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Financial development and economic growth in Malawi: an empirical analysis

Abstract

This paper examines the causal relationship between financial development and economic growth in Malawi using the autoregressive distributed lag (ARDL) approach. Results show that there is positive and significant relationship between financial development and economic growth in the longrun. Granger causality tests show that economic growth drives financial development with no feedback effects. This is true for two indicators of financial development, namely, private sector credit as a percent of GDP and private sector credit as a ratio of domestic credit. On the other hand, financial development has no causal effects on economic growth. Furthermore, there is a weak relationship between economic growth and bank deposits as a percent of GDP. These results imply that economic growth is vital for development of the financial sector in Malawi. The absence of causality of financial development on economic growth could be attributed to the relatively less developed financial sector in Malawi, and the fact that financial markets tend to develop slowly to explain medium-term economic growth. As a policy recommendation, policies must be put in place to support development of growth-enhancing financial sector. For financial development to have a positive effect on economic growth, it is necessary that the expansion of the financial system be accompanied by an increase in the flow of funds towards productive investment activities.

Keywords: financial development, economic growth, autoregressive distributed lag approach.
JEL Classification: E20, E44, E50.

Introduction

The relationship between financial development and economic growth has been comprehensively treated in the theoretical and empirical literature. The theoretical foundation of this relationship can be traced back to the early discussions of Walter Bagehot (1873) who argue that the financial system plays a critical role in facilitating the mobilization of capital and growth; and, subsequently extended by Josef Schumpeter (1911) who contends that the services provided by financial institutions are essential drivers for innovation and growth. Schumpeter notes that a well developed financial system channel financial resources to the most productive use; thereby suggesting that finance leads economic growth. This has come to be known as the finance-led hypothesis.

In the 20th century, the finance-led hypothesis received further momentum from the liberalization theorists such as McKinnon (1973) and Shaw (1973), as well as from international financial institutions, namely, the World Bank and the International Monetary Fund. These scholars and institutions assert that a liberalized financial sector mobilizes greater volumes of financial saving and allocates capital to the more productive users, which enhances the productivity of physical capital. The effect of these factors is an increase in economic growth.

More recently, the finance-lead hypothesis received yet another impetus from the "new" growth literature (see Pagano, 1993). The endogenous growth literature also stresses the significance of financial development for long-run economic growth through the impact of financial services on capital accumulation and technological innovation. These services include mobilizing savings, acquiring information about investment, and allocating resources, exerting corporate control, and facilitating risk amelioration.

In spite of the various support offered towards the finance-lead hypothesis, not all economists support it. Others advocate an alternative hypothesis, the demand-following hypothesis. They maintain the view that economic growth induces growth in the financial sector. This alternative view was first made by Robinson (1952) who propagates an explanation that finance does not exert a causal impact on growth. Robinson instead asserts that financial development follows economic growth as a result of higher demand for financial services. According to this view, it is argued that when an economy grows, more financial institutions, financial products and services emerge in the markets in response to higher demand of financial services. The idea is later extended by Patrick (1966) who argues that, the early phases of an economy are characterized by the supply-leading finance, but as the economy matures, demand-following hypothesis where the growth of the economy leads finance development takes pre-eminence.

However, another dissenting view, associated with Lewis (1955) and Patrick (1966), postulates that there is a feedback relationship between financial development and economic growth. Indeed, a number of empirical studies find a two-way causality between finance development and economic growth (see Greenwood and Jovanovic, 1990; Ber-

thelemy and Varouudakis, 1997; and Greenwood and Bruce, 1997).

Empirical evidence show there is support for all competing hypotheses and that there is no consensus regarding the direction of causality between financial development and economic growth for Latin America (see Christopoulos and Tsionas, 2004); China (Shan and Jianhong, 2006); Latin America (Shan, 2005; Ang, 2008) 15 OECD member countries (Apergis et al., 2007; Luintel et al., 2008; Demirgüç-Kunt and Levine, 2008). Regarding, the time series evidence, Shan (2005), Arestis and Demetriades (1997), and Shan and Morris (2002) found that the 'supply-leading' hypothesis was supported in only a few of the countries surveyed; consequently no general conclusions could be drawn and the relationship between financial development and economic growth cannot be generalized across countries. Many researchers have found no clear evidence that financial development affects or is affected by economic growth (see Ang, 2008; Demirgüç-Kunt and Levine, 2008). But others have equally found that financial market development significantly promotes real economic growth in Pakistan (see Khan 2005); German, France and Japan (Arestis et al., 2001). Still others argue that there is no evidence of any positive uni-directional causal link from financial development indicators to economic growth. For instance, using data for 95 individual countries, Ram (1999) claims that there is no support for the view that financial development promotes growth based on his findings on countries in Asia. De Gregorio and Guidotti (1995) have also found that financial development significantly reduces economic growth for some countries that experienced high inflation rates, in particular Latin American countries.

In Africa, as it is elsewhere, there is also no consensus regarding the direction of causality between financial development and economic growth. For instance, Ghirmay (2004) found that financial development played a causal role in the economic growth of eight out of the thirteen countries sub-Saharan African countries he investigated. Agbetsiafia (2004) also found mostly unidirectional causality running from financial development to economic growth in seven African countries thus lending support for the supply leading phenomena of the finance-growth nexus. In the case of Egypt, Morocco and Tunisia, Abu-Bader and Abu-Qarn (2008) using four different indicators of financial development, found a bi-directional causality running between financial development and economic growth. In contrast, Baliamoune-Lutz (2008) finds mixed results for North African countries. Similarly, Atindehou et al. (2005) using three indicators of financial development, found weak causal relationship in almost all the twelve West African countries they studied. Odhiambo (2007) also finds conflicting results for three SSA countries where the demand-following was supported in Kenya and South Africa while in Tanzania the supply-leading response was supported.

While the different methodologies used to study the finance-growth connection have distinct strengths and weaknesses, they produce remarkably consistent results. The main, tentative conclusions that we garner from more recent empirical work is that countries with a better-developed financial system tend to grow faster. Specifically, both financial intermediaries and markets matter for growth. The size of the banking system and the liquidity of stock markets are each positively linked with economic growth. With regard to stock markets, Zivengwa et al. (2011) find a strong positive link between stock market capitalization and economic growth in Zimbabwe.

1. Objective of the study

The main objective of this study is to model and examine the causal relationship between financial development and economic growth in Malawi. Specifically, the study tries to investigate whether finance leads to economic growth in Malawi or bi-causal effects exist.

The study is of policy and academic relevance for two reasons. First, it is expected that a country-specific study for Malawi using novel econometric tools would generate evidence which is not only robust but also capable of informing economic policy. The argument here is that if national economic policy is to favor a supply-leading experiment in the form of financial restructuring program, it is necessary that policy makers are able to isolate the relevant financial variables in the economy based on robustly-tested evidence. And second, despite the vast interest in the finance-growth nexus worldwide as stated above, research in this area remains scanty on Southern Africa. In the case of Malawian economy in particular, no study to our knowledge has been conducted on the link between financial markets development and economic growth. This paper will hence add to the much needed literature on this subject on Malawi and the Sub-Saharan Africa region in general.

1.1. Financial development in Malawi. The financial sector in Malawi is among the world's least developed. The range of institutions is narrow. Banks are dominant institutions. There are 11 licensed commercial banks currently in Malawi with only 19% of the adult population banked (FinScope-Malawi, 2008). Total assets held by the banking system as of March 2009 was estimated at about US$1.28 billion (RBM), of which more than 65% is

concentrated in the country's three largest banks. There is only a limited interbank market. Most excess liquidity in the Malawian financial system is currently placed with the Reserve Bank of Malawi. On the other hand, less than 3% of the adult population is covered by an insurance product (FinScope-Malawi, 2009) and the stock market is small compared to regional standards, registering a total market capitalization of US$1,362 million in 2010 (see Table 2 below).

The absence of deep, efficient financial markets seriously challenges and constrains policymaking. Limited access to finance lowers welfare and hinders poverty alleviation efforts. Lack of credit to the economy constrains growth. Finally, implementing monetary policy in the context of shallow markets is costly and inefficient.

Table 1 shows standard financial deepening and efficiency indicators for SADC countries, namely bank credit to private sector as a percent of GDP, broad money (M2) as a percent of GDP, and interest spreads. It shows that Malawi is generally lagging behind in these two measures of financial development when compared to other countries in the region. On the other hand, the spread seems to be one of the highest. Table 2 shows stock market capitalization for Malawi and other countries in the region. Again Malawi capitalization has been volatile and lagging behind other countries, except Swaziland, in terms of the size of the stock exchange.

In general, the indicators demonstrate that although the level of financial deepening is still low, nevertheless, financial deepening and efficiency has progressed positively over the past years (see Tables 1 and 2).

Table 1. Indicators of financial depth and efficiency

Country	Bank credit to private sector (% of GDP)			Broad money (M2) (% of GDP)			Interest rate spread (%)		
	2005	2009	2010	2005	2009	2010	2005	2009	2010
Low income	9.9	14.2	15.3	19.3	23.9	30.3	13.1	11.5	11.7
Malawi	10.5	12.8	16	20.2	22	26.8	20.7	21.8	21
Mozambique	11.2	13.4	25.8	28.6	36.7	26	11.7	6.5	6.6
Tanzania	10.4	18.2	16.1	22.2	27.9	32.3	10.4	9.8	8
Zambia	7.6	12.8.	11.5	18	24.7	23.1	17	15	13.5
Madagascar	10	13.9	11.7	18	20.6	20.8	7.2	33.5	38.5
DRC	2.9	7.2	6.6	8.5	11.4	16.5	32.6	49.3	39.7
South Africa	143.5	147.8	145.5	71.3	85.4	85.7	4	3.2	3.4
Zimbabwe	*20*	0	..	32.8		29.7			
SSA	94.5	102.5	117.6	42.4	52.1	48.6			
SSA excluding RSA & Nigeria	52.4	59	60.3	25.7	34.1	32.4			

Source: World Bank, Development Indicators, Central Bank Economic Reports (various); stands for data unavailable.

Table 2. Stock market capitalization, 1992-2002 (US$ millions, end of period levels)

Country	Stock market capitalization							
	1992	1995	2000	2001	2002	2007	2008	2010
Middle income								
Mauritius	424	1,562	1,335	1,061	1,324	5,665.55	3,442.50	6,505.60
Botswana	295	98	978	1,269	1,717	5,887.20	3,555.80	4,075.90
Low income								
Malawi	..	15	212	152	107	587	1,770.80	1,362.10
Zambia	..	19	236	217	231	1,194.60	2,345.80	2,816.70
Tanzania	..	…	233	298	695	841.1	1,293.30	1,264.00
Swaziland	111	339	73	127	146	215.8	286.5	352.9
South Africa	103,537	280,526	204,952	139,750	182,616	828,125.00	690,797.50	1,012,538.30

Source: World Bank, Development Indicators, Central Bank Economic Reports (various); stands for data unavailable.

2. Theoretical framework

This study draws heavily from Levine (1997, 2004) in capturing the causal effect of financial development on economic growth. We will use this model on account of the applicability of such an endogenous model in underdeveloped countries where bi-casual effects are likely. The model is specified as follows:

$$g_t = y_t - y_{t-1} = \alpha + \beta fin_t + C_t\delta + \varepsilon_t, \quad (1)$$

where y is the log of real GDP at time t, g is the growth rate of y, α is the intercept, fin is an indicator of financial development, X is a vector of control variables, controlling for other factors associated with economic growth, and ε is the white noise error term, and t is the time period. C is capacity utilization.

To ensure robustness of findings, the indicators of financial development which will be used in this study are private sector credit as a percent of GDP,

bank deposits as a percent of GDP and ratio of private sector credit to domestic credit as a percentage, and stock market capitalization as a percent of GDP. Empirical literature suggests that the relationship between financial development and economic growth is sensitive to the proxy used for the measurement of financial development.

2.1. Estimation procedure. Considering that the focus of this paper is to establish the relationship between financial development and economic growth, cointegration analysis and error correction procedure appears to be one of the favoured technique in literature to model the relationship. In this study, we use the Autoregressive Distributed Lag (ARDL) approach (i.e. the bounds testing approach to cointegration) popularized by Pesaran and Pesaran (1997), Pesaran and Shin (1999) and Pesaran et al. (2001). This approach has some econometric advantages over the Engle-Granger (1987) and maximum likelihood based approach as proposed by Johansen and Juselius (1990) and Johansen (1991). Firstly, the bounds test does not require pre-testing of the series to determine their order of integration. Secondly, the test can be conducted regardless of whether the variables to be modelled are *I*(1), *I*(0), or mutually integrated. Third, the ARDL modeling incorporates sufficient number of lags to capture the data generating process.

In addition, endogeneity problems are addressed in this technique. According to Pesaran and Shin (1999), modeling the ARDL with the appropriate lags will correct for both serial correlation and endogeneity problems. Jalil et al. (2008) argue that endogeneity is less of a problem if the estimated ARDL model is free of serial correlation. In this approach, all the variables are assumed to be endogenous and the long run and short run parameters of the model are estimated simultaneously (Khan el al., 2005). The issue of endogeneity is particularly relevant since the causal relationship between financial development and economic growth cannot be ascertained beforehand because literature suggests that a bidirectional relationship could exist between financial development and economic growth.

Finally, the ARDL has superior small sample properties as compared to the Johansen and Juselius (1990) cointegration test (Pesaran and Shin, 1999). Therefore, the approach is considered to be very suitable for analyzing the underlying relationship and has been increasingly used in empirical research in recent years.

An ARDL representation of equation 6 above can be specified as an unrestricted error correction model as follows:

$$g_t = \alpha_0 + \sum_{i=1}^{p} \alpha_{1i} \Delta LRGDP_{t-i} + \sum_{i=1}^{p} \alpha_{2i} \Delta fin_{t-i} + \sum_{i=1}^{p} \alpha_{3i} \Delta CU_{t-i} + \beta_1 LRGDP_{t-1} + \beta_2 fin_{t-1} + \beta_3 CU_{t-1} + v_{1t}, \quad (2)$$

where Δ is the first-difference operator and v_t is assumed to be a white-noise disturbance term. g_t is real GDP growth; *LRGDP* is log of real GDP growth; *fin* will take three different values, namely; ratio of private sector credit to GDP (PGDP), ratio of bank deposits to GDP (BGDP) and ratio of private sector credit to total domestic credit (PDOM). *CU* is the capacity utilization which is proxied by output gap and has been estimated by using the HP filter.

Equation (7) can be viewed as an ARDL of order (*p*, *q*, *r*). The ARDL estimates $(p+1)^k$ number of regressions in order to obtain the optimal lags for each variable, where *p* is the maximum number of lags to be used and *k* is the number of variables in the model (Shrestha and Chowdhury, 2005). The SBC is used to choose the parsimonious model.

The first procedure in implementing the ARDL approach is to test the null hypothesis of H_0: $\beta_1 = \beta_2 = \beta_3 = 0$ is against the alternative hypothesis of H_1: $\beta_1 \neq \beta_2 \neq \beta_3 \neq 0$ from equation (7). This tests the existence of the long-run relationship. The variables β represent long-run parameters while variables α capture short-run dynamics.

The cointegration test is based on the Wald test. The Wald test can be carried out by imposing restrictions on the estimated long-run coefficients of economic growth, financial development and capacity utilization. Since the Wald test has non-standard distribution, Pesaran and Pesaran (1990) and Pesaran et al. (2001) provided two sets of critical values for the cointegration test. According to these authors, the lower bound critical values assumed that the explanatory variables x_t are integrated of order zero, or *I*(0), while the upper bound critical values assumed that x_t are integrated of order one, or *I*(1). The computed F-statistic from the Wald test will be evaluated with the critical values obtained from Pesaran et al. (2001). If the computed F-statistic is smaller than the lower bound value, then the null hypothesis is not rejected and we conclude that there is no long-run relationship between economic growth and the said explanatory variables. Conversely, if the computed F-statistic is greater than the upper bound value, the converse holds. On the other hand, if the computed F-statistic falls between the lower and upper bound values, then the results are inconclusive.

While the bounds test for cointegration analysis does not require pretesting of the variables for unit root, it is imperative that the unit root test be carried out to ensure that series are not integrated of an order higher than one. The use of the ARDL model practically breaks down in the presence of series

integrated of orders higher than one. The Augmented Dickey Fuller (ADF) test is used and the Swartz Bayesian Criterion (SBC) and the Akaike Information Criteria are used to determine optimal lag length for the tests.

Once cointegrating relationship has been ascertained, the long run and error correction estimates of the ARDL model are obtained. The error correction representation of the series can be specified as follows:

$$\Delta LRGDP_t = \alpha_0 + \sum_{i=1}^{p} \alpha_{1i} \Delta LRGDP_{t-i} + \sum_{i=1}^{p} \alpha_{2i} \Delta fin_{t-i} + \sum_{i=1}^{p} \alpha_{3i} \Delta CU_{t-i} + \varphi ecm_{t-1} + \varepsilon_t, \quad (8)$$

where φ is the speed of adjustment parameter and the *ecm* is the error correction term obtained from equation (6). The coefficient φ is expected to be negative and statistically significant to further confirm the existence of a cointegrated relationship.

2.2. Data issues and sources. This study will use annual data series spanning the period 1980 to 2010 reflecting the period for which most data on the finance variables of interest was available. Economic growth is proxied by per capita GDP growth. For the financial development variables, we will use three indicators commonly used in literature, namely private sector credit as a percent of GDP, bank deposit as a percent of GDP, and private sector credit as a ratio of domestic credit. The ratio of M2/GDP measures the degree of monetization of an economy, has been used as a standard measure of financial development in numerous studies, including King and Levine (1993a, 1993b); Murinde and Eng (1994); Lyons and Murinde (1994); Odhiambo (2004), amongst others. This ratio has, however, been the subject of many criticisms. Its major weakness, according to Ghirmay (2004), is that it is likely to measure the extent to which transactions are monetized, rather than functions of the financial system such as savings mobilization, as presented in the theoretical models. In other words, it more related to the ability of the financial system to provide financial services than to the ability to channel funds from savers to borrowers. For instance, economies with underdeveloped financial systems may have a high ratio of money to GDP as money is used as a store of value in the absence of other more attractive alternatives.

Thus, an alternative to the broad money ratio is the ratio of bank deposits to GDP as a quality proxy for financial development (see Demetriades and Hussein, 1996; Luintel and Khan, 1999; Suleiman and Abu-Qarn, 2007. The ratio of bank deposits to GDP gives an indication of how local savings are being effectively mobilized. In developing countries, a large component of the broad money stock is currency held outside the banking system. In principle, a rising ratio of broad money to income may reflect the more extensive use of currency, rather than an increase in the volume of bank deposits. Therefore, in order to obtain a more representative measure of financial development, currency in circulation should be excluded from the broad money stock, and this is the ratio of bank deposits to GDP, according to Xu (2000). Although this indicator of financial sector development reflects the capacity of financial intermediaries to mobilize savings, it may, however, not be closely related to financial services such as risk management and information processing.

The ratio of private sector credit to GDP is used as the second proxy of financial development (Odhiambo, 2007; Banda, 2006). This ratio is frequently used to assess the allocation of financial assets, which the first two indicators (the ratios of broad money to GDP and bank deposits) cannot provide. Therefore, an increase in these first two ratios does not necessarily mean an increase in productive investments. On the other hand, the ratio of private credit to GDP is related to the quantity and efficiency of investment, and hence to economic growth (De Gregorio and Guidotti, 1995). It is assumed that credit provided to the private sector generates increases in investment and productivity to a much larger extent than credit provided to the public sector. It is also argued that loans provided to the private sector better shows the improved quality of investments emanating from financial intermediaries' evaluation of project viability than loans directed at the public sector.

The third proxy that we will use is the share of private sector credit in domestic credit. This indicator captures the essence of domestic asset distribution within an economy. A financial system that simply channels credit to the government or state-owned enterprises may not be evaluating managers, selecting investment projects or pooling risks to the same degree as a financial system does when it allocates credit to the private sector. Lynch (1996) argues that government credit from banks in countries with a highly regulated financial system is frequently captive, and that banks have no control over its use. Consequently, the banks' important role of allocating credit is best represented by their lending to the private sector. Thus, the share of credit given to the private sector in domestic credit may reflect another aspect of the financial sector. Thus, it is important to use it as a proxy of financial development.

The fourth proxy will be the ratio of domestic credit to GDP, which measures the growth of the banking sys-

tem. It may provide an indication of financial depth and the degree to which the formal banking sector plays a role in the economy. The private/public sector split of domestic credit may provide an indication of the role of the state in the financial and real sectors of the economy. However, we will use better indicators such as private sector credit as percent of GDP and the share of private sector credit in domestic credit.

There are other indicators of financial development which have been used in literature, particularly the stock market capitalization as a percentage of GDP. It indicates the size of the stock market relative to the size of the economy. This indicator can provide an indication of the health of an economy. In our study, we will not use this indicator as the Malawi stock market, like most of the stock markets in SADC countries are still underdeveloped, except for the Johannesburg stock market in South Africa.

The data that will be obtained from different sources, including various issues of each individual country's Economic and Statistical Bulletins, various volumes of *International Financial Statistics* published by the International Monetary Fund, and *World Development Indicators* published by the World Bank.

3. Empirical analysis

3.1. Unit root and cointegration tests. Before the model is estimated, the time series properties of the data, including the unit root tests and cointegration tests, are analyzed.

Table 3. ADF test of unit root with trend and constant

	In levels	1st difference	Order of integration
CU	-0.830505	-5.716936*	*I*(1)
RGDP	-1.720308	-7.043264*	*I*(1)
PGDP	-0.586708	-6.802550*	*I*(1)
PDOM	-3.101101	-6.211434*	*I*(1)
BGDP	-2.165201	-6.623145*	*I*(1)
LRGDP	-8.030180*		*I*(0)
1% Mackinnon critical values	-3.98915	-3.987	–

Note: * Significant at 1% level, otherwise not significant.

The results of the ADF test shown in Table 1 indicate that all variables are *I*(1) processes except economic growth which is an *I*(0) process. This result renders support to the use of the ARDL approach since the ARDL is capable of handling *I* (0) and *I*(1) processes jointly. This is significant because the ARDL process breaks down in the presence of *I*(2) variables and must be applied only when the dependent variable is *I*(0).

After establishing the order of integration for the variables, we proceed to conduct cointegration test. With a relatively small sample size (40) and use of annual data, a lag length of 2 is used in the bounds test and results are presented in Table 2 below.

Table 4. Bounds test results*

Financial development proxy	Lags		Bounds critical values		F-stat.
			Lower	Upper	
PGDP	2	1%	4.324	5.642	6.5
	2	5%	3.116	4.094	
	2	10%	2.596	3.474	
BGDP	2	1%	4.324	5.642	4.1
	2	5%	3.116	4.094	
	2	10%	2.596	3.474	
PDOM	2	1%	4.324	5.642	7.3
	2	5%	3.116	4.094	
	2	10%	2.596	3.474	

Note: *Critical values based on Narayan (2004).

The F-test for the joint significance of the lagged level variables specified in equation (7) is conducted by appealing to the Wald test. The 1% lower and upper bound critical value provided by Narayan (2004) are 4.324 and 5.642, respectively. The calculated F-statistics show that there exist long-run relationship for PGDP and financial development as measured by PDOM and PGDP because the test values are above the upper bound critical value. We, therefore, reject the null hypothesis of $H_0 : \beta_1 = \beta_2 = =\beta_3 = 0$ in favor of $H_1 : \beta_1 \neq \beta_2 \neq \beta_3 \neq 0$ as specified in equation (7) for these variables. This in effect validates the existence of the long-run relationship amongst economic growth, financial development capacity utilization.

3.2. Long-run and short-run ARDL models. Tables 5 and 6 provide long-run and short-run estimates of the ARDL (1,0,1) (PGDP & PDOM) model, and Granger causality test, respectively.

Table 5. Long-run estimates (PGDP)

Variable	Coefficient	Std error	p-value
PGDP	0.005367	0.002115	0.0022*
CU	0.001441	0.000425	0.0005*
C	0.085756	0.021808	0.0005*

Note: *Significant at 1% level.

Table 6. Short-run results of ADRL

Variable	Coefficient	Std. error	t-statistic	Prob.
ΔPGDP	0.001310	0.001299	1.008494	0.3229
ΔCU	0.003406	0.000174	19.57921	0.0000*
ECM(-1)	-0.099944	0.047858	-2.088334	0.0471*
C	0.043432	0.006663	6.518418	0.0000*
R-squared	0.953798		F-statistic	172.0339
S.E. of regression	0.011385		Akaike info criterion	-5.985652
Prob (F-statistic)	0.000000		Schwarz criterion	-5.797059

Note: *Significant at 1% level, otherwise not significant.

Table 7. Pairwise Granger causality results

Null hypothesis	Obs	F-stat.	Prob.
PGDP does not Granger cause g_{yt}	28	1.41795	0.2626
g_{yt} does not Granger cause PGDP		9.58916	0.0009*
BGDP does not Granger cause g_{yt}	28	1.06053	0.3651
g_{yt} does not Granger cause BGDP		1.60795	0.3429
PDOM does not Granger cause g_{yt}	29	1.48490	0.2746
g_{yt} does not Granger cause PDOM		5.51734	0.0107**

Note: *Significant at 1% level, ** significant at 5% level, otherwise not significant.

Results show that there is a positive and significant relationship between financial development and economic growth in the longrun. This relationship however does not seem to hold in the shortrun. This finding suggests that the finance-growth nexus is a long-run phenomenon. By appealing to Granger causality tests however, it is found that economic growth drives financial development. That is, faster economic growth leads to financial deepening. This is true for two indicators of financial development, namely, private sector credit as a percent of GDP and private sector credit as a ratio of domestic credit.

On the other hand, financial development has no effects on economic growth. Instead, capacity utilization has a significant impact on economic growth. The absence of causality of financial development on economic growth could be attributed to the less developed financial sector in Malawi, and the fact that financial markets tend to develop slowly to explain medium term economic growth. Another possible explanation to this development is that, until recently, banks in Malawi have mostly been operating in the short end of the credit market – thus, most have tended to lend short and predominantly for consumption and not production – hence the weak link to economic growth. Furthermore, there is a weak relationship between economic growth and bank deposits as a percent of GDP. Following the finding of cointegrating relationship using PGDP and PDOM, we ignore presentation of results from the BGDP. While it would be expected that a rise in deposits could trigger more lending and hence have a positive impact on growth, the structure of the Malawi economy is such that the production and consumption systems are dependent on imports. This to a large extent would imply that the credit extended spills to imports and is, therefore, a leakage in the national accounting system. Furthermore, following similarity in findings using the PGDP and PDOM, the diagnostic tests presented here are only those from the PGDP. Tables A-1, and figures 1A and 2A in the Appendix show diagnostic tests. Statistically, the estimated model passes the diagnostic tests; there is no evidence of serial correlation (AR test), autoregressive heteroskedasticity (ARCH test), and stability test (CUSUM and CUSUM squared tests).

Conclusion and policy implications

This paper examines the causal relationship between financial development and economic growth in Malawi. Specifically, the study tries to investigate whether finance leads to economic growth in Malawi or bi-causal effects exist. The study uses the Autoregressive Distributed Lag (ARDL) approach (i.e. the bounds testing approach to cointegration) popularized by Pesaran and Pesaran (1997), Pesaran and Shin (1999) and Pesaran et al (2001). Results show that there is positive and significant relationship between financial development and economic growth in the long-run. This relationship however does not seem to hold in the short-run. This finding suggests that finance-growth nexus is a long run phenomenon. By appealing to Granger causality tests however, it is found that economic growth drives financial development. That is, faster growth leads to financial deepening. This is true for two indicators of financial development, namely, private sector credit as a percent of GDP and private sector credit as a ratio of domestic credit. The results are also sensitive to the measure of financial development that is used in the relationship. Financial development has no effects on economic growth. Instead, capacity utilization has a significant impact on economic growth. The absence of causality of financial development on economic growth could be attributed to the less developed financial sector in Malawi, and the fact that financial markets tend to develop slowly to explain medium term variations in growth. Furthermore, there is a weak relationship between economic growth and bank deposits as a percent of GDP.

These results imply that economic growth is vital for development of the financial sector in Malawi. The lack of causality of financial development on economic growth could be attributed to the less developed financial sector in Malawi, and the fact that financial markets tend to develop slowly to explain medium term variations in growth. In conclusion, there is need to put in place policies to support development of growth-enhancing financial sector. For financial development to have a positive effect on economic growth, it is necessary that the expansion of the financial system be accompanied by an increase in the flow of funds towards productive investment activities.

This paper did not empirically investigate the relationship between stock market development and economic growth. The stock market in Malawi is still in its infant stage, and thus is likely to play a major role in future.

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Appendix A

Table 1A. Long-run results (PDOM)

Variable	Coefficient	Std. error	T-ratio
PDOM	0.45389	0.0825	5.501697*
CU	0.003079	0.00104	2.9605769*
C	3.5893	0.22256	16.12734*

Note: *Significant at 1% level, otherwise not significant.

Table 2A. Short-run results (PDOM)

Variable	Coefficient	Std. error	t-statistic
DPDOM	0.003891	0.010504	0.370437
DCU	0.002729	0.000208	13.10676*
ECM (-1)	0.248139	0.075369	3.292303*
C	0.030028	0.002072	14.4936*
R-squared	0.957853		
S.E. of regression	0.011248		
Sum squared resid	0.00329	R-squared	0.957853
Hannan-Quinn criterion	-5.95389		
Prob(F-statistic)	0.0000	Adjusted R-squared	0.95299

Note: *Significant at 1% level, otherwise not significant.

Table 3A. Definition of variables

CU	Capacity utilization
RGDP	Real GDP growth
PGDP	Private sector credit as a percent of GDP
PDOM	Private sector credit as ratio of domestic credit
LRGDP	Log of real GDP growth
BDG	Bank deposits as a percentage of GDP

Appendix B. Diagnostic tests

Table 4A. Serial correlation, heteroskedasticity tests and normality tests

	Type of test	Null hypothesis	P-value	Decision
Serial correlation	Breusch Godfrey LM test	No serial correlation	0.428	Fail to reject
Heteroskedasticity	ARCH test	No ARCH effects	0.32	Fail to reject
Normality	Jarque Berra	Residuals are normally distributed	0.66	Fail to reject

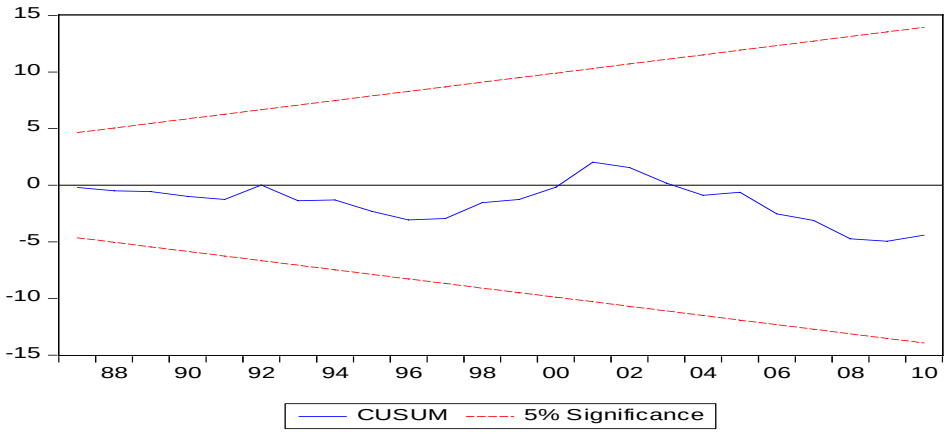

Fig. 1A. Stability tests – CUSUM

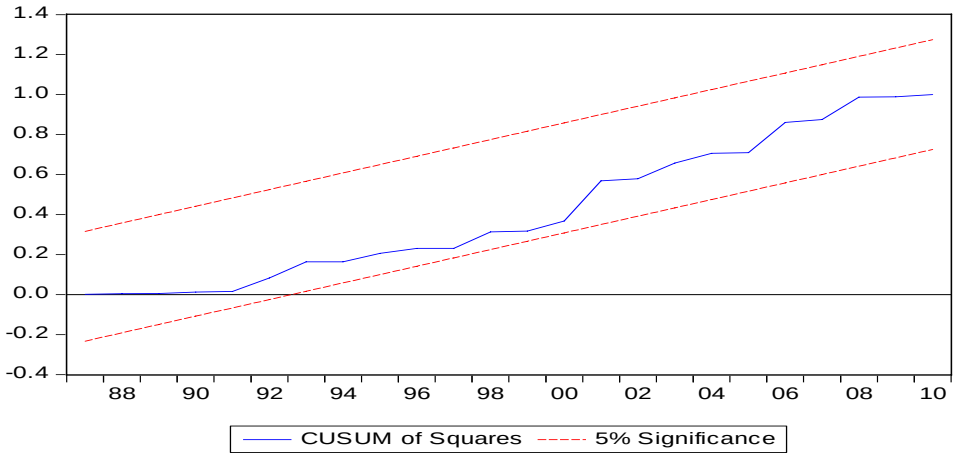

Fig. 2A. Stability test – CUSUM square

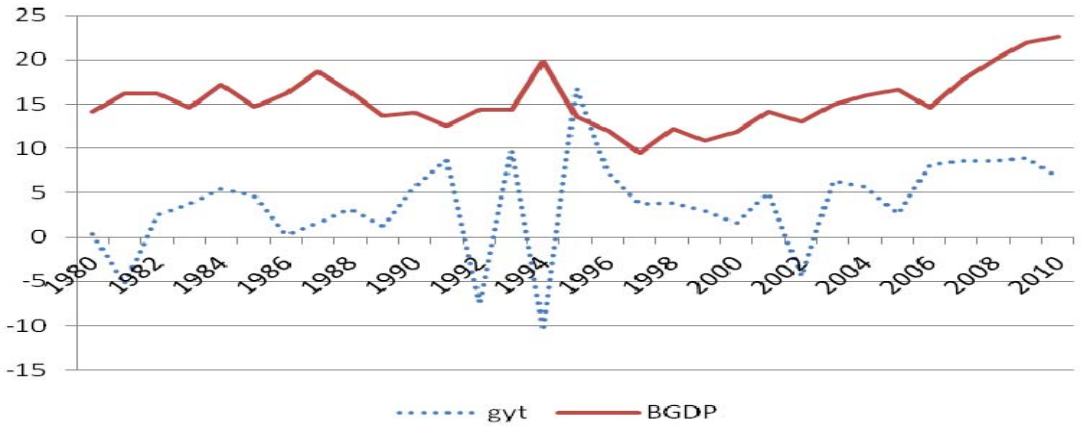

Fig. 3A. GDP growth and bank credit as a ratio to GDP

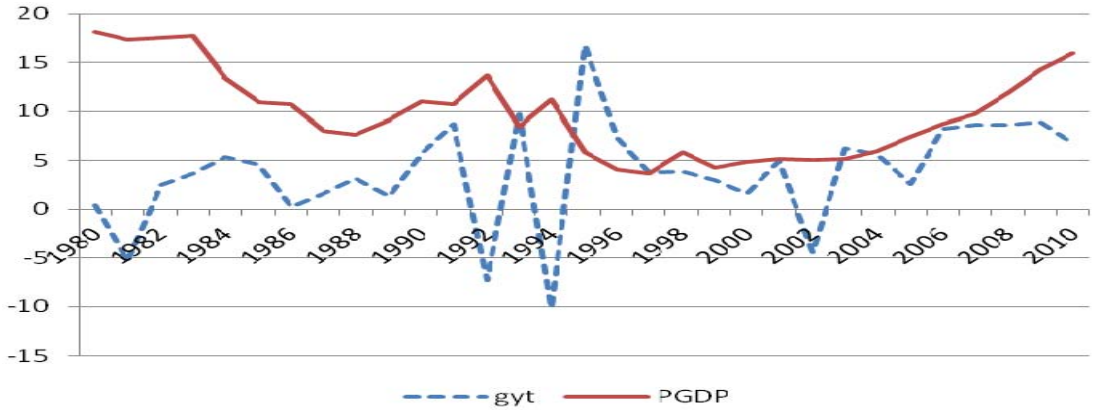

Fig. 4A. GDP growth and private sector credit as a ratio to GDP

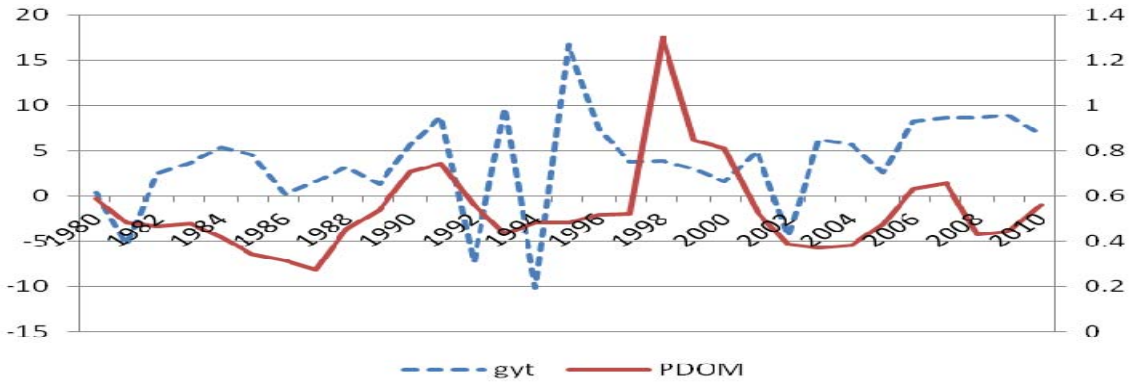

Fig. 5A. GDP growth rate and private sector credit as a ratio to domestic credit