Financial Reforms and the Finance – Growth Relationship in the Southern African Development Community (SADC)

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Abstract

This study seeks to establish the casual relationship between financial development and economic growth in the SADC region, factoring-in the role of financial reforms. Utilising Generalised Methods of Moments (GMM) and Panel Fixed Effects estimations, the study established that financial development has a negative effect on growth in SADC. Underdeveloped financial systems, structure and distribution of credit in the SADC countries and strong country heterogeneity factors are possible explanations to the relationship obtained. The financial reforms in the post liberalisation period have a positive but weak impact on growth in SADC. A bi-directional causality between finance and growth was established, although demand-following causality proved to be stronger. Addressing underlying structural issues in both the financial sector and overall macro economy of SADC countries may help in improving the role of finance in supporting growth in the region. Countries need to continually introduce reforms that enhance performance of their financial sectors. A strong demand-following causality implies that pro-growth policies should be intensified so that growth subsequently pulls with it financial development.

Keywords: Financial Development, Financial Reforms, Economic Growth, SADC, Generalised Methods of Moments

JEL Classification: G21, G28, O31, O33

1 Introduction

Regional economic development literature in SADC gives prominence to trade, production, employment and factor endowments overlooking the role of the financial sector. Limited attention has been given to financial systems and their

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role in regional development. There is limited empirical evidence regarding effects of financial development on economic growth in SADC despite the studies on the relationship between financial development and economic growth spanning across generations. Since Schumpeter (1911), and subsequently Robinson (1952) and Lewis (1955) the link between financial development and economic growth has been widely considered. Existence of a relationship between financial development and economic growth was confirmed by renowned scholars such as McKinnon (1973), Shaw (1973) and Levine (1997). Studies on SADC known thus far include Allen & Ndikumana (1998), Aziakpono (2004), Phakedi (2014) and Le Roux & Moyo (2015). Although these studies, except for Aziakpono (2004), covered the whole of SADC, they produced mixed results on the relationship between finance and growth in SADC. Furthermore, the studies on SADC omitted two issues which could be deemed important to the finance-growth relationship. Firstly the studies did not consider the effect of financial reforms and secondly, the studies did not attempt to establish the causality relationship between finance and growth in the SADC region.

The role of finance in economic growth in SADC has not been extensively researched in most literature and policy initiatives given that financial sectors of SADC countries, with the exception of South Africa, are regarded as less developed (KPMG 2014). SADC countries outside South Africa are not financially developed and experience high levels of financial exclusion (Allen et al., 2011).This notwithstanding, the role of finance in development of the region is gradually gaining importance, particularly as most countries embrace financial innovations and other initiatives aimed at enhancing financial sector support to economic activity. The increased cooperation within SADC on monetary policy issues, financial regulation, exchange rates, and finance and investment signifies the importance of finance in regional economic development. Over the past two decades there has been a gradual shift from wholesale to retail finance in support of development of Small to Medium Enterprises (SMEs). Substantial progress has been made over the past two decades in terms of financial inclusion and financial innovation, as well as cross-border banking in Africa's banking systems (Beck, Senbet and Simbanegavi 2015). In SADC, the effects of innovation in financial services on economic activity across-countries, including efficient financial transfers, remittances and increasing volumes of trade are evident (Maimbo, Saranga & Strychacz, 2010). Furthermore, initiatives in the form of microfinance and mobile banking have enhanced financial inclusion. The impact that these developments and financial innovation have had on economic activity in the region justifies the need for a relook on the role of finance on economic growth in SADC. In addition, the continually evolving financial landscape underscores the need for continuous research in this area.

Stylised facts on SADC indicate that the level of financial development is diverse across countries, with South Africa being the more financially advanced country (Table 1). Other countries such as Mauritius, Botswana and Namibia have fairly developed financial markets, with DRC, Madagascar and Malawi having the least developed financial markets (KPMG, 2014). Financial systems of most SADC countries are largely dominated by banks, with a few countries

such as South Africa, Mauritius and Zimbabwe having a relatively developed non-bank financial sectors (Schoombee 2011). South Africa has the largest level of domestic credit to private sector to GDP (147 per cent), followed by Mauritius (91.5 per cent), Namibia (48.5 per cent) and Botswana (27.5 per cent) as shown in Table 1. Notwithstanding the indicated disparities and underdevelopment, the banking sector in the SADC region has experienced significant growth in the past decade (KPMG, 2014). Initiatives to enhance financial development in SADC - mainly anchored in reforms introduced in the 1980s and 1990s (Kasekende, 2010), innovation and institutional development - managed to gradually increase depth, coverage of and access to financial systems over the past decades. The banking sector has been driving economic development for most of Southern Africa countries, providing capital and credit to both the private and the public sector (Allen et al., 2011).

Economic growth in the SADC region varies across countries although on average, the per capita income increased by three per cent per annum over the last decade (South African Institute of International Affairs, 2015). Traditionally, growth was driven mainly by the resource industry, and the services sector such as tourism in small SADC countries. In the last decade, growth has increasingly become more widespread across countries, including non-resource-rich countries (African Economic Outlook, 2013). For example, growth in Southern Africa was estimated at 3.8 per cent in both 2012 and 2013 – but 6.3 per cent in 2012 and 5.8 per cent in 2013; if South Africa is excluded (Schaffnit-Chatterjee, 2013).

The observed relationship between financial development and economic growth in SADC, based on descriptive analysis of data, shows that finance was positively related to growth in general (Figure 1). The descriptive analysis of data revealed a trend that in SADC, finance supports growth across three measures of financial development, namely Domestic Credit, Liquid Liabilities and Banking Sector Credit to Private Sector. Caution, however, needs to be taken in that the observed trend is highly statistical, based on averaged time series data, justifying the need for econometric estimations on the relationship. Notwithstanding the observed general relationship where finance is desirable for growth in SADC, Phakedi (2014) argued that the slow growth in some SADC countries cannot be attributed to undeveloped financial systems. Most SADC countries introduced financial reforms in the 80s and 90s (Kasekende 2010) through financial liberalisation. The reforms were mainly about reducing government involvement, freeing up financial markets, and strengthening financial institutions (Mowatt, n.d.). The objective was to facilitate development of the financial sectors, and subsequently growth, by removing restrictions. Le Roux and Moyo (2015) observed a short run positive relationship between financial liberalisation and economic growth in SADC. As such, the role of financial reforms in enhancing development of financial systems of SADC countries and the subsequent effect on growth should be acknowledged.

This study seeks to determine the causal relationship between financial development and economic growth in the SADC countries, extending the analysis to cover the effects of financial reforms. The study uses a dynamic panel model which reflects a generic endogenous growth (AK) model with financial inter-

mediation (Mankiw, 1995). The dynamic panel model tests for the nature of the relationship, introduces the reforms in the model and tests the direction of causality.

This study contributes to policy research on regional economic development from a financial perspective. Evidence based policy formulation is critical for sustainable economic development, especially in respect of the current drive towards regional financial integration among SADC countries. Regional financial integration could potentially address several of the issues associated with small, fragmented financial markets in Africa (Wakeman-Linn & Wagh 2008).

The rest of the paper is organised as follows: section two covers the related literature whilst section three describes the data and the methodology used; section four discusses the empirical results and lastly section five concludes the paper and discusses policy recommendations.

2 Literature Review

Financial development, an improvement in the quality, quantity, or efficiency of financial systems (financial markets, banks and other financial intermediaries) is a desirable goal of any country (Maskay, 2012). Countries endeavour to have in place factors, policies and institutions that lead to effective financial intermediation and markets, as well as deep and broad access to capital and financial services (World Economic Forum, 2012). Sahay, Čihák, N'Diaye and Barajas (2015), view financial development as a combination of financial sector depth, access, and efficiency.

Literature on the relationship between finance and economic growth dates back to the early twentieth century and can be traced back to Schumpeter, 1911 (Nyasha & Odhiambo, 2014). The Schumpeterian perspective is that entrepreneurs require finance to be able to adopt new production techniques (Ang, 2008). Schumpeter also observed that financial markets channel funds to the most efficient investors that foster entrepreneurial innovation for economic growth (Kagochi, Nasser & Kebede, 2013). Notable studies on finance-growth, that follow the Schumpeterian argument, include Gurley and Shaw (1955), Goldsmith (1969) and Hicks (1969). They argued that development of a financial system is crucially important in stimulating economic growth (Ang, 2008). There are three possible relationships between financial development and economic growth: the supply-leading or finance-led growth; the demand-following or growth-driven finance and the two-way causal relationship.

Proponents of the finance-led growth hypothesis, including King and Levine (1993); Rajan and Zingales (1998), postulated that financial development has a stimulating impact on the economy. The supply-leading hypothesis can be traced back to Bagehot, 1873 who argued that the financial system played a critical role in igniting industrialisation in England by facilitating the mobilisation of capital (Nyasha & Odhiambo 2014). The hypothesis holds that financial development promotes growth in the economy through efficient allocation of capital, mobilisation of savings through attractive instruments and lowering costs of

information gathering (Akinlo & Egbetunde, 2010). This view was reinforced by Schumpeter who argued that finance leads economic growth and that financial institutions are necessary for the capitalistic economy's development (Nyasha & Odhiambo 2014). Goldsmith (1969), McKinnon (1973) and Shaw (1973), also emphasised the role of financial services in promoting economic growth. Initiatives towards enhancing financial intermediation and promoting financial inclusion in SADC strengthen the role of finance in economic activity. These developments lend support to this hypothesis, justifying the need for a review of the finance-growth nexus in SADC.

Contrasting the finance-led growth hypothesis Robinson (1952), Kuznets (1955) and Stem (1989) argued that an increase in growth generally leads to increased financial development. The demand-following hypothesis, developed by Robinson (1952), suggests that demand for financial services resulting from economic growth supports financial development (Chowa & Fung. 2013). Robinson theorised that financial services respond to economic growth as a result of higher demand for financial services (Ang, 2007). The rationale is that economic growth generates increased demand for financial instruments and financial markets grow as they respond to this demand (Akinlo & Egbetunde, 2010). Michalopoulos, Laeven and Levine (2013) argued that economic progress itself makes any existing financial system less effective. Levine (2010) added that without continuous development of the financial system, the quality of financial services declines, thus slowing down economic growth. Fundamentally, in some countries of the SADC, growth has been driven by resources, which in turn could be driving financial development, supporting this hypothesis. However, the developments in the financial sector of SADC countries in the past decade could be contrary to this theory.

The two-way causal relationship recognises the bi-directional causality relationship between finance and growth. Lewis (1955) stated that financial market develops in response to economic growth, and financial markets in turn generate feedback effect that propels real growth. Studies by Abu-Bader and Abu-Qarn (2008), Wolde-Rufael (2009) and Kara, Nazlıoğlu and Ağır (2010) acknowledged the existence of this type of relationship. The bi-directional relationship was supported by a number of endogenous growth models (Chowa & Fung 2013). Patrick (1966) added that the direction of causality between financial development and economic growth changes over the course of development. Calderón and Liu (2003) observed that financial development induces real capital formation in the early stages of economic development but gradually diminishes and eventually becomes responsive to economic growth. Nyasha and Odhiambo (2014) concluded that the supply-leading pattern precedes the demand-following pattern in the stages of economic development.

Most finance-growth studies, including Levine (2005), Chowa & Fung (2013), Odhiambo 2007, Zhuang et al. (2009), however, follow a Schumpeterian view of financial intermediaries as agents that monitor, finance and foster entrepreneurship - and hence, investment and growth (Valverde, Paso & Fernández 2004). Theoretical models show that financial systems ameliorate market frictions, thereby influence saving rates, investment decisions, technological innova-

tion, and hence long-run growth rates (Levine 2005). Conventional knowledge has been in favour of the supply-leading response, where the development of the financial sector is expected to lead the development of the real sector (Odhiambo 2007).

Empirical evidence shows that a more developed financial system is associated with higher rates of economic growth (Lawrence and Longjam, 2003). Studies based on industry or firm level data revealed a positive impact of financial sector development on economic growth (Morgan, 2010). The depth of the financial sector has a positive and statistically significant effect on economic growth and is greater for developing countries than for developed countries (Zhuang et al. 2009). There are few studies on finance-growth in SADC. Phakedi (2014), using Fixed-Effects; GMM, and Seemingly Unrelated Regression Estimators (SURE) finds that that money supply and credit are negatively related to economic growth in 14 SADC countries (1990-2012). Le Roux and Moyo (2015), using GMM estimates, found a short-run positive relationship between financial liberalisation and economic growth in SADC countries. Allen and Ndikumana (1998) found a long-run positive correlation between financial intermediation and economic growth for SADC members. Aziakpono (2004) studied the SACU area, and found strong evidence of the relevance of domestic financial intermediation in promoting growth in South Africa, but weaker for Botswana and Lesotho.

2.1 Criticism of the Finance–Growth Relationship

The positive role of financial development in economic growth has been questioned and not all researchers are convinced about the importance of financial systems. Lucas (1988) dismissed the importance of financial development as a precondition for economic growth. McKinnon (1973) and Shaw (1973) criticised the role of financial intermediaries and financial markets in the development process. The McKinnon model assumes that investment in a typical developing economy is mostly self-financed (Ang, 2008). The 2008 financial crisis had a negative impact on economies, which exposes deficiencies of theory by Modigliani and Miller (1958) who postulated that real economic decisions are independent of financial structures. Pan and Wang (2013) cited the U.S. financial crisis of 2007-2009 as an example of financial system malfunctions where growth-retarding impacts of financial development exist. The level of financial development also affects the extent of negative effects of financial crises on economic development. Research findings of Lartey and Farka (2011) revealed that countries with better developed financial systems are more adversely affected by crises than those with underdeveloped financial systems.

2.2 Financial Reforms and Growth

McKinnon (1973) and Shaw (1973) are among the first renowned scholars to raise an argument against financial repression, putting forward a case for financial reforms. They pointed out that financial repression is a major source of

financial sector under-development, which in turn hinders growth. Reforms of financial markets include policies aimed at supporting higher economic growth (Bumann, Hermes & Lensink, 2012). Financial reforms have had double edged effects on economies, of either supporting financial development or spreading financial crises (Tyavambiza & Nyangara, 2015). In the SADC region, the major financial reforms implemented in the 1980s and 1990s were mostly financial liberalisation. Financial liberalisation includes official government policies that focus on deregulating credit as well as interest rate controls, removing entry barriers for foreign financial institutions, privatising financial institutions, and removing restrictions on foreign financial transactions (Bumann et al., 2012). Financial liberalisation in most SADC countries was part of economic structural adjustment programs prescribed by the IMF for purposes of driving growth through private sector development.

Debate on the impact of financial reforms or financial liberalisation on development is as inconclusive as the debate on finance-growth relationships. Arguments for and against the positive role of financial liberalisation on economic growth have been presented. Moyo et al., (2014) argued that reforms enhance growth by promoting financial innovation and efficiency and competition in the banking industry. Arguments in favour of liberalisation hold that it increases the amount of resources, reduces the cost of debt, create completion that brings in efficiency, leading to a rise in investment and growth. On the contrary, financial liberalisation may worsen asymmetric information in the financial sector and create competition that increases financial fragility of financial intermediaries such as banks.

Empirical evidence on the impact of reforms on growth is equally mixed. Tswamuno, Pardee, and Wunnava (2007) found that liberalisation of the capital account is necessary but not sufficient for economic growth in SSA. Misati and Nyamongo (2012) recognised the growth reducing effects of financial liberalisation dominance and recommended institutional reform measures and managed financial openness for SSA countries. With liberalisation, the bank based nature of financial systems in SSA makes them vulnerable to systemic bank failures that would have a contagious effect on the economy (Moyo et al., 2014). Le roux and Moyo (2015) stated that financial liberalisation supports economic growth in SADC. Most SADC countries introduced financial reforms in the 1980s and 1990s through financial liberalisation, which enhanced development of their financial sectors (Kasekende, 2010). Financial development was enhanced through the removal of restrictions, increasing access to credit as well as broadening the array of institutions which provide financial intermediation. The expectation is that reforms have a positive effect on economic growth and on that basis financial reforms should be included in the finance-growth relationship analysis.

3 Methodology

3.1 Data and Variables

This study uses annual data for 15 SADC countries, covering the period 1985 to 2014. The data were obtained from the World Bank's World Development Indicators Database (2015) and the Global Financial Development Database (GFDD) for 2015. Variables used for measuring financial development, however, require some justification. The rationale is that what represents an appropriate measure of financial development proved to be controversial in the literature (Ghirmay, 2004). Lawrence and Longjam (2003) pointed out that literature has generally used variables that capture the degree of financial intermediation, efficiency of the financial sector, monetisation of the financial system, the role of commercial banks in allocating funds, and the relative importance of the stock market. This study used total domestic credit by the banking system to GDP (DC); liquid liabilities of the financial sector (M3 to GDP) and banking sector, private sector credit to GDP (Private credit) as proxies for measuring financial development.

Domestic credit capture the full degree of intermediation in developing countries, as governments - which provide infrastructure for economic development - often borrow from the financial markets (Adusei, 2012). Government borrowing not only affects credit to other sectors in domestic markets but often also invite interference by government in the markets as well, which affects financial development. Credit to the private sector represents an accurate indicator (proxy) as it is a measure of the quantity and quality of investment (Beck et al., 2000). Credit to the private sector is often used as a proxy for measuring financial development in literature. Liquid liabilities consist of currency held outside the bank system plus interest-bearing total deposit liabilities of banks and other financial institutions. It also reflects the overall size of the financial intermediary sector in a country. Liquid liabilities are used as a measure of "financial depth" and thus of the overall size of the financial intermediation sector (King and Levine, 1993a). Ideally, the study should have included a fourth measure (stock market capitalisation) to capture the non-bank financial sector but lack of data and limited development of stock markets in most SADC countries renders the variable inappropriate.

Economic growth is measured by real GDP per capita, following King and Levine, (1993) as it goes beyond indicating a country's economic size through income stock but also captures distribution of this income, enabling cross-country comparisons.

3.2 The Finance-Growth model

The finance-growth nexus is anchored on the endogenous growth model, also known as the AK model of growth with financial intermediation (Mankiw, 1995). This model has also been used by Barro Sala-i-Martin (1995), Barro (1997), and Bekaert et al (2005). The model reflects a production function which relates out-

put to capital and labour and is often expressed as a Cobb Douglas production function:

$$Y_{i,t} = A_{i,t} L_{i,t}^{\beta} K_{i,t}^{\gamma} \tag{1}$$

where i and t index country and time respectively. Y, L, and K represent real per capita GDP, labour, and capital respectively. The function is expanded by introducing other interest variables and converting it to a linear form by taking logarithms. This study follows Bekaert etal (2005) and defines the logarithmic growth in real GDP per capita for country i between time t and $t+k$ as:

$$y_{i,t+k,k} = \frac{1}{k} \Sigma_{j=1}^{k} y_{i,t+j} \quad {}_{i=1,.....N} \tag{2}$$

where, as Hassan et al (2011) put it, $y_{i,t} = GROWTH_{i,t} = \log GDPPC_{i,t} - \log GDPPC_{i,t-1}$,

$i = \{1, 2, \ldots N\}$ and N is the number of countries in our sample. The initial level of log GDP per capita is denoted as $Q_{i,0}$ and the country's long-run (steady state) per capita GDP as Q_i^*, taking a first-order approximation to the neoclassical growth model (see, Mankiw, 1995), we can derive

$$y_{i,t+k,k} = -\rho[Q_{i,t} - Q_i^*] \tag{3}$$

where ρ is a positive conditional convergence parameter. The literature often implicitly models Q_I^* as a linear function of a number of structural variables such as the initial level of human capital. Hence a prototypical growth regression can be specified as

$$y_{i,t+k,k} = -\rho Q_{i,t} + \gamma' X_{i,t} + \varepsilon_{i,t+k,k} \tag{4}$$

where $X_{i,t}$ are the variables controlling for different levels of long-run per capita GDP across countries. Equation 4 is the same as the model $G(j) = \alpha + \beta F(i) + \gamma X + \varepsilon$ used by Levine (1997) to run 12 regressions on a cross-section of 77 countries. Equation 4, however, is a panel data model which considers both the cross-section and time elements of the data set. This study's dynamic panel regression model for the finance-growth analysis in SADC is:

$$\begin{aligned} \vartheta_{i,t} = \beta_0 + \alpha_{i,t\vartheta i,t-1} + \Sigma_{F=1}^{3} \beta_F FD_{i,t} + \beta_4 GCF_{i,t} + \beta_5 GEX_{i,t} + \beta_6 CPI_{i,t} \\ + \beta_7 TO_{i,t} + \beta_8 RINT_{i,t} + \varepsilon_{i,t} \end{aligned} \tag{5}$$

where β_0 represents the initial real GDP per capita, $\vartheta_{i,}$ is real GDP per capita growth and $\vartheta_{i,t-1}$ is the lagged values of growth for each country and $\Sigma_{F=1}^{3} FD_{i,t} = \{LL_{i,t} + dDC_{i,t} + BCP_{i,t}\}$ represents proxies for financial development entered individually in each regression as Liquid Liabilities (LL) = M_3/GDP; DC = total domestic credit to GDP and BCP = bank credit to private sector/GDP. GCF is gross fixed capital formation, GEX is government expenditure to capture and control the varying size of countries, CPI is the level

of consumer price index reflecting inflation, TO measures trade openness of a country and RINT is real interest rate. $\alpha_{i,t}$ is the coefficient which estimates the dynamic effect of the model and β is the coefficient for the independent variables to be estimated. To capture the effects of financial reforms, a dummy variable was introduced which takes the value of 1 from the year when a particular country introduced reforms going forward or zero otherwise. The estimated model which captures the effect of financial reforms for SADC then becomes:

$$\begin{gathered}\vartheta_{i,t} = \beta_0 + \alpha_{i,t}\vartheta_{i,t-1} + \beta_1 BCP_{i,t} + \beta_2 DC_{i,t} + \beta_3 LL_{i,t} + \beta_4 GEX_{i,t} \\ +\beta_5 CPI_{i,t} + \beta_6 TO_{i,t} + \beta_7 RINT_{i,t} + \beta_8 FR_{i,t} + \varepsilon_{i,t} \\ t = 1, 2 \ldots . T; i = 1, 2 \ldots . N\end{gathered} \tag{6}$$

Where FR is a dummy variable which take a value of 1 from the year a country introduced financial reforms and going forward, or zero otherwise. The dummy is also interacted with all the proxy variables for financial development. The resultant interactive dummy variable represented financial development in the post liberalisation/reform period as follows:

$$\begin{gathered}\vartheta_{i,t} = \beta_0 + \alpha_{i,t}\vartheta_{i,t-1} + \beta_2 GEX_{i,t} + \beta_3 CPI_{i,t} + \beta_4 TO_{i,t} + \beta_5 RINT_{i,t} \\ +\beta_6 (FR_{i,t} * BCP_{i,t}) + \beta_7 (FR_{i,t} * DC_{i,t}) + \beta_8 (FR_{i,t} * LL_{i,t}) \varepsilon_{i,t} \\ t = 1, 2 \ldots . T; i = 1, 2 \ldots . N\end{gathered} \tag{7}$$

3.3 Causality Tests

After estimating the regression models, the study carries out panel Granger causality tests to establish direction of causality between economic growth and financial development. Following Caporale et al„ (2009), the set of equation for testing the causality is shown in Equation (8).

$$\begin{gathered}\vartheta_{it} = \alpha_0 + \sum\nolimits_{n=1}^{N} \alpha_i^n \vartheta_{i(t-j)} + \sum\nolimits_{n=1}^{N} \beta_i^n FD_{i(t-n)} + u_{it} \\ FD_{it} = \alpha_0 + \sum\nolimits_{n=1}^{N} \alpha_i^n FD_{i(t-k)} + \sum\nolimits_{n=1}^{J} \beta_i^n \vartheta_{i(t-n)} + u_{it} \\ \text{with n } \epsilon \text{ N* and } u_{it} \text{ i.i.d.}\end{gathered} \tag{8}$$

Equation 11 is an autoregressive (AR) model that can be converted into an AR (2) by setting N equal to two. A panel test for Granger causality test the significance of $\beta_1 = \beta_2 = 0$ using a χ^2 with two degrees of freedom. To establish if there is a long-run linkage between financial development and economic growth, this study tests the restriction $\beta_1 + \beta_2 = 0$, under the null hypothesis that there is no long-run effect (Caporale *et al.*, 2009).

4 Empirical Results

This section presents results of empirical estimations performed in this study. Table 2 shows the panel unit root test results of the variables in this study. All variables except for Bank Credit to Private Sector are stationary in levels. Variables are stationary at level mainly because variables are in ratios or in percentages, which reduction makes them stationary. Furthermore, some of the variables are growth rates which technically are as good as differenced. Bank Credit to Private Sector is, however, stationary after first differencing.

4.1 Generalised Methods of Moments Results

Table 3 presents GMM estimation results across three models. Each model has a different variable for measuring financial development. The estimations retain the same instruments for each model with the only change being on the respective proxy variable for financial development

Domestic Credit

Results of the GMM estimations show that Domestic Credit has a negative, statistically insignificant, relationship with economic growth (Model1). The negative sign implies an inverse relationship between domestic credit and economic growth. The results are consistent with findings by Phakedi (2014) and Le Roux & Moyo (2015). Le Roux & Moyo (2015) in a paper on financial liberalisation and economic growth in the SADC find out that domestic credit to private sector is negatively related to GDP. The negative relationship between credit and economic growth is also not uncommon in studies for other regions. Samargandi, Fidrmuc and Ghosh (2014) found that financial development has an adverse effect on economic growth in Middle Income Countries, consistent with Arcand, Berkes and Panizza (2012).

The negative sign between domestic credit and economic growth can be explained by the possibility of crowding out of credit to private sector by credit to government in SADC countries. Most credit in SADC countries could be going to non-productive sectors through government borrowing to finance consumptive activities. The negative relationship reflects distortions in the credit supply process (Gregorio and Guidotti 1991), inefficiencies in credit allocation (Allen and Ndikumana 1998) and cross-country heterogeneity and higher volatility of business cycles (Loayza and Ranciere 2006). Increase in credit to consumptive activities have a tendency to increasing imports, especially given production constrains in most SADC countries, which hurts growth. In addition, SADC countries are also susceptible to business volatility emanating from various sources including, internal conflicts (Zimbabwe, Mozambique, DRC, Angola); global developments (South Africa, Botswana) and internal economic instability, which affects currency and production.

Liquid Liabilities

In model 2, Liquid Liabilities has a positive, statistically insignificant, relationship with economic growth. The positive sign, however, is in line with Allen and Ndikumana (1998), Phakedi (2014) and Petkovski and Kjosevski (2014).

Allen and Ndikumana (1998) found a positive and significant relationship between economic growth and the size of the financial sector in Southern African countries. Phakedi (2014) obtained mixed results for SADC with money supply, exhibiting a positive effect under the Fixed Effects Model, but negative under GMM estimation. Petkovski and Kjosevski (2014) argued that any positive relationship is consistent with theory presented by Shaw (1973) that savings deposits increase as the financial system expands and helps growth by facilitating economic activity. Such a result would be consistent with the idea that money supply helps growth by facilitating economic activity (Caporale et al., 2009). Although insignificant, the positive sign could imply that money supply has potential to drive growth in SADC, assuming the money supply growth is not excessive to push up inflation, especially with existing production constraints in some SADC countries.

Bank Credit to Private Sector

Bank Credit to Private Sector has a negative and significant impact on economic growth. Implicitly, the result is suggesting that banking sector credit to the private sector has an adverse effect on growth in SADC. This unexpected result is in line with Allen and Ndikumana (1998) who observed that regressions with annual data produced negative coefficients on credit provided by banks in SADC. The negative relationship between credit and economic growth is also not uncommon in other studies. Arcand et al., (2012), found a negative relationship as the level of credit to the private sector approaches GDP levels. The result is also consistent with findings by Petkovski and Kjosevski (2014) and Caporale et al., (2009).

There are possible explanations for the negative relationship between bank credit to private sector and economic growth. First, there is a possibility that credit extended to the private sector by banks in some countries resulted in non-performing loans (Cojocaru, Hoffman & Miller, 2013). There are SADC countries that recorded high non-performing loans over the period under study, including Zambia 26% in 2000 and 23.6% in 2001; Tanzania 25.2% in 1999; Mozambique 23.4% in 2001 and Madagascar 19.6% in 2002 (World Development Indicators, 2015). Non-performing loans discourages financial institutions from lending and this impact negatively on economic growth (Romer, 2012). Secondly, the allocation of credit to private sector also has an impact on growth. Where credit is directed to non-productive private sectors, it does not drive production or economic growth. Beck, Büyükkarabacak, Rioja and Valev (2012) postulated that credit to enterprises has a correlation with economic growth, and credit to households has no correlation to economic growth. Credit extension to the private sector in the SADC countries was probably crowded out by credit to the household sector, which normally goes towards financing final consumption (Phakedi 2014). Third, the negative relationship between bank credit to private sector and economic growth could be a result of a number of banking crises that countries experienced. Petkovski & Kjosevski (2014) put forward this argument for countries in Central and South Eastern Europe, having been affected by banking crisis in the 1990s, 2008 and 2010. A number of SADC countries also had banking crises.

Control Variables

Lagged GDPPC has a positive impact on economic growth, which is indicative of self-propelling growth that is dependent on previous period levels. Gross Fixed Capital Formation has an expected positive effect on growth consistent with Shaheen, Awan Waqas, and Aslam (2013). The results are contrary to the findings by Mbulawa (2015) where gross fixed capital formation was found to have had a detrimental effect on growth in SADC. The Consumer Price Index (CPI) has a negative effect on growth, confirming the a priori expectation. The results are in line with Bittencourt, van Eyden & Seleteng (2015), who find that inflation not only reduces economic activity in the SADC region, but also weakens the institutional framework conducive to a stable macroeconomic environment. Real Interest Rate has a negative effect on growth due to its impact on income distribution, costs, inflation and level of demand in the economy, consistent with Odhiambo (2011). Trade openness significantly supports economic growth in SADC, a result in line with Mbulawa (2015). As the countries in SADC open their economies for trade, the rate of growth increased significantly. Government expenditure has a negative effect on GDP, as government spending directed at non-productive expenditures could have a negative effect on economic growth (Gorlach & Le Roux, 2013). The negative effect of government expenditure is supported by Le Roux & Moyo (2015) and Misati & Nyamongo (2012).

4.2 Panel Fixed Effects Results

This study runs Panel Ordinary Least Squares (OLS) estimations with Fixed and Random Effects as robust checks for the GMM estimates. Panel Ordinary Least Squares (OLS) estimations involve running both Random Effects and Fixed Effects. Fixed effects model controls for, or partial out, the effects of time-invariant variables with time-invariant effects (Williams, 2015). In the random effects model, the individual-specific effect is a random variable that is uncorrelated with the explanatory variables (Torres-Reyna 2007). The study conducted Hausman-Test in order to ascertain between fixed and random effects, by testing the consistency of the random effects model (Gujarati & Porter, 2009). The Hausman tests indicate that Fixed Effects are acceptable to Random Effects for all the models (Table 4). Fixed Effects assumes that certain attributes within the individual may impact or bias the predictor or outcome variables and we need to control for this. Table 5 shows the results of panel estimations with Fixed Effects. The results of panel estimations with Fixed Effect confirm outcomes of the GMM estimations. Domestic credit now has a negative and significant effect on economic growth, consistent with the results of GMM estimates. Liquid Liabilities shows a negative and significant effect of liquid liabilities on growth, a result that is contrary to the positive effect obtained under GMM estimation. The reason for the variation could be difficult to ascertain except to note that the sign of the coefficient for Liquid Liabilities is now consistent with those of other proxy variables. Banking Sector Credit to Private Sector's coefficient remains negative under both estimations.

4.3 Financial Reforms and the Finance-Growth Nexus in SADC

The study also tests the effects of financial reforms on the finance –growth relationship in the SADC region. Results in Table 6 show that the dummy for financial reforms variable is not significant across all the measures of financial development. The results suggest that financial reforms have no effect on growth in the SADC region. The dummy variables are, however, negative suggesting that financial liberalisation is adverse to economic growth, indicative of growth reducing reforms. When the dummy variable is interacted with the measures of financial development, to test effects of post liberalisation financial development on growth, the dummy, however, causes coefficients for Domestic Credit and Liquid Liabilities to be positive. The implication is that in the post liberalisation period expansion in domestic credit and liquid liabilities supported on growth in SADC. The deduction from the results could be that financial reforms managed to remove restrictions and impediments that were inhibiting development of financial systems of SADC countries. The positive result is in line with findings by Le roux and Moyo (2015).

Given the negative relationship between credit and growth in SADC obtained earlier, the result could, however, be suggesting that financial reforms yielded limited effects on growth. The result may be indicating the inadequacies of the reforms implemented in sustainably driving growth, suggesting that liberalisation alone is not enough for finance to drive growth. Inherently, the financial sector is dynamic and requires continuous reforms in the sector. The dummy and interacted dummy variables remain insignificant, possibly implying a weak impact of financial reforms. The success of financial liberalisation in SADC could have been limited by other dependent factors, such as, the lack of well-established and secure property rights and sound regulatory framework to monitor the financial system (Romer, 2012).

The financial reforms dummy and interactive dummies did not change the impact of financial development, specifically domestic credit and bank credit to private sector, except for liquid liabilities, on growth. These results could suggest that financial reforms are a necessary, but not sufficient condition for finance-growth analysis.

5 Panel Granger Causality Results

Empirically, the nature of a relationship between financial development and economic growth in the SADC region is not exhaustive in establishing a causal relationship. Causality tests need to be performed to ascertain the direction of causality between financial development and economic growth. Causality tests in this study were done on a panel Autoregressive Model of order 2, using GMM estimation. Tests were done using the Wald-test Chi Square statistic, under the null hypothesis that the coefficients are individually (for the short run) or jointly (for the long run) equal to zero. The results are presented in Tables 7, 8 and

9. Granger causality between Domestic Credit and real GDP per capita runs from GDP to credit and is only in the short run (Table 7). There is no long run causality between the two variables. Table 8 shows that there is no causality, in either way, between Liquid Liabilities and Real GDP per capita both in the short or long run. In Table 9 empirical results suggest bidirectional causality between Real GDP per capita and Bank Credit to Private Sector. The long run relationship is positive when causality is running from Real GDP PC to Bank Credit to Private Sector and it becomes negative when causality reverses. Overall, the Granger causality tests using Wald tests suggest that causality generally runs from growth to financial development and the long run causality relationship is positive. Supply leading causality exists only under Bank Credit to Private Sector.

Overall, panel Granger causality shows bidirectional causality between financial development and economic growth. Causality is, however, strong and significant when running from economic growth to financial development. As such, a strong demand following causality was confirmed. The demand following causality relationship is highly expected for SADC countries given that the financial sectors of most countries have limited depth and efficiency, and countries experience high levels of financial exclusion when compared to other countries. Financial innovation such as microfinance and mobile money, though they are reducing financial exclusion, remains weak to drive growth in the financial sectors. The weak effects of financial development on growth in SADC support the 'demand-following finance' hypothesis in line with (Aziakpono, 2004). Demand following causality is also supported by the fact that growth in most Southern African countries has mainly been driven by commodities and natural resources (AfDB, 2013). As such, when economies grow, they pull with them financial systems.

Whilst there are no studies that have attempted on establishing direction of causality between financial development and economic growth for SADC as a region, causality tests carried out for some individual countries have effects that could support results of this study. For example, Sunde (2012) found a bidirectional relationship in South Africa and Namibia; Odhiambo (2010) found unidirectional causal flow; Tyavambiza and Nyagara (2015) found a supply leading causality effect in Zimbabwe; Aziakpono (2004) found demand following finance in Botswana and Akinlo and Egbetunde (2010) a demand following in Zambia and evidence of bidirectional relationship between financial development and economic growth in South Africa.

6 Conclusions and Recommendations

The study empirically tests the relationship between financial development and economic growth for the SADC countries using GMM and Panel Fixed Effects estimations. Empirical evidence shows an inverse relationship between financial development and economic growth indicating that financial development does not support or is adverse to economic growth in SADC. Financial reforms were

found to be insufficient to drive growth. Bidirectional causality between financial development and economic growth was established. Causality is, however, strong when running from economic growth to financial development and weak when running in the opposite direction. Although the results are consistent with findings by Phakedi (2014), Allen & Ndikumana (1998) and Le Roux and Moyo (2015), they are not consistent with a priori expectations. In comparison with other studies in the Sub Saharan Africa, the results of this study are consistent with Egbetunde and Akinlo (2014) and Ngongang (2015). Egbetunde and Akinlo's (2014) results indicted a negative impact of financial development on economic growth in the Sub-Saharan region. Ngongang, (2015) found that financial development has a weak effect on economic growth.

Possible explanations for these study findings are fourfold. Firstly, the weak effect of financial development on economic growth is mainly due to underdeveloped financial systems that hinders growth (Ngongang, 2015). Underdeveloped financial system results in low credit levels, poor institutional structure and lack of depth and access to finance (financial exclusion) which retards growth. Under-developed financial sector and high levels of financial exclusions limit financial depth and efficiency, which is supposed to sustainably drive growth. The FinMark Trust survey report (2013) indicates the SADC countries have high levels of financial exclusion. Whilst there have been a number of initiatives to enhance development financial systems in SADC, focus has been mainly toward increasing financial inclusion. Weak institutions, inadequate infrastructure, lack of sustainable resources to support financial inclusion initiatives hinder development of financial sectors in most countries.

Secondly, inefficiencies in the financial intermediation process, especially crowding out of credit in some SADC countries, may have contributed to the outcome. Generally, government debt or borrowing crowds-out the private sector in most SSA countries (Mbate, 2013). As such, credit in these countries is not entirely supporting productive activities. Furthermore, in countries that experience economic and internal conflicts (for example, Zimbabwe, Mozambique, Zambia, Madagascar, Angola and DRC, among others) credit is normally channelled towards financing such conflicts or resolutions of the crisis/conflicts.

Thirdly, most, if not all, countries in SADC managed to implement financial reforms, mostly through liberalisation of the financial sector. These reforms may not have been adequate or lacked support, such as well functioning institutions, regulations and monitoring mechanism, for them to be effective. Besides, financial development is highly dynamic and countries need to implement regular reforms. Financial innovation through mobile money is signalling to be a key determinant in enhancing financial development in SADC. Lack of adequate resources to fully embrace it across all the people could be dragging its impact on growth. The initiatives are probably too recent to have caused major shifts in the finance-growth effect. Related to that, although not empirically tested, perhaps traditional drivers of growth in SADC countries, such as, resources and tourism, are still overpowering or remain the transmission channels for impact of the financial sector on growth. A fourth possible explanation, though not empirically tested, is that the results could still be affected by country heterogeneity

despite the use of models which control for country heterogeneity. Countries in the SADC region are highly heterogeneous, especially in their financial sector. Phakedi (2014) obtained mixed results for individual SADC countries despite using estimation methods that address cross-sectional dependence among countries.

Given a negative relationship between growth and finance in SADC, it is difficult to prescribe recommendations to prop up either of the two as it would imply a decline in one or the other. Despite this, there is a need to address the underlying structural issues in financial systems of SADC countries, which may be contributing to the negative relationship. Firstly, the countries in SADC need to put in place measures to develop their financial sectors and enhance their depth and efficiency whilst addressing challenges of limited access. The authorities or banking institutions should promote access to credit to the private sector in order to enable this sector to finance investments in expanding its productive capacity for future production and growth. An improvement in the performance of the financial system in the sub-region is indispensable in order for financial development to stimulate growth. Improvement is achieved through a number of ways: strengthening of weak financial systems and institutions; resolve the institutional and structural problems in their economies; and make use of cross-border financial institutions where appropriate. Furthermore, smaller countries in the SADC region with underdeveloped financial systems need to strengthen their financial regulation and improve the financial and regulatory infrastructure.

SADC countries need to enhance the process of credit allocation through tight regulation of credit, and promoting competition in the banking sector. SADC countries should promote alternative delivery channels when providing financial services, such as mobile and agency banking. Given the heterogeneity among SADC countries and the varying levels of financial development, the region should promote financial integration in order to enhance development of underdeveloped financial systems through spatial spill-over gains. Further to that, given a strong demand-following causality between finance and growth it is recommended that pro-growth policies should be intensified so that growth subsequently pulls with it financial development.

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Table 1: Financial depth and efficiency in SADC countries (2011)

	Bank branches per 100,000 adults	Bank Concetration (%)	Bank deposits to GDP (%)	Credit to Gvt to GDP (%)	Domestic credit to private sector (% of GDP)	Foreign Bank Assets to total bank assets (2009)
Angola	10.5	70.5	29.8	10.0	21.1	57
Botswana	8.6	70.1	38.4	2.2	27.5	66
DRC	-	56.6	-	0.4	6.6	-
Lesotho	3.2	100.0	33.6	4.1	14.7	-
Madagascar	1.4	93.1	16.6	3.2	11.0	100
Malawi	1.1	87.5	26.3	6.7	19.8	30
Mauritius	21.3	49.6	89.8	18.1	91.5	52
Mozambique	3.6	83.2	32.6	11.4	24.3	100
Namibia	7.1	83.4	62.5	10.4	48.5	40
Seychelles	37.2	-	54.5	18.0	26.0	27
South Africa	10.7	77.7	59.1	12.0	144.7	22
Swaziland	7.2	100.0	27.9	3.9	27.2	88
Tanzania	1.9	50.9	26.7	7.3	17.8	78
Zambia	4.4	53.0	9.2(2009)	8.4	12.3	100
Zimbabwe	-	68.8	28.9*	0.4*	25.9*	-

Source: World Bank GFDD (2013); *Reserve Bank of Zimbabwe

Table 2: Panel Unit Root Tests at Level

Variable	Levin, Lin & Chu	Im, Persaran and Shin W-state	ADF-Fisher Chi-Square	PP-Fisher Chi-Square
Bank Credit to Private Sector (BCP) to GDP	0.78716	1.85714	24.7337	20.6174
First Difference BCP	9.95172 ***	-10.9436***	170.364***	277.427***
Consumer Price Index (CPI)-Inflation	4.32753***	-4.18841***	87.4226***	95.3842***
Domestic Credit (DC) to GDP	-1.71063***	-1.66284***	48.8233***	47.2156**
Gross Fixed Capital Formation	-2.90409***	-3.13366***	54.0280***	66.6563***
Government expenditure to GDP	-4.01101***	-3.96590***	72.1170***	69.2745***
Real GDP growth	-6.08881***	-6.36778***	97.9346***	187.059***
Real GDP Per Capita growth	-6.16933***	-6.49791***	100.094***	189.686***
Liquid Liabilities (Money Supply) to GDP	-2.10333***	-1.59087**	50.2759***	51.8866***
Population	-9.65610***	-9.84657***	158.018***	46.1173**
Real Interest Rate to GDP	-4.08807***	-4.91383***	82.7977***	108.684***
Trade Openness	-3.58490***	-2.81906***	54.1696***	46.4778**

t-statistic; ***. **, * stationary at 1%, 5% and 10% levels respectively

Table 3: GMM Estimation with Real GDPPC as the Dependent Variable

Variable	Model 1	Model 2	Model 3
Constant	0.799735 (0.3217)	0.632432(0.4117)	0.716392(0.3530)
Growth in GDPPC(-1)	0.280992(0.0001)***	0.288027(0.0000)***	0.364407(0.0000)***
Domestic Credit	-0.001446(0.7804)	-	-
Liquid Liabilities	-	0.006773(0.5892)	-
Bank Credit to Private Sector	**-**	**-**	**-0.211102(0.0980)***
Gross Fixed Capital Formation	0.008241(0.7986)	0.008129 (0.7967)	0.002571(0.9385)
Consumer Price Index -CPI (Inflation)	-0.001187 (0.1897)	-0.001042 (0.2565)	-0.000858(0.3056)
Real Interest	-0.029711(0.0002)***	-0.030406 (0.0002)***	-0.026243(0.0022)***
Trade Openness	0.015542(0.0234)***	0.014928(0.0293)***	0.016528(0.0199)***
Government Expenditure	-0.032668(0.4111)	-0.036591 (0.3425)	-0.035978(0.3690)
Diagnostic tests	*R-squared 0.183120* *Adj R-squared 0.168716* *J-statistic 0.573289*	*R-squared 0.196595* *Adj R-squared 0.182429* *J-statistic 0.139388*	*R-squared 0.195207* *Adj R-squared 0.180421* *J-statistic 0.548253*

Coefficient (t-statistic probability); ***; **; * stationary at 1%, 5% and 10% levels respectively

Table 4: Hausman Tests

Variable	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.	Decision
Model 1 Domestic Credit as Financial Development	15.3107	6	0.0180	Fixed Effects
Model 2 Liquid Liabilities as Financial Development	17.2466	6	0.0084	Fixed Effects
Model 3 Bank Credit to Private Sector as Financial Development	19.4632	6	0.0005	Fixed Effects

Table 5: Panel Regressions with Fixed Effects

Variable	Model 1	Model 2	Model 3
Constant	4.5560 (0.0008)***	4.9349(0.0005)***	3.8238 (0.0053)***
Domestic Credit	**-0.0327 (0.0020)*** **	**-**	**-**
Liquid Liabilities	**-**	**-0.0609 (0.0065)*** **	**-**
Bank Credit to Private Sector	-	-	-0.0361(0.3340)
Gross Fixed Capital Formation	0.0799 (0.0084)***	0.0849(0.0052)***	0.0805(0.0099)***
Inflation (Consumer Price Index -CPI)	-0.0004 (0.0134)**	-0.000464 (0.0098)***	-0.0005(0.0134)**
Real Interest	-0.0445 (0.0000)***	-0.0409 (0.0000)***	-0.00442(0.0000)***
Trade Openness	0.0200 (0.0304)**	0.02459(0.0099)***	0.0215 (0.0251)**
Government Expenditure	-0.2441(0.0000)***	-0.2462(0.0000)***	-0.2700(0.0000)***
Diagnostic tests	*R-squared 0.2547 Adj R-squared 0.2199 F-statistic 7.3288 Prob(F-statistic)0.000000*	*R-squared 0.25086 Adj R-squared 0.2159 F-statistic 7.1830 Prob(F-statistic) 0.000000*	*R-squared 0.2457 Adj R-squared 0.2092 F-statistic 6.7414 Prob(F-statistic) 0.000000*

Coefficient (t-statistic probability); ***; **; * stationary at 1%, 5% and 10% levels respectively

Table 6: GMM Estimations with Financial Reforms Dummy and Interactive Dummy

Variable	Model 1		Model 2		Model 3	
	With Dummy Variable	With Interactive dummy	With Dummy Variable	With Interactive dummy	With Dummy Variable	With Interactive dummy
Constant	4.878603	5.095025	5.639503*	4.895525	3.907130	3.669221
GGDPPC(-1)	0.250938***	0.269981***	0.245190***	0.261934***	0.325032***	0.332701***
DC	-0.002549	-	-	-	-	-
LL	-	-	-0.032679	-	-	-
DBCP	-	-	-	-	-0.205303	-
GCF	-0.034594	-0.034475	-0.033520	-0.037588	-0.028497	-0.035034
CPI	-0.000485	-8.55E-05	-0.000544	-0.000313	-0.000478	-0.000201
RINT	-0.041318***	-0.043440***	-0.040699***	-0.042813***	-0.029745**	-0.034274***
TO	0.030474	0.024179	0.033317	0.025234	0.046027	0.029767**
GEXP	-0.243446	-0.283226*	-0.244068*	-0.253760*	-0.192828	-0.204964
Dum	-0.303754		-0.314807		-2.367446	-
DMDC	-	0.022873	-	-	-	-
DMLL	-	-	-	0.011735	-	-
DMDBCP	-	-	-	-	-	-0.193157
Diagnostic tests	*R-squared 0.270702 Adj R-squared 0.228701 J-statistic 7.06E-24*	*R-squared 0.247336 Adj R-squared 0.206067 J-statistic 0.383228*	*R-squared 0.270806 Adj R-squared 0.228811 J-statistic 2.28E-23*	*R-squared 0.269316 Adj R-squared 0.229253 J-statistic 0.072080*	*R-squared 0.217848 Adj R-squared 0.1709610 J-statistic 1.77E-23*	*R-squared 0.265658 Adj R-squared 0.223753 J-statistic 0.182602*

Coefficient (t-statistic probability); ***; **; * stationary at 1%, 5% and 10% levels respectively

Note:

1. Dum-Dummy variable taking a value of 1 from the year a country introduces financial reforms (financial liberalisation) going forward or 0 otherwise
2. DMDC- interaction between Financial Reforms Dummy and Domestic Credit (representing domestic credit in the post liberalisation period)
3. DMLL- interaction between Financial Reforms Dummy and Liquid Liabilities (representing liquid liabilities in the post liberalisation period)
4. DMDBCP- interaction between Financial Reforms Dummy and the Differenced Bank Credit to Private Sector (representing bank credit to private sector in the post liberalisation period).

Table 7: GMM Granger Causality test between Real GDPPC and Domestic credit

	Dependent Real GDPPC		Dependent Domestic Credit	
	Variable	**Coefficient (P-value)**		**Coefficient (P-value)**
	C	1.6546(0.0009)	C	6.7162(0.0000)
	GGDPPC(-1)	0.3007(0.0000)	DC(-1)	0.8081((0.0000)
	GGDPPC(-2)	0.0954(0.0572)	DC(-2)	0.0058(0.9093)
	DC(-1)	-0.0271(0.1628)	GGDPPC(-1)	0.3521(0.0073)
	DC(-2)	0.0089(0.6487)	GGDPPC(-2)	-0.2640(0.0435)
	R-squared 0.243844 *Adjusted R-squared 0.208583* *J-statistic 2.259700* *Prob(J-statistic) 0.323082*		*R-squared 0.942145* *Adjusted R-squared 0.939447* *J-statistic 5.268771* *Prob(J-statistic) 0.071763*	
Short run	*Dc(-1)=Dc(-2)=0*		*GGDPPC(-1)=GGDPPC(-2)=0*	
	Wald test Chi-square	*3.211461(0.20007)*	***Wald test Chi-square***	***8.6870(0.0130)***
Long run	*Dc(-1)+Dc(-2)*	*-0.0182*	*GGDPPC(-1) + GGDPPC(-2)*	*0.0881*
	Wald test Chi-square	*2.216355(0.1366)*	*Wald test Chi-square*	*0.3424(0.5584)*

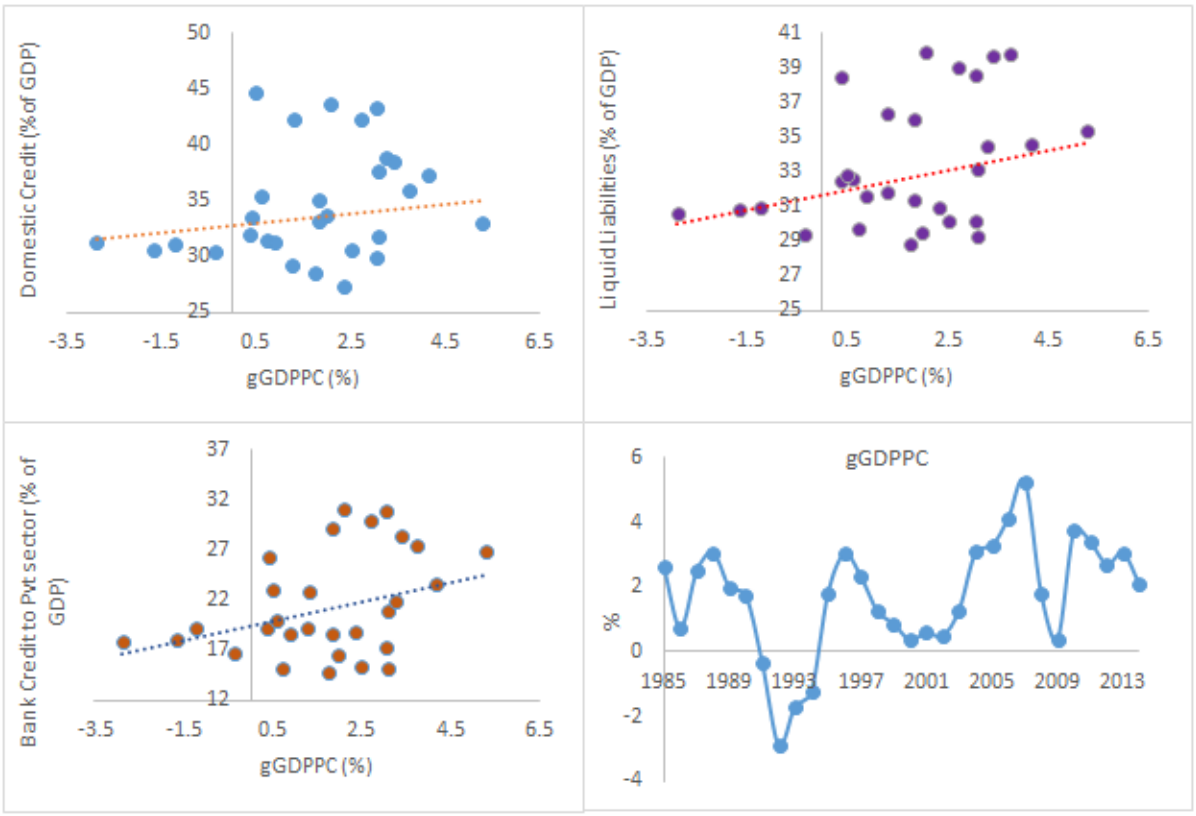
Table 8: GMM Granger Causality test between Real GDPPC and Liquid Liabilities

	Dependent Real GDPPC		Dependent Liquid Liabilities	
	Variable	**Coefficient (P-value)**	**Variable**	**Coefficient (P-value)**
	C	0.8003(0.3581)	C	4.6764(0.0000)
	GGDPPC(-1)	0.3239(0.0000)	LL(-1)	0.8113(0.0000)
	GGDPPC(-2)	0.0828(0.1002)	LL(-2)	0.0549(0.2813)
	LL(-1)	0.0579(0.2549)	GGDPPC(-1)	0.0861(0.0953)
	LL(-2)	-0.0523(0.2970)	GGDPPC(-2)	0.0092(0.8570)
	R-squared 0.240129 *Adjusted R-squared 0.204695* *J-statistic 0.546729* *Prob(J-statistic) 0.760815*		*R-squared 0.956805* *Adjusted R-squared 0.954791* *J-statistic 5.320576* *Prob(J-statistic) 0.069928*	
Short run	*LL(-1)=LL(-2)=0*		*GGDPPC(-1)=GGDPPC(-2)=0*	
	Wald test Chi-square	*1.308531(0.5198)*	*Wald test Chi-square*	*3.486869 (0.1749)*
Long run	*LL(-1)+LL(-2)*	*0.0056*	*GGDPPC(-1) + GGDPPC(-2)*	*0.0953*
	Wald test Chi-square	*0.050816(0.8216)*	*Wald test Chi-square*	*2.684731(0.1013)*

Table 9: GMM Granger Causality test between Real GDPPC and Bank Credit to Private Sector

	Dependent Real GDPPC		Dependent Bank Credit to Private Sector	
	Variable	**Coefficient (P-value)**		**Coefficient (P-value)**
	C	1.0267(0.0000)	C	0.4946(0.1015)
	GGDPPC(-1)	0.2788(0.0000)	BCP(-1)	-0.0359(0.4631)
	GGDPPC(-2)	0.1447(0.0054)	BCP(-2)	-0.3420(0.0000)
	BCP(-1)	-0.1293(0.0010)	GGDPPC(-1)	0.2988(0.0000)
	BCP(-2)	-0.0316(0.4049)	GGDPPC(-2)	-0.1017(0.1163)
	R-squared 0.253765 *Adjusted R-squared 0.217559* *J-statistic 0.025399* *Prob(J-statistic) 0.987381*		*R-squared 0.196672* *Adjusted R-squared 0.157697* *J-statistic 51.09212* *Prob(J-statistic) 0.000000*	
Short run	*BCP(-1)=BCP(-2)=0*		*GGDPPC(-1)=GGDPPC(-2)=0*	
	Wald test Chi-square	***11.3484(0.0034)***	***Wald test Chi-square***	***21.8228(0.0000)***
Long run	*BCP(-1)+BCP(-2)*	*-0.1609*	*GGDPPC(-1) + GGDPPC(-2)*	*0.1971*
	Wald test Chi-square	***8.255268(0.0041)***	***Wald test Chi-square***	***7.39980 (0.0065)***

Figure 1: Observed relationship between finance and growth in SADC



*gGDPPC-growth in Gross Domestic Product per Capita (GDPPC)
Data Source: World Development Indicators