (FD1) and Real Per Capita Income (ED1)

Table 3: *Final Prediction Error (FPE) of One-dimensional Autoregressive Process for EDI and FDI*

Order of Lags	FPE of Economic Development. (ED1)	FPE of Financial Development (FD1)
1	0.00634170	0.00619380
2	0.00641400	0.00590267(m*)
3	0.00625630(m*)	0.00602630
4	0.00631250	0.00615521
5	0.00636838	0.00601178
6	0.00638727	0.00618970

Notes:
FPE = final Prediction error
ED1 = real Income per capita
FD1 = broad money balance as a percentage of GDP
m* = the optimal lag with the minimum final prediction error.

The above results indicate that the optimal lag for economic growth is three lags with lowest final prediction error of 0.0062563, while that of financial development is two lags with the lowest final prediction error of 0.00590267.

In determining the lag orders of the uni-dimensional autoregressive process for the financial development (FD1) and economic growth (ED1), the two equations; economic growth and financial development were both estimated with an upper bound of six on the lag structure of each variable.

By fixing each variable (controlled) at the lag obtained from the uni-dimensional autoregressive search and sequentially varying the number of lags on the other manipulated (input) variable in the causal regression, the FPEs for different combinations are computed, as the order of the manipulated variable is varied from lags 1 to 6. Table 7.2.2 gives a summary of the results of autoregressive process of the un-constrained equations for both financial development and economic development.

Table4: *Autoregressive Process of Un-constrained Equations*

Order of Lags	FPE of ED1 FD1-Manipulated variable, & ED1- Controlled variable	FPE of DLM2/GDP ED1-Manipulated variable & FD1 Controlled variable
1	0.00561074	0.00652029
2	0.00651691	0.00657023
3	0.00657307	0.00587271
4	0.00645572	0.00623298
5	0.00653405	0.00653865
6	0.00656257	0.00655449

The above result shows that when economic growth (ED1) is controlled and financial development (FD1) manipulated, optimal lag for economic growth function becomes lag one with the lowest final prediction error of 0.00561074. On the other hand, when financial development (FD1) is controlled and economic growth (ED1) is manipulated, the optimal lag becomes three, with the lowest final prediction error of 0.00587271. Table 5 gives a summary of the specifications that produce the smallest FPEs and their optimal lags.

Table 5: *The Optimal Lags of "Manipulated" and FPE of "Controlled" Variables*

Controlled Variable	Manipulated Variable.	Optimal Lag.	FPE (m*, S*)
ED1 (Ly/N)	FD1	1	0.00561074
FD1 (DLM2/GDP)	ED1	3	0.00587271

Causality Test Between Currency Ratio (FD2) and Gross Domestic Investment as a ratio of GDP (ED2)

Table 6: *Final Prediction Error (FPE) of One-dimensional Autoregressive Process for ED2 (INV/GDP) And FD2 (CC/M1)*

Order of Lags	FPE of Economic growth. (ED2) - Inv/GDP	FPE of Financial Development (FD2)- CC/M1
1	0.0109247 (m*)	0.0175067
2	0.0113621	0.0159496
3	0.0125365	0.0173108
4	0.0109805	0.0155215 (m*)
5	0.0120577	0.0165029
6	0.0114048	0.0178305

Notes:
FPE = final Prediction error
ED2 = Gross Domestic Investment as a ratio of GDP
FD2 = Currency ratio (i.e. CC/M1)
m* = the optimal lag with the minimum final prediction error.

The above results indicate that the optimal lag for economic growth (ED2) is one lag with lowest final prediction error of 0.0109247, while that of financial development (FD2) is four lags with the lowest final prediction error of 0.0155215. By fixing each variable (controlled) at the lag obtained from the uni-dimensional autoregressive search and sequentially varying the number of lags on the manipulated (input) variable in the causal regression, the FPEs for different combinations of both the ED2 and FD2 are computed as shown in Table 6.

The results in Table 7 shows that when economic growth (ED2) is controlled and financial development (FD2) manipulated, optimal lag for economic growth function (ED2) becomes lag eight with the lowest final prediction error of 0.00803828. On the other hand, when financial development (FD2) is controlled and economic growth (ED2) is manipulated, the optimal lag becomes one, with the lowest final prediction error of 0.0167241. Table 8 gives a summary of the specifications that produce the smallest FPEs and their optimal lags.

Analysis Causality Results

In order to test for the direction of causality, the FPEs obtained from step one is compared to that computed from step two. If FPE (m*) from step one is less than FPE (m*, s*) from step two (i.e if FPE(m*)<FPE(m*, S*), then it is said that financial development does not Granger-cause economic growth. If on the other hand the FPE (m*) is greater than FPE (m*, S*) i.e (if FPE(m*)>FPE(m*, S*) then financial development granger causes growth. This rule applies to both the economic growth and financial development equations. The final result of this analysis is shown in Table 9.

Table 7: *Autoregressive Process of Un-constrained Equations*

Order of Lags	FPE of ED2 FD2- Manipulated variable, and ED2 Controlled variable	FPE of FD2 ED2- Manipulated variable and FD2 Controlled variable
1	0.0122182	0.0167241
2	0.0105875	0.017628
3	0.0104253	0.0181865
4	0.0115616	0.0196757
5	0.0127099	0.0222304
6	0.0123452	0.0208601
7	0.00865683	0.0227362
8	0.00803828	0.025528

ANALYSIS OF GRANGER CAUSALITY RESULT

The test of causality between FD1 and EDI indicates that FPE (m*) > FPE (m*, s*) in both Economic growth (ED1) equation and Financial development (FD1) equation. This shows that both financial development (FD1), proxied by monetisation variable and economic growth (ED1), proxied by per capita income granger causes one another. Hence there is a bi-directional causal relationship between FD1 and ED1. However, when a similar test is conducted between FD2 and ED2, the FPE (m*) was found to be greater that FPE (m*, s*), i.e. FPE (m*)>FPE

(m*, s*) in the case of ED2 equation but not in the FD2 equation as shown in table 8. This result suggests that, while financial development (FD2) granger causes economic growth (ED2), economic growth (ED2) does not granger cause financial development (FD2). Hence there is a dominant supply leading response between ED2 and FD2.

The overall findings of this study are two-fold. One, the results indicate that there is a first class positive relationship between financial development and economic growth in Kenya. Two, with regardless of which variable is used as a proxy for financial development and economic growth, supply-leading still prevails in the economy. The study therefore, recommends that the current financial development in Kenya be developed further in order to make the economy more monetised. This will however, enable the real sector of the economy to pick up, thereby facilitating demand-following response.

Table 8: *The Optimal Lags of "Manipulated" and FPE of "Controlled" Variables*

Controlled Variable	Manipulated Variable.	Optimal Lag.	FPE (m*, S*)
ED2 (Inv/GDP)	FD2 (CC/M1)	8	0.00803828
FD2 (CC/M1)	ED2 (Inv/GDP)	1	0.0167241

Table 9: *Summary of Hsiao's Test Results*

Causality	Constrained Equation		Non-Constrained Equation		Presence of causality	
Direction.	Optimal lag length m*	Final Prediction Error. FPE	Optimal lag length S*	Final Prediction Error. FPE	Accept/ or Reject.	Positive or Negative.
From FD1(M2/GDP) To ED1(y/N)	3	0.0062563	1	0.0056107	Accept	Positive.
From ED1(y/N) to FD1(M2/GDP).	2	0.00590267	3	0.00587271	Accept	Positive.
From FD2 (CC/M1) To ED2(Inv/GDP)	1	0.0109247	8	0.00803828	Accept	Positive.
From ED2 (Inv/GDPN) to FD2 (CC/M1).	4	0.0155215	1	0.0167241	Accept	Negative.

Limitations of the Study and Areas for Further Research

Limitations of the Study

This study, like many other studies in LDCs, suffers from a number of weaknesses. These include; data inadequacies, missing observations and inconsistencies. Given that quarterly data for most of the variables were not available, the study used annual data, which is likely to reduce the precision of the parameter estimates even further. Although Hsiao's test procedure was the most appropriate approach for Granger causality test in this study, its efficiency still cannot be fully guaranteed. In fact, I noted in this study that Hsiao's test procedure, to some extent, is still ad-hoc, since there is no clear-cut on the maximum number of lag-length to be employed in the test.

Even though the above limitations could have had an effect on the empirical results and evidence adduced in this study, it is assumed that their effects are minimal and cannot therefore affect the econometric results and the findings of this study.

Areas for Further Research

This study employed Hsiao's test procedure in testing for the direction of causality between financial development and economic growth. Future researchers in this field could venture into other alternative test procedures like those suggested by Sims (1972), Pierce and Haugh (1977), and Geweke (1981), in order to confirm whether their results will not differ from the one reported in the present study. It is also recommended that future research on this topic could augment the current study by testing Patrick's hypothesis, which was beyond the scope of this study.

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