

**Rethinking economic growth: A financial development  
perspective on Southern Africa**

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A research project submitted to the Gordon Institute of Business Science, University of Pretoria, in partial fulfilment of the requirements for the degree of Master of Business Administration.

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## **Abstract**

Persistent poverty and inequality in Southern Africa call for economies to prioritise growth policies to address these issues. Theory and evidence confirms positive growth effects on poverty in developing countries. Given the paltry growth trajectory in Southern Africa, capitalizing on the theoretical underpinnings which allude to the growth spurring capability of financial development is imperative. This study sought to establish the financial development and growth nexus in Southern Africa by adopting a panel framework for 13 Southern African countries. Data spanning 26 years (1990 to 2015) for financial development, growth and other growth linked variables data was collected and analysed.

The findings confirmed that financial development is not significant in explaining the variation in GDP per capita growth in Southern Africa. However, some growth linked variables were found to be significant in explaining growth in the region. Understanding the insignificance of financial development in explaining growth presents an opportunity to implement financial sector reforms and policies (financial inclusion, financial literacy and financial intermediation) that can help improve the region's financial development standard. This study questioned the role of financial development in growing economies in Southern Africa, hence a redress of the social issues.

## **Keywords**

Economic growth, financial development, poverty, inequality

## **Declaration**

I declare that this research is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination at any other university. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

Tapiwa Nathaniel Chatora

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# **CHAPTER 1: INTRODUCTION TO THE RESEARCH PROBLEM**

## **1.1 Rethinking economic growth: A financial development perspective on Southern Africa**

### **1.2 Introduction**

Southern Africa – host to poverty-stricken countries and riddled with gross and entrenched income inequality of global note is still to synthesize feasible policies to exterminate these social ills. Economic literature validates the role of economic growth in addressing poverty and income inequality especially for developing countries. However, growth has not only remained paltry in Southern Africa but inconsistent implying lack of sustainability of the same. In this realm, it is obligatory to prioritize the elimination of poverty and inequality through growing the economy. Financial development and its facets presents an opportunity to realise sustainable growth hence the supposed effects of growth on poverty and inequality can be realised.

Ancient supply-leading theory as established by Schumpeter (1911) backed by modern empirics suggests a positive growth effect of capital injection for developing countries' economies (Ikhide, 2015). In addition, the financial sector is central to the allocation of injected capital resources, stimulating savings and investment decisions. These functions facilitate the accumulation of other factors of production, physical and human capital which consequently affect total factor productivity (Svirydzenka, 2016). Thus financial development is critical to growth.

Levine (2004) discusses financial development along the improvement in the pooling of savings, complemented by the investment decision function of the financial sector. Theory connotes that an improvement in key roles ensures that financial development may influence growth. Pursuing that line of thinking, it is obligatory to establish the existence of this nexus in Southern Africa given the pressing need to abate poverty and inequality.

Acknowledging that Southern African countries implemented financial sector reforms indirectly to enable the development of financial sectors, questioning the extent of financial

development and its growth effects in Southern Africa is imperative.

Ikhide (2015) defines financial development under three key components, depth, access and efficiency. In addition, depth measures how big the financial institutions are, access involves the ease of getting services and products and efficiency measures the affordability of services and products.

Svirydzenka (2016) and Sahay et al. (2015) concur with this definition and incorporates the financial development variables (depth, access and efficiency) in their studies, hence this study adopts the same. Identifying the most relevant facet of financial development for Southern Africa goes a long way in the crafting of practical ways of improving growth, and indirectly the welfare of the population. In pursuit of the same, chapter 1 provides an overview and research background, the problem statement and states the objectives as it sets the stage for an objective discussion of the finance-growth theory in the literature review section.

### **1.3 Background to the research problem**

The unending urge to grow economies remains applicable to most developing countries on account of a multiplicity of empirical work confirming the poverty-reduction capability of growth (Seven & Coskun, 2016; Ho & Lyke, 2017; Moser & Ichida, 2001; Assefa & Mollick, 2017). Evidence from earlier studies in Kenya, Cameroon and Swaziland amongst developing countries affirmed the significance of growth in decreasing in poverty. Moser and Ichida (2001)'s study also substantiated the positive role of growth on poverty, life expectancy, school enrolment and infant mortality.

However, Fosu (2011) credits disparities in the ability to translate economic growth into poverty and inequality reduction amongst countries highlighting two countries such as Ghana and Botswana. Fosu (2011) argued that Ghana thrived to achieve the objective of significant poverty reduction by translating moderate growth into poverty reduction while Botswana' remarkable income growth translated into minimal decline in poverty.

Furthermore, the different levels of inequality and poverty across countries explains the disparities in translating growth into inequality and poverty reduction. Ferreira, Leite and Ravallion (2010) agree to this assertion by concluding that low poverty reduction in Brazil

was as a result of high inequality levels economic performance in a slow growing economy. Evidence shows that during a 24-year period (1981 to 2005), Costa Rica reduced its poverty levels by 88 per cent (Fosu, 2011). However according to Ferreira et al. (2010) during a similar period, (1985 to 2004) Brazil reduced poverty levels (based on a \$1 per day) from 33 % to 29%.

This evidence is against the backdrop that Costa Rica’s GDP growth exceeded double the GDP growth of Brazil and the Gini coefficient for Costa Rica and Brazil was 0.47 and 0.58 respectively (Fosu, 2011). This confirms the consensus that growth can be used to reduce inequality and poverty but performance disparities exists based on the growth rates and inequality levels across countries.

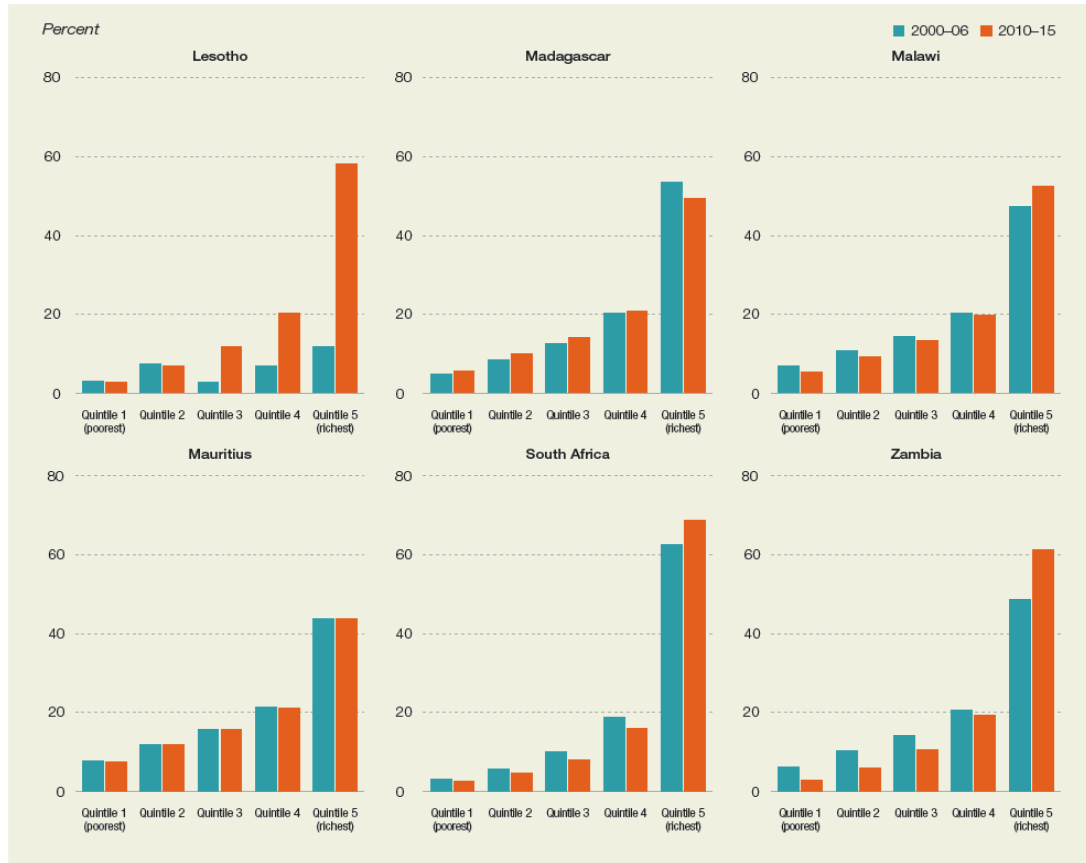
Figure 1 shows how poverty reduction has been in Southern Africa from period 2000 to 2015. Lesotho saw a slight increase in poverty while Madagascar was stagnant and the reset of the countries recorded an improvement in poverty reduction. Despite this general decline in poverty levels in Southern Africa, almost half of the SADC population still live in extreme poverty (\$1 per day) (SADC, 2012).



**Figure 1. Evolution of poverty rates by income groups in the Southern African region**

**Source:** Adapted from Southern Africa Economic Outlook (2018, Figure 9, p.15).

In addition, the share of income in the region depicted in figure 2 also resemble greater inequality as between 40 per cent and 60 per cent of the region’s income, is earned by the richest 20 per cent.



**Figure 2. Share of income by income quintile, selected countries**

**Source:** Adapted from Southern Africa Economic Outlook (2018, Figure 10, p.16)

However, the effect of growth on poverty might be overshadowed where the level of inequality is exceptionally high, thus the increase in income might be outpaced by a surge in inequality (Fosu, 2011). Regardless of this strand of evidence, growth remains relevant in Southern Africa - a region grossly stricken by many social ills such as poverty, inequality and unemployment.

In the same realm, Southern Africa also hosts one of the most un-equal countries on a global scale, South Africa (World Inequality Lab, 2018). In addition, during 2014, the top 10 percent received two thirds of national income, while the top 1 percent received 20 percent

of national income in South Africa. Figure 3 shows inequality and GDP per capita in SADC for period two periods (2000 to 2006 and 2010 until 2015).

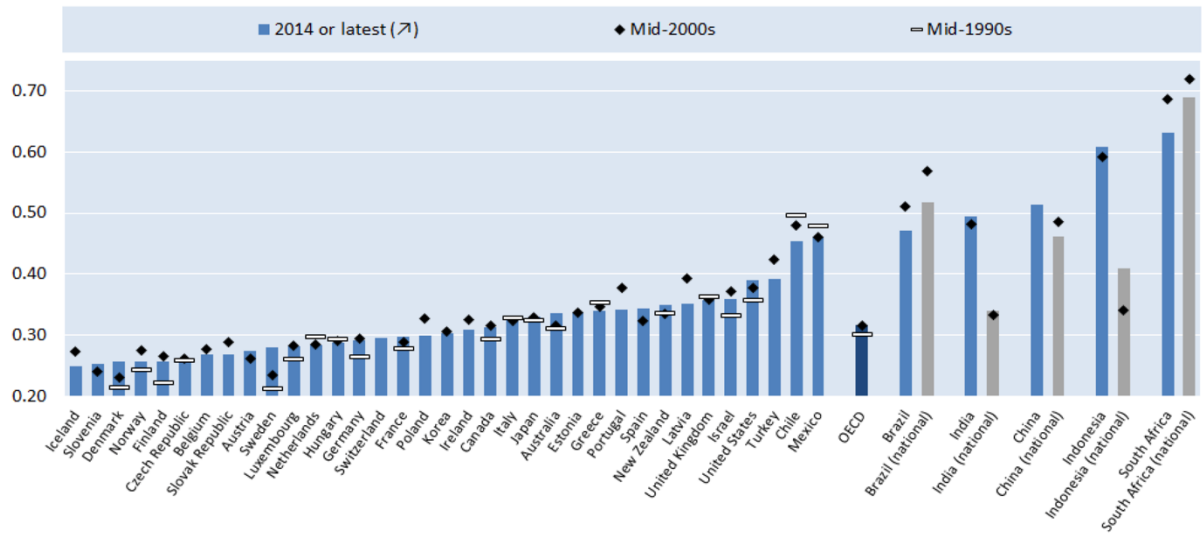


**Figure 3. Evolution of inequality and GDP per capita**

**Source:** Adapted from Southern Africa Economic Outlook (2018, Figure 11, p.17)

Furthermore, the Gini coefficient of Southern Africa as of 2014 was consistent with the African Development Bank’s findings that ranked 7 Southern African countries in the top ten of Africa’s most unequal countries (United Nations Economic Commission for Africa, 2014). These countries are Angola, Botswana, Lesotho, Namibia, South Africa, Swaziland and Zambia.

Figure 4 compares South Africa’s Gini co-efficient to the rest of the world and it is indeed a statistic of global note, hence the need to synthesise growth policies within the region. This gives a better understanding of inequality in SADC.



**Figure 4. Income inequality global comparison against South Africa**

**Source:** Adapted from OECD Update Report 2017 – Inclusive Growth (2017, Figure 1, p13).

From the statistics, poverty and inequality levels in Southern Africa are high and evidence from prior studies suggest that growth can be used to circumvent these problems. Rodrik (2006) suggests a growth diagnosis to address serious constraints arguing that a large gap between private and social returns arises under two circumstances; either policy or institutional environment or market failures. Alluding to this, Aghion (2015) argues that growth-enhancing policies vary across countries and are also dependent on the level of technological advancement existing in a country. In this instance, growth that has poor social returns in SADC and warrants changes in policies around economic development.

Financial development through any of its facets (access, depth and efficiency) can be a lever to be pulled for economies to achieve growth which can then be translated into poverty reduction. On the other hand, Seven and Coskun (2016) argues that inequality in the context of unequal access to financial services and products aggravates continuous income inequality while hindering economic growth during the crucial economic development phase of growth. This will consequently be recognized through inequality and poverty figures. This point brings a facet of financial development into the discussion which growth is a function of and clarifies the fact that inequality in itself, does limit economic development.

Growth in Southern Africa has been sluggish while the Asian countries saw consistently increasing growth rates for the past decade with projected 2018 growth at 6.6% (International Monetary Fund, 2017). Sluggish growth does not have the capacity to be translated into significant poverty and inequality reduction hence the need to stimulate growth in the region. Engerman and Sokoloff (2005) argue that the institutional environments of many former colonies' past had adverse effects on long-term growth. In addition, this suggested that inequality was institutionalised through limited access to economic activities and opportunities, education, infrastructure, factor endowment in terms of minerals, fertile land and climate, all which are critical for growth. The effects of past colonial policies across former colonies can be noticed through consistencies of poor development results. This is true for Southern Africa.

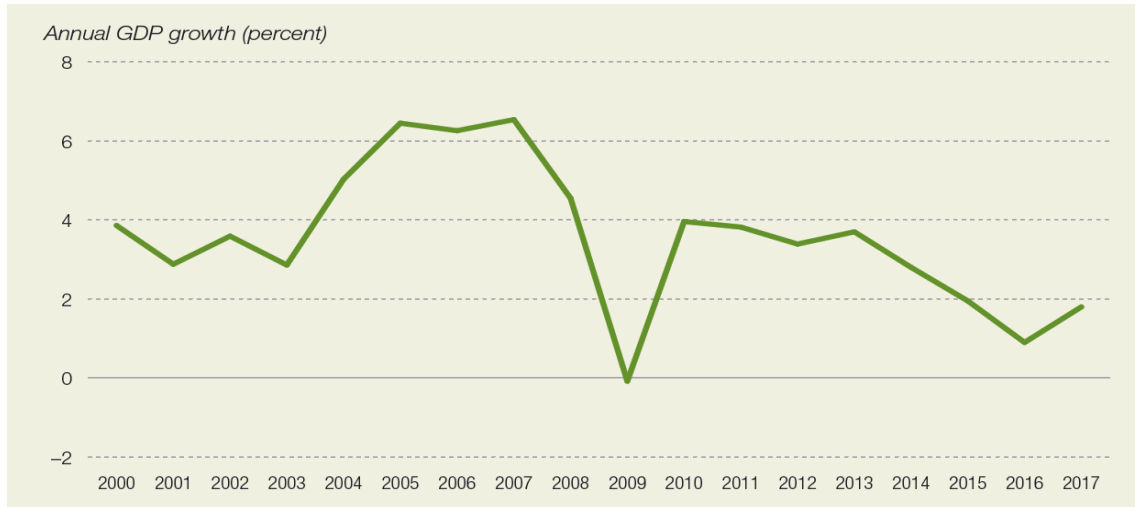
To some extent, the Washington Consensus prescriptions did not yield results in Southern Africa Rodrik (2006) argued that each country should be treated differently based on its own constraints. This is true for SADC countries that implemented structural programmes did not yield the targeted results. Looking at these points, it can be concluded that a combination of weak institutional policies, colonial legacies and to some extent resource curses is at play in the SADC region.

The statistics for the region are worrying and the only way to start addressing these social issues is if growth is addressed. The Regional Indicative Strategic Development Plan (RISDP) – a macro-economic framework for Southern Africa Development Community (SADC) insists on an ambitious 7% GDP growth per annum for each SADC member state (SADC, 2018). The 7% GDP growth was set in line with the 8 Millennium Development Goals targets for developing countries with the main focus on poverty eradication Goal 1 (United Nations, 2000). According to Fosu (2011), the accepted growth rate for developing countries to achieve Millennium Development Goal 1 is 7%. Conversely, no country in Southern Africa has managed to achieve or surpass this benchmark consistently. More so, the average growth for the region since 2000 of 4.5% falls short of the 7% RISDP benchmark (SADC Statistical Yearbook, 2016).

Rodrik (2006) argued that to develop feasible growth strategies, countries need undertake diagnostic analysis and establish where the economic growth's significant constraints are. For SADC, it can be argued that the most significant constraint to growth, is extreme

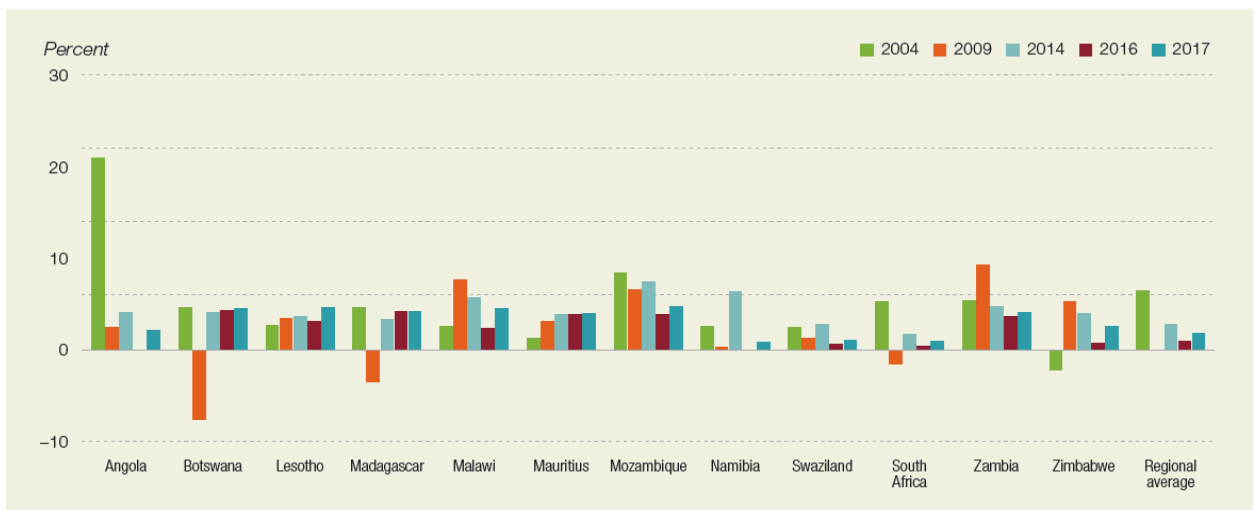
poverty and inequality, hence the need to address same.

The trend in figure 5 shows Southern Africa's annual GDP growth rates from 2000 to 2017. In addition, figure 6 shows selected countries' growth rates for selected years. This depicts an inconsistent and slothful scenario that needs urgent attention in terms of growth feasible policies.



**Figure 5. Regional average real GDP growth**

**Source:** Adapted from Southern Africa Economic Outlook (2018, Figure 2, p.4)



**Figure 6. Real GDP growth regional economies**

**Source:** Adapted from Southern Africa Economic Outlook (2018, Figure 3, p.5)

Erratic growth in the SADC region lacks the sustenance necessary to address the major

social ills. These worrying statistics imply that growth has to be prioritized in the region if inequality, poverty and unemployment are to be addressed. The search for a feasible solution to the deficient growth in the region is obligatory in pursuit of both economic and social redress in Southern Africa.

Herwartz and Walle (2014) alluding to earlier empirical work by McKinnon (1973) argued that developing countries are more likely to grow their economies through the injection of capital compared to developed countries. This assertion is also investigated in this study using foreign direct investment inflows to establish if capital injection in SADC has an impact in growth. This also suggests that supply-leading hypothesis is true for developing countries and demand-following theory true for developed countries.

Other variables under study include exports to GDP, human development index, government expenditure as a GDP percentage and domestic credit to GDP. Exports to GDP per capita which seeks to investigate if export benefit can lead to growth. Human development is for establishing if human development has an impact on growth. Government expenditure, to establish if targeted government expenditure drives growth. Finally, domestic credit to GDP, to establish if access to domestic credit has an impact on growth.

The injection of capital is akin to financial development. The question is does financial development impact growth in developing economies? if so, what conduits can best explain the transmission mechanism?

Ikhide (2015) notes that improved financial intermediation might be the basis development of financial services sector leading to efficiency in both the attraction of savings and the allocation of the same resources to the real sector. The allocation of financial resources to investments with the highest marginal productivity results in growth. It is unavoidable to query if countries in Southern Africa ought to prioritise financial development to grow their economies. Also, taking stock of the financial development progress in the region is another facet worthy tracking. This can also be complemented by the transmission mechanism from which growth can be achieved through financial development. An understanding of this will help edify policy formulation.

## **1.4 Research problem**

With poverty and inequality entrenched in the SADC region, growth must be prioritised to synthesise feasible policies to abate poverty and inequality. The existing financial development and growth nexus provides an opportunity to use financial development facets to achieve growth and at the same time abating inequality and poverty. The known benefits of financial development to growth have been discussed since Schumpeter (1911) who argued that access to funding provides an opportunity for growth through empowering innovators and entrepreneurs. This is a supply-leading argument. This hypothesis argues for growth as a product of financial development. Although more theories around the nexus exist, the consensus on the existence of a relationship stands.

Zhang, Wang and Wang (2012)'s study on China confirmed that financial development was not significant to growth. Furthermore, Ono (2017) came to the same conclusion based on a study done in Russia. Heterogeneity might be the main cause of such findings. However, in Southern Africa with countries born out of colonial pasts, poverty and inequality are the order of the day. To sum it all up, seven countries from SADC are in the top ten most unequal countries in Africa (UNECA, 2014). This shows how urgent it is for the bloc come up with solutions and craft policies that tackle these social ills. The question then remains, what the function is of financial development in the growth equation of Southern Africa economies where poverty and inequality remains unabated despite some economic growth being realised?

## **1.5 Significance of research**

Given such evidence, it unavoidable to query whether Southern Africa should develop its financial markets in order to capitalize on the growth-enhancing effects of financial development. Past studies on this relationship in Southern Africa have failed to cover the whole region as most studies were mostly country specific. Akinboade (1998) specifically focused on Botswana whereas Assefa and Mollick (2017) studied the whole of Africa. Though Bara, Mugano and le Roux, (2016) studied Southern Africa, their study was inclined to the economic reforms effected in Southern Africa and they addressed the causal linkages between growth and financial development. The work by Aziakpono (2004) specifically looked at the Southern African Customs Union and the Common Monetary Area (Rand), which falls short of covering the whole Southern African region.

Taivan and Nene (2016) also studied this relationship in Southern Africa using time series.

The point of diversion of this study is premised on the financial development measures and methodology assumed. Panel analysis is assumed with the intuition of capturing either fixed effects or random effects - accounting for heterogeneity across SADC countries. Panel data being rich in information (time series and cross-sectional data), allows both intra and inter-country analysis employed herein thereby allowing for further disaggregation of the sample as per income levels. Furthermore, panel data allows for predictions of individual country outcomes that are based on other countries through pooling data as compared to using the individual country's data to estimate predictions (Hsiao, 2007). This allows for a deeper understanding of individual country's behaviour through analysing the behaviours of the pooled countries. This ascertains a robust empirical examination of the relationship tailored to meet the different characteristics of the countries in Southern Africa.

Through the business lens in the financial services sector, the study seeks to contribute towards policy recommendation for business and government that will help boost financial development through different channels from ease access to services and products provided by the financial sector, affordability of services and products and also the growth of the institutions in terms of financial depth. The study also seeks to contribute towards innovation and strategy for financial sector players in such a way that they become innovative and come up with products and services that bring about shared value to both businesses and communities. Innovations around financial technology (mobile money, mobile application banks, remote credit/loan applications) and developmental projects (infrastructure development funding) must be done in a way that increases the bottom line for businesses and at the same time, improving the livelihoods of people, focus should move from profits only and also give attention to social impact.

## **1.6 Scope of study**

The study focuses on Southern Africa and investigates the growth of the financial services and economic growth in the region. Nations with readily available data for variables under study from 1990 to 2016 are included in the study. This time period includes the period of the 2008 global financial crises which might be key in providing some insights for analysis

prior and post global financial crisis.

The growth variable for the study is GDP per capita growth and other variables for the study are domestic credit, human development, exports to GDP, government expenditure, foreign direct investment inflows, inflation and financial development indexes which includes financial institutions development proxies (access, depth and efficiency) and financial market development proxies (access, efficiency and depth).

These variables are relevant to the context of SADC in relation to; human development improvement is critical and a key ingredient to the growth equation. Kahn (2015) asserts that investing in children's education and quality health access is essential for growth. Rodrik (2006) alludes to this point by stating that functioning's and capabilities provide an opportunity for people to realise their potential through acquisition of productive skills. These points support human development in SADC.

Domestic credit is an important variable from a financial intermediation perspective (Gregorio & Guidotti, 1995). This is because it only captures the value of funds extended to private sector. It is critical to gauge if private sector credit impacts growth or it is just private credit for private use in non-productive activities with no impact on growth.

Most SADC countries rely on imports and understanding the effect of exports on growth might give insights to change trade policies in order to achieve growth. Lall (2001) argues that trade is mutually beneficial activity that should benefit trading parties and that competitiveness helps to build and strengthen dynamic and comparative advantage. Understanding this for SADC might create more options in striving for growth by leveraging off factor endowments as a comparative advantage.

Foreign direct investment has been credited with facilitating growth and with the dire need for growth in the region. However, Stiglitz (2000) argued that long-term capital foreign direct investment is what is needed for growth as opposed to short-term capital investment. Furthermore, short-term capital investment allows for capital flight, highlighting why China has a very restrictive short-term capital flows. SADC countries can learn from this and craft policies favouring long-term capital inflows.

Government expenditure on public services and infrastructure can indicate levels of development. The more government spend especially on education and health might set a conducive environment for long-term growth (Kahn, 2015).

Fischer (1993) uses inflation as an evaluator of the effectiveness of the macroeconomic policies that a government implements to manage the economy. Understanding the impact of inflation on growth is critical for SADC economies. Fischer (1993)'s study on macroeconomic factors and growth found inflation to be negatively related with growth. In addition, Fischer (1993) states that high levels of inflation erode investments and productivity growth thereby stalling growth.

Ghosh and Phillips (1998)'s study also came to the same significant inverse relationship conclusion between inflation at lowest levels and growth. In addition, fast growth and low inflation are critical and basic objectives for economies' macroeconomic policies. These findings concur with Fischer (1993)'s findings.

With reference to the financial institutions and markets development, it is critical to understand how these institutions contribute to growth across their three dimensions, ac

cess, depth and efficiency (Ikhide, 2015) thereby help identify the levers to pull in order to achieve growth. The study includes all countries in SADC but will eliminate countries with inadequate data sets. These variables are core to the study, hence the elimination decision.

## **1.7 Purpose Statement**

Despite all the known benefits of growing economies, countries in Southern Africa have failed to consistently grow their countries at the 7% RISDP benchmark. The sluggish growth thus has not helped in abating poverty and inequality which has remained a feature of the region. Amidst all the efforts meant to grow economies, financial development has been widely acknowledged as a contributor to economic growth (Ikhide, 2015).

Given the need to grow economies in Southern Africa, it becomes obligatory to take stock of the trajectory of financial development in these countries as well as its relationship with

economic growth. Synthesis of policies meant to enhance both economic growth and financial development will help alleviate poverty and inequality in the region.

Growth of financial sectors is integral to the growth of economies. In that realm, the magnitude of financial improvement can be a good growth forecaster, capital growth through savings or foreign direct investment, and technological development. Pradhan, Arvin, Hall and Bahmani (2014) concurs by stating that countries with developed financial markets and integrated banking systems offer services and products that help to stimulate growth. This means that if countries develop their financial services, their real economy grow over time.

## **1.8 Research Objectives**

This research pursues three objectives as presented below;

1. To understand the extend of financial development in Southern Africa and ascertain its relationship with economic growth.

Early writings note that financial systems were key components to England's industrialization through the deployment of capital resources (Levine, 1996). In addition, Menyah, Nazlioglu and Wolde-Rufael (2013) argue that the significance of financial development in driving growth manifests through its roles. These roles are; efficient allocation of scarce financial resources and creation of confidence necessary for capital accumulation through savings and innovation.

Samargandi, Firdumuc and Ghosh (2014) alluded to Schumpeter (1911)'s work arguing that specialization and innovation occurs when producers are well funded. A conclusion can be made that a financial system that accumulates resources and allocates funds to innovators and entrepreneurs breeds an environment that fosters growth. Innovators and entrepreneurs focus their energy and minds on coming up with ideas of creating businesses and innovations that can develop economies without worrying about funding because the financial system takes care of that aspect.

2. To ascertain the growth theory that financial development and economic growth follow (for SADC).

Positive contribution of funding to real growth through services and instruments has been widely acknowledged in the literature, dating back to Schumpeter (1911)'s work on supply-leading hypothesis. Herwartz and Walle (2014) built on the same argument advocating for the premise that the development of the financial services impacts growth by igniting and driving innovation in an economy. This argument concurs with the supply-leading theory argued that the causality relationship is one directional in favour of financial development driven growth.

Robinson (1952) disagreed with the supply-leading theory and argued growth in the economy induces the need for services and products offered by financial sector, implying that as the economy experiences growth, growth in turn triggers growth of financial services. This results in the development of financial institution. This argument is the demand-following theory.

The bi-directional causality hypothesis by Patrick (1966) argues for a co-existence of demand-following and supply-leading. Hassan, Sanchez and Yu (2011), claimed that during the developmental stages, causality runs from finance to growth by stimulating capital formation up until a certain level. At this level, causality starts running from growth to finance through stimulating demand for financial services and products. Abid, Bahloulb and Mroua (2016) concurs by highlighting that GDP growth as an economic performance measure is considered a consequence but at times, considered a cause of the economy's financial performance. This confirms that the bi-directional causality theory is practical. Cecchetti and Kharroubi (2015) suggested a non-linear theory arguing that the variables are positively related up to a particular point, post which variables become negatively related. Lastly, Menyah et al. (2014)'s proposed view suggests the non-existence of a relationship.

### 3. To establish which independent variables are significant to growth.

Focus on the third objective is imperative because this objective holds answers to the question of development which seeks to interrogate if financial sector growth improves livelihoods of the poor by abating inequality and poverty. Which lever between financial development proxies, domestic credit, human development, exports to GDP, government expenditure, foreign direct investment inflows and inflation is vital in edifying growth?

SADC region aims to achieve growth that improves social progress and hence this objective will give recommendations on growth policies that affect financial development.

Chapter 1 explored the need for a study in Southern Africa giving a socio-economic overview of problems experienced in the region. The chapter motivated the critical growth role that financial development and how this growth can be used as a lever in abating social ills. It can be concluded that growth is important in addressing poverty and inequality, but if current growth is not addressing same, there is need to look at other levers that can achieve this objective, in this instance, explore financial development facets.

The following chapter reviews literature on development, financial development, growth and also discusses empirical evidences from prior studies by highlighting key findings in similar studies and measures used. The Southern African context is also discussed on the basis of two extreme nations, South Africa and Zimbabwe.

# **CHAPTER 2 - LITERATURE REVIEW**

## **2.1 Introduction**

Chapter 2 discusses literature around financial development and growth. It focusses on the general development need and drills the discussion down to the financial development facets that can achieve growth by reviewing findings of other studies where financial development achieved the growth objective and where it did not achieve the objective. This discussion forms the basis of chapter 3.

## **2.2 Why development?**

Amartya (1999) suggests that development increases the potential of people through improved opportunities to achieve more, socially and economically. This entails the reduction of poverty.

It is against this background that economic growth with development has to be realised. Financial development is one lever of growth that can be pulled to achieve economic growth with development. Amartya (1999) imply that poor financial development in an economy creates obstacles to greater freedom for citizens, it limits them from choosing their own destiny. These obstacles and limitations hinders development, hence we find many, specifically in Africa living in poverty, being excluded from participating in economic activities, high inequality, poor governance in private and public institutions, rampant corruption, lack of quality health and lack of quality education. Can financial development create the freedoms for people and can it remove obstacles to greater heights? If so, through what channels can this be achieved?

Focus on growth is critical but growth is a measure that does not mean anything if it does not guarantee development. Economic progress through growth should also reflect social progress (poverty and inequality reduction). Hence development is a reflection of both economic and social progress. Financial development as proved through theory and evidence has the potential to impact growth which can be translated into reduction of poverty and inequality.

According to an economic development report by the United Nations (2015), some

services sectors with the inclusion of financial services are critical in driving economic activities and have the potential to contribute addressing key infrastructural issues and social development challenges that Africa face today. This statement confirms that the continent has potential to realise social development through financial sector improvement as a growth lever. This further strengthens the need to explore financial development's significance as a growth driver and a potential source for the much needed development.

### **2.3 Financial Development and Growth Theories**

Finance's function in growth discussions of economies is amongst the major contentions in economic enquiry as there is an un-settled debate on the financial development and growth nexus. A four-fold theoretical and evidence based argument has been established. The supply-leading theory pioneered by Schumpeter (1911) posits that the injection of finance into the economy induces growth. A recent study in China by Ho and Lyke (2017) followed the supply-leading theory and found that an improved financial sector, banking in particular, is significant in driving growth, concluding that growth can be enhanced through ensuring efficient performance of banks.

Secondly, demand-following hypothesis by Robinson (1952), argues that the real sector growth causes improvements in the financial services sector (financial development). Thirdly, the bi-directional, argues for a co-effect of supply-leading and demand-following in the relationship (Patrick, 1966). Menyah et al. (2014), the independent hypothesis that argues for no relationship existing between variables.

Furthermore, Law and Singh (2014) raised a question on the target optimal size of financial systems in economies that can achieve sustainable growth. This question was raised based on a research by Cecchetti and Kharroubi (2015) which suggested that financial development in an economy yields positive returns up to a particular point, thereafter which it stifles growth. In conclusion, a positive relationship exists up to a certain point, thereafter, the variables become inversely related. These findings support a non-linear theory between financial development and economic growth. Findings by Cecchetti and Kharroubi (2015) counters the traditional supply-leading theory thereby posing a new opportunity to research further and validate this claim.

Though evidence on these hypotheses remain mired in controversies given conflicting

evidence on the same, Ikhide (2015) concludes that there is substantial evidence to support finance sector induced growth. This accords with the claims of supply-leading theory.

With existing theories in place, it is important to establish if this study agrees with any of the existing theories. This will contextualise and inform the basis of policy formulation.

## **2.4 Supply-leading hypothesis**

Following the supply-leading argument as established, King and Levine (1993) argue that the GDP of a country as an economic performance measure is a historical measure and therefore looks backwards on what has already happened. Therefore, working backwards from the achieved historical GDP trying to determine what variables of development were stimulated is in itself an artificial exercise.

Looking at the theory as Schumpeter (1911) put it, the supply-leading argument is based the idea that if an entrepreneur can access credit with ease, it creates a conducive environment for growth and prosperity (Bittencourt, 2012). A more recent study done in Nigeria by Karimo and Ogbonna (2017) concurs with the supplied-leading theory and concluded that growth can be achieved through financial development if attention is targeted at reducing complexities in accessing stock markets. In addition, if financial access is improved through lower cost of capital from financial institutions. Sharma and Bardhan (2012) in their study found a finance-led growth system across Indian states. These findings implied that financial development through efficient financial mediation stimulates growth through pooling savings together through banks and channelling them through credit.

The above findings are in support of access to financial services and products including credit as a source of growth. This means that with access to credit, entrepreneurs can start businesses through their innovative ideas and create jobs which will improve the livelihood of people in a country and in turn, generate growth. The socio-economical dimension to this is the reduction of inequality and poverty through the creation of jobs and improvement of livelihoods through income earning potential. This argument shows that access to credit or finance, an instrument financial development facet, is a growth determinant.

## **2.5 Financial development and economic growth**

The definition of financial development as proposed by Ikhida (2015) along depth, access and efficiency supports the notion that improved ability to obtain and use financial services and products can ignite growth. In addition, this suggests that the starting point of the growth process can be clearly determined as access and uptake of products and services for credit or savings in accord with the supply-leading hypothesis.

Reflecting on the financial development definition by Ikhida (2015), access to credit products or equity by entrepreneurs and innovators is important in sustaining long-term economic growth. The Solow growth model, Solow (1957) alludes to this point by stating that innovation is a critical component to the long-term growth equation of a country's economy. Hsu, Tian and Xu (2014) deviates and postulated that the level of financial development determines commitment to innovation in terms fostering, and resource allocation in terms of monetary investment into innovation considering the long cycles of innovation and the uncertainty around innovation outcomes. In addition, developed financial systems are able nurture innovation by absorbing risks surrounding uncertainty through effective scarce resource allocation, the reduction in financing and transactional costs.

King and Levine (1993) concluded in favour of positive growth effects of improved financial sector citing the major role financial systems of enabling savings pooling and efficiently allocating resources in an economy. This concurs with Schumpeter (1911)'s claim on the roles of financial systems (building savings base and enabling transactions) critical in inducing growth through innovation.

Consolidating the points above, it can be concluded that underdeveloped financial systems are incapable of funding innovation sufficiently. If this is the case, underdeveloped countries with poor financial systems can not bank sustainable economic growth on innovation. This proposition asserts that growth is stimulated by a developed finance system.

Finance and growth debate has been widely researched and evidence has showed varied results. A study done in Tunisia by Jedida, Boujelbene and Helali (2014) established that private credit, a facet of financial development stimulates long-run growth. Ductor and

Grechyna (2015) found private credit growth significant in explaining real output growth. This highlights the need to explore private credit facet in policy formulation.

On the contrary, Ono (2017)'s investigation on growth in Russia concluded that Russian banks are insignificant in explaining growth, in fact, growth in Russia is dependent on natural resources. Exploitation of factor endowment becomes the source of growth for Russia and its impact on growth is much stronger than financial sector development. However, a recommendation for Russia would be to explore financial development as an alternative lever. This also spreads the growth risk across sectors from resources based dependency to financial development based growth. This point explains the fact that countries have different endogenous factors that stimulate economic growth.

A study by Aghion, Howitt and Mayer-Foulkes (2005) based on Schumpeterian theory, concluded that direct growth effects of financial development are insignificant for economies whose financial development is above a certain threshold, even though should growth converge is expected, the positive effect on growth will vanish eventually.

These results can be credited to the diverse econometric methodologies and other heterogeneous factors. However, analysing the financial development and growth relationship, in as much as there is a consensus that a relationship exists, it can be concluded that there is an unsettled-debate on the direction of causal relationship as supported by existing casual theories and empirical evidence from prior studies.

An interesting and important country in this debate is China. Boyreau-Debray (2003)'s study on China found financial intermediation, a facet of financial development, to be negatively impacting China's economic growth. An investigation by Hassan, Wachtel and Zhou (2009) on the same nexus in China also found an inversely related nexus. Zhang et al. (2012) concluded that in as much as China had enjoyed fast economic growth over three decades, financial development and growth had a negative relationship because its financial sector is still under-developed and mostly state controlled, noting China's very restrictive capital market policies in terms of short-term inflows that enabled it to stabilize the economy and achieve growth (Stiglitz, 2000). These findings concur with the Russia findings by Ono (2017) and strengthens the other theories that claim against a supply-led relationship and that heterogeneity among countries plays a big role in the results

obtained.

Pradhan et al. (2014) in their study of ASEAN Regional Forum (ARF) countries established that development of financial institutions (financial institutions and financial markets) is of substance in the growth equation of ARF countries. Pradhan, Arvin, Bahmani, Hall and Norman (2017) determined a positive long-term growth contribution of financial improvement. This insinuates that developed financial systems facilitate and contribute to economic growth.

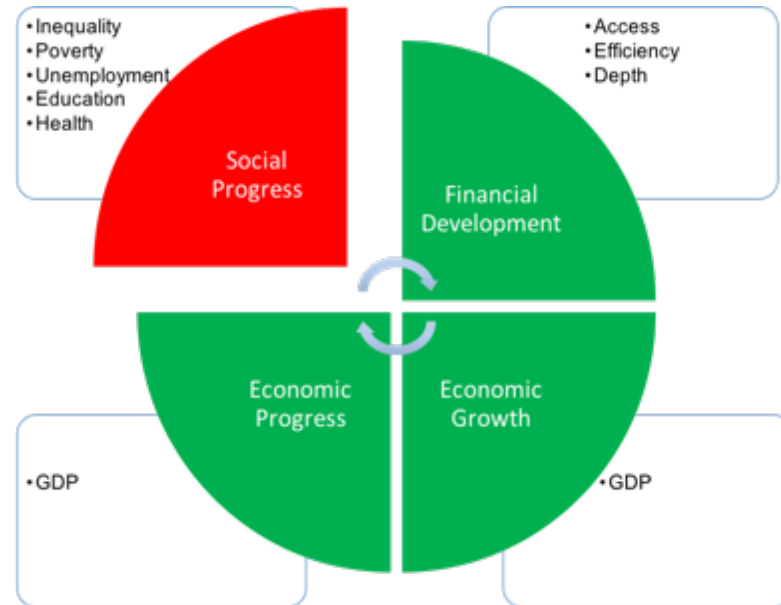
Jedida et al. (2014)'s evidence from Tunisia concur with findings by Ductor and Greychyna (2015)'s study on the positive growth contribution of credit. Furthermore, suggesting that development in financial system facilitates and contributes to economic development

Law and Singh (2014) argued that a financial crisis, particularly the 2007-2008 global economic crisis proved that a developed but inefficient financial system pose a huge counter-growth in an economy. Inefficiencies encourage speculation which may reduce confidence in the system leading to a number of counter-growth activities. Law and Singh (2014) mentioned that, failing systems impacts growth as they hinder savings growth, leading to inadequate savings pool for investment. In short, capital provision is limited. This is because people hold back from saving through financial systems creating scarcity of capital resources. The poor are exposed the most because discouraged savings behaviour reduces funding in the system which leads to underinvestment in innovation and entrepreneurial activities, this in turn has a negative impact on social progress and increases the inequality gap, poverty and unemployment.

Looking at development (social development), growth and financial improvement relationship, proposed framework of ideal flow of processes and activities following the supply-leading hypothesis should start with the positive causal relationship where financial development leads to both growth and development. However, since paltry growth is not translating to the social progress aspect of economic development, the disruption of flow can be established by the following in figure 7.

This study focusses on the social progress quadrant of the matrix in figure 7. This quadrant is not being significantly addressed in Southern Africa despite growth and

progress in the other three quadrants. By so doing, social issues can be addressed by pulling levers in the financial development quadrant in order to achieve social progress through economic growth.



**Figure 7. Development matrix depicting current state of SADC**

**Source:** Authors' conclusion

## 2.6 Growth as a sufficient condition

Seven and Coksun (2016) suggested growth enhancers through which financial development can impact growth as size and efficiency of financial institutions, legal system efficiency, political stability, ease access to variety of financial sector services and products, and quality intermediaries. In addition, the economy must be able to mobilise channels that trigger savings and channel the savings to investments.

Kagochi, Al Nasser and Kebede (2013) also suggested ingredients that's are critical in setting a platform conducive to stimulate growth and included financial services development, government policy, stability and human development. Some of these factors concur with Seven and Coksun (2016)'s enhancers. Looking at these factors, it can be noted that context matters and that some factors are more profound than others and heterogeneity explains why some factors work in other countries and why some do not. However, in the case of Southern Africa, other factors may also include quality education,

access to quality health services. Attaining any of these factors provides a platform for economic development.

On the other hand, according to Nawaz (2015), suggests that a country's per capita output (GDP per capita) is determined by three key ingredients which are; amount of physical capital, human capital and technological advancement according the economic theory. In addition, differences in country fundamentals play a role in the rate at which growth is achieved.

Due to political risk in most developing countries, Azzimonti (2018) argues that foreign direct investment tends to be highly concentrated in a few low political risk countries. This means that attracting (FDI) from developed countries requires a stable macroeconomic environment. FDI is an important element of capital injection into the economy which can lead to economic growth of host economies, particularly during developmental stages (Azzimonti, 2018). However, a number of criteria must be met for FDI to flow into a country. The World Economic Forum (WEF) 12 pillars of competitiveness provides pillars that are sufficient to attract FDI in a country (World Economic Forum, 2016).

Cai, Chen and Fang (2018)'s study investigating growth effects of FDI concluded that countries whose economies are developing at faster rate tend to benefit more from FDI than slow growing economies. In addition, FDI allows for technology and skills transfer that might be limited in host countries. This means that FDI is good for economies but greater benefits can be enjoyed if the countries are already enjoying faster growth. Developing countries may attract FDI but if the host countries have slow growth, the effects of FDI may not be as a great. But how can this faster growth be achieved? Theory suggests that FDI stimulates economic growth.

Trade openness also stimulates trade which helps in expanding market for a country's products and facilitates technological transfers between trading countries leading to economic growth. Alcalá and Ciccone (2004)'s study on trade and productivity concluded that a strong trade-growth association is evident. Whereas Yenokyan, Seater and Arabshahi (2014) argued that it the trade effect on growth is dependent on the market expansion brought and also the fact that it is not trade that stimulates growth, but rather the technological transfer that trade facilitates. Adding on, Manova (2012) asserts that

dysfunctional financial markets are a constraint to international trade flows due to the great need of external capital. This means that financial underdevelopment hinders trade and subsequently growth.

Manova (2012) posits that economies which boasts developed financial systems tend to have a competitive advantage on trade as they export and sell more to economies with failing systems. Developing countries which rely on exports but have less developed financial systems suffer more and the implication of this might be reforms to trade policy.

Looking at the FDI and trade points above, if the financial system of a country is not developed and is coupled with other factors such as political instability, policy uncertainty, neither of the two will exist. FDI cannot flow because of the risk of not being able to extract and repatriate funds out of the host country, the same applies to trade, trading partners will suffer a possible risk of not being able to extract payments from trading partners. A good example is Zimbabwe, with the political instability that existed for a long time and policy changes without consultation, trade and FDI decreases substantially.

Menyah et al. (2014) concurs to the point of openness in their study that suggested trade openness as another variable that needs to be added to the economic growth debate. Findings suggested that growth significance of both. Adding trade openness this to the discussion brings another complex political dimension to the issue of economic growth which is deeply rooted in policy and institutions of individual countries.

A study by Bangake and Eggoh (2011) concluded that a financial development, government expenditure, trade openness and growth relationship exists for sampled countries, in addition, financial development, government expenditure and trade openness are co-integrated in explaining growth. The point on trade openness validates Menyah et al. (2014)'s findings. This improves sufficiency of conditions for development. Trade openness also contributes towards financial development as it allows capital flow.

Theoretically and through evidence from this discussion, it can be noted that the levers to pull for social progress inclusive growth, are in fact within financial development construct.

## **2.7 Counter-growth diagnosis, poverty and inequality**

Inequality and poverty reduction should be a focus for countries. If Southern African countries are to eradicate poverty, some form of appraisal and diagnostic has to be done. Kahn (2015) reviewed a book by Jeffrey Sachs and quoted some of the the core causes of counter-development as poverty and poor policies. This list acts as a guide on how poverty can be explained and it is true for most poverty stricken countries, particularly in Africa and of interest Southern Africa. It is against this list that policies can be crafted and action on poverty reduction. Ferreira et al. (2010) alludes to by stating that greater inequality is counter growth as their Brazil findings suggested.

Biswas, Chakraborty and Hai (2017) argue that inequality hinders economic growth because it creates an environment where governments implement policies to redistribute income and wealth using policies that are anti-growth, diverting tax payers' funds to grants and welfare payments instead of investing in employment creating projects as supported by the political economy theory. In addition, without perfect financial markets, growth is hindered due to the negative effects and limitations of access to credit on small businesses and human capital, amplified by high inequality.

The general consensus, through theory and evidence is that developed financial sectors ignites and drives economic growth. However, with most developing countries, financial systems are inefficient and not fully developed. Berglof and Bolton (2002) argued that developing countries need to focus on implementing financial reforms around financial intermediation based on the theory and evidence that financial intermediation and future growth in developing economies have a strong relationship, the same relationship is negatively correlated in developed economies, hence this will bring about efficiency and confidence in a bid to achieve economic growth.

This is a strong point considering the fact that one key function of the finance sector is facilitation of savings and credit transactions (between lenders and borrowers) (Levine, 2004). If the financial intermediation is efficient and has confidence, more savings might be channelled into the system building reserves for investment and extending credit to entrepreneurs, innovators and small businesses.

Putting South Africa on the spotlight, the existence of a number of policies to reduce

inequality and redistribute wealth for example, Black Economic Empowerment (BEE) shows that the government is trying to correct the past wrongs at the same time discouraging potential investment flow to come into the country. However, potential companies with high technology capabilities and capital, end up overlooking opportunities to invest on South Africa and contributing towards growth because the government gives preferential appointments to the previously disadvantaged so that they catch up in economic activity, thus reducing the inequality and poverty gap. On the other hand, Zimbabwe implemented 51% indigenization policy that was meant to give 51% ownership of all foreign owned companies to local people. Inasmuch as these policies are good, they are counter-development. In the US, the government implemented taxation as a way of reducing inequality and subscribe a minimum income base level for the poor (Biswas et al., 2017).

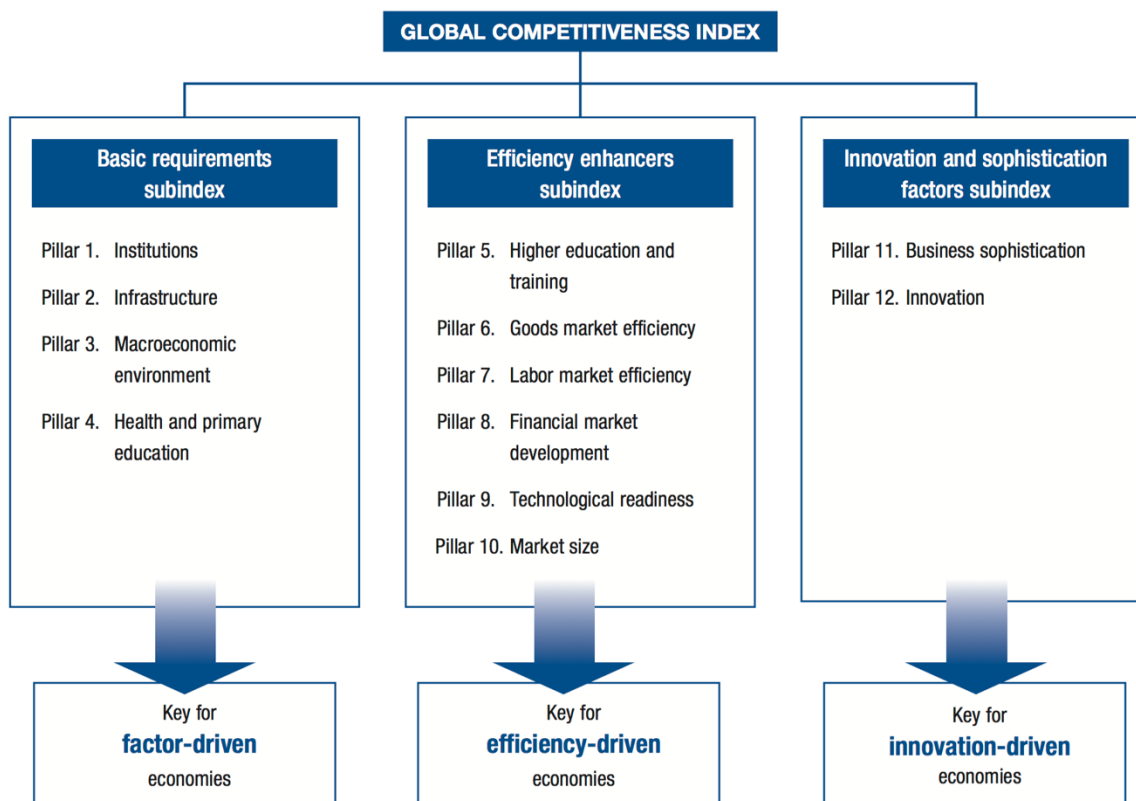
## **2.8 Development Goals, Competitiveness, Financial Development and Growth**

The United Nations (2000) established the Millennium Development Goals (MDGs) which is a list comprising of 8 goals which were meant to be achieved by 2025 specifically targeting developing countries. MDGs are presented in appendix 9.3. In 2016, these were replaced by Sustainable Development Goals (SDGs) presented in appendix 9.4 which are also meant to serve a much broader purpose than the MDGs and targeting both developing and developed countries (United Nations, 2016).

Noting that the MDGs and SDGs are guidelines and due to heterogeneity, countries have to establish their own national frameworks to work with towards achieving SDGs. It is interesting to note key elements covering poverty, inequality, education, health, openness between MDGs and SDGs. An example to this point is South Africa's National Development Plan which seeks to achieve goals linked to the SDGs by 2030, (South African Government, 2013).

In order to achieve development goals, economic growth must be achieved. The World Economic Forum (2015) also established a global framework for competitiveness comprising of 12 pillars for competitiveness which are designed to guide countries establish growth economies.

Looking at the WEF 12 pillars of competitiveness depicted in figure 8, it can be noted that health and education (both primary and higher education and training) constitutes basic part of the 12 pillars. These 2 pillars are also part of the SDGs. This means that for sustainable goals to be achieved, access to education and health is mandatory. Both the WEF 12 pillars and the SDGs mention innovation, infrastructure, industry, institutions and labour. These fall under efficiency enhancers and innovation and sophistication categories of the 12 pillars.



**Figure 8. WEF 12 competitive pillars**

**Source:** Adapted from The Global Competitive Report 2017-2018 (2017, Figure 1, p.12)

The macroeconomic environment's basic requirement pillar speaks to the government's monetary and fiscal policies. The importance of this pillar to financial development is the fact that government revenue (taxes) and expenditure on any investment also constitutes an element of financial development. On the other hand, the monetary policy as an element of financial development speaks to the interest rates and money supply which are all elements of financial development and have been used in prior studies as variables. Berglof and Bolton (2002) argues that it is not the financial improvement that is significant in explaining growth but rather policies that govern the environment in which the financial

institutions operate in that is significant in enabling financial development, consequently achieving growth.

Furthermore, Dincecco and Katz (2014) argued that governments in developing countries fail to provide infrastructure required to facilitate economic growth due to poor extractive capacity. This point clearly confirms the upside of a developed financial system to the government's tax collection activities. With an improved revenue collection rate, governments can increase expenditure on projects that improve social issues. This argument emphasizes that the 12 pillars of competitiveness (macro and micro pillars) cannot be used in isolation because of their interconnectedness.

The market size development pillar speaks to the point of trade. As a country becomes more competitive, trade opens foreign markets which according to Alcalá and Ciccone (2004) leads to economic growth. In addition, the technological readiness pillar is also a vital part of the trade, reiterating Yenokyan et al. (2014)'s argument on that technology transfer is also critical to growth and can be achieved through technological transfer facilitated through trade.

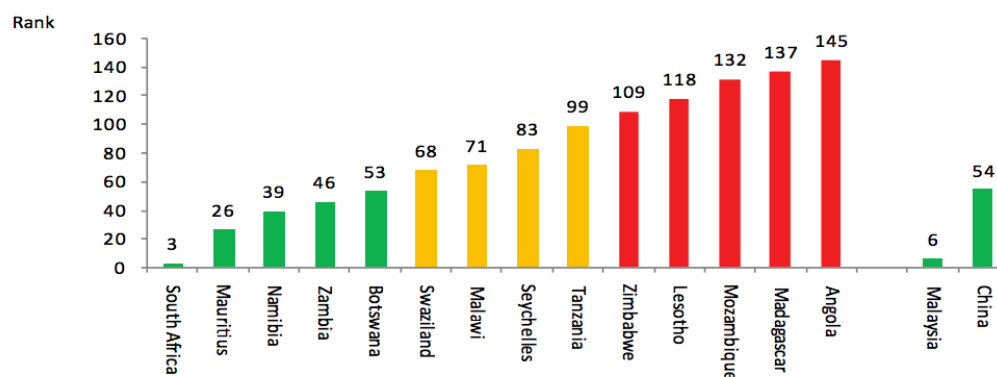
Of interest on the WEF 12 competitiveness pillars is the financial market development pillar which falls under efficiency enhancers. The inclusion of this pillar suggests the importance of financial market development's efficiency enhancing effects of in a growth conducive economy.

Badunenko and Romero-Avila (2013)'s study concluded that significant portions of growth effects of capital accumulation is a result of financial development acting as an efficiency-enhancer. This shows that role of financial development can be overshadowed by other pillars in the growth argument. In the end, resources need to be allocated efficiently and at low cost, this becomes an integral part of economic development.

Not only should the financial market be developed and efficient, but it must create confidence in the local and global market. Reiterating Hsu et al. (2014)'s innovation point and bringing the financial market development pillar, the link becomes clearer confirming that innovation thrives where financial development exists.

Figure 9 shows how South Africa compares to Malaysia and China in financial markets

competitiveness. This shows that financial development does not translate to socio-economic gains. Inequality ranking of South Africa is of global note and also a financial markets competitiveness of global note yet financial development is not translating to social progress.



**Figure 9. Financial Market Development Competitiveness: SADC Countries Vs China and Malaysia (2013-2014)**

**Source:** Adapted from WEF Global Competitiveness Report, (2013/14) in UNECA (2016, Figure A5.9, p.227)

Putting all these pillars together, it can be concluded that the WEF 12 competitiveness pillars follow the supply-leading theory of economic growth that claims that economic growth is an outcome of existing economic activities in a growth conducive economy. In addition, for SDGs to be achieved in totality, the competitive pillars must set a growth conducive environment.

## 2.9 Role of financial development

Seven and Coskun (2016) posits that there is need to continuously explore financial improvement and growth link based on evidence that financial systems as integral components in economies can level economic opportunities scales thereby reducing poverty and inequality. Economies in Africa are realising some growth, but it is not improving social conditions of the poor. This role of financial systems confirms the definition of financial development which entails the financial sector's level of depth, access and efficiency (Ikhide, 2015). If individuals can access credit at the lowest possible and sustainable cost, they can empower themselves through skills, education and equalize

economic opportunities through entrepreneurial activities which in turn will promote economic development.

Cornaggia, Maob, Tian and Wolfe (2015) argued that external funding is critical to stimulating innovation due to the fact that private companies' capital is constrained locally. In addition, as more financial institutions grow and increase in numbers, availability of credit increases and borrowing costs falls. The choice of funding depends on the cost of capital but if the financial service providers, banks in this case are not being efficient by lowering the cost of capital, the expectations of innovation driving growth are hampered. To achieve economic growth, a developed financial system should be efficient in fostering savings that can be channelled into investments. Banks are critical and play a more active role in channelling savings into investments (Ueda, 2012). This also confirms the fact that if the financial system is not well developed, the effects are detrimental to the growth of the economy through other ways, in this instance, crippling of innovation.

Furthermore, Guiso, Sapienza and Zingales (2004) argued that in an environment where capital can move across countries through global financial integration systems, the growth effects on financial development tends to be lower for larger companies than it is for small companies. This is because large companies do not necessarily depend on the local financial system for capital whereas small businesses, local innovators and entrepreneurs are dependent on the country's financial system for funding through equity and debt.

An experimental study done in Malawi by Brune, Giné, Goldberg and Yang (2016) concluded that formal banking institutions can mobilize and facilitate savings in an economy which can be used to fund economic activities as opposed to being advanced credit facilities by financial institutions. In this instance, the study was motivated by the evidence that agricultural growth effects on poverty reduction are more than double than any other sector (World Bank, 2008). One group of farmers was had bank accounts opened for them to encourage savings, the other group was paid in cash, the group of farmers who had proceeds deposited in their newly opened bank accounts had more savings to spend on agricultural inputs for the following season (Brune et al., 2016).

This experiment confirms that the roles of financial development goes beyond impacting growth directly but its spill overs have a direct impact on other sectors' impact on economic growth. Furthermore, the study cements Schumpeter (1911)'s argument citing the

role of financial system as one of mobilizing savings and facilitating transactions.

Aker, Boumniel, McClelland and Tierney (2016) that financial development through financial technology (fintech) involving electronic payment systems, mobile payments, prepaid debit cards, mobile application payments in developing countries has significant effects on growth through improved and ease of access to banking products for the informal sector thereby accounting for previously unaccounted for informal sector transactions through financial inclusion. Furthermore, cost and time saving benefits can be enjoyed by the population whereas more transparency and logistical issues can also be achieved on social programmes, for example grants disbursements in high density areas and remote rural areas.

South Africa has had issues with disbursing grants in cash, such disbursements were marred with hijacking, implementing the prepaid card eliminates risk of hijackings, reduces transportation and security costs and also saves the recipients queuing time which can be used for other activities. Alluding to the fintech benefits on both economic growth and social benefits, the key challenge of lack infrastructure, both technological and financial in developing countries remains.

Fung (2009) also suggested that countries underdeveloped financial systems, mainly poor countries, are entrapped in a vicious circle. This means that if a country has an underdeveloped financial system, it will continue to be poor because poor economic performance will resemble poor financial development and this will continue to be the case until there is a break in the vicious circle through some form of financial development. Poor people, low income earners, entrepreneurs and innovators' potential will be hampered due to constrained credit products. This is through inability to fund entrepreneurial and innovative ventures and self empowerment through education.

Seven and Coskun (2016) concurs with this suggestion stating that accessibility of financial services and products by the poor is critical to complement development because inasmuch as financial development (size and liquidity) exists, without access to it by the poor, it translates to meaningless growth. Essentially, if access to financial sector services (banking services that promotes savings), and products (credit) is limited for the poor, then financial development that is realised by the economies may not fundamentally contribute

to social progress, that is the reduction of inequality and alleviation of poverty.

Access to credit at the lowest possible and sustainable cost will make it possible for entrepreneurs and small businesses to start businesses and create employment which is a necessary condition in poverty and inequality reduction. Research shows that small businesses are the force behind GDP growth, a report by the Reserve Bank of South Africa (2015), small businesses accounts for more than half of the country's jobs. Furthermore, using the National Development Plan's ambitious vision, the SMME will create more jobs in the economy which are critically needed for development estimated to be 90% of jobs by 2030, (South African Government, 2013).

Kagochi et al. (2013) highlighted human capital development as a key growth factor that directly plays a critical role in reducing inequality and poverty. With a developed population, equipped with education, skills and ease access to credit, individuals are able to continuously empower themselves with more education and skills. Education and skills can be used to earn a living through employment created by small businesses, innovators and entrepreneurs or even start own businesses because capacity to do so exists. This will greatly impact access to health services and to improving living conditions of individuals and societies.

## **2.8 Financial Development's downside**

While the development of financial sectors is crucial to growth, its downside must be equally recognised. Financial development through financial markets pose a huge systematic risk to the whole financial system through its architecture globally, notably the 2008 global crisis (Acemoglu, Ozdaglar, & Tahbaz-Salehi, 2015). While the United States of America has a well developed financial system however, the same suffered a great deal and most economies were negatively affected. Adding on, Mattana and Panetti (2014) developed a theory on financial development specifically focusing on the architectural setting suggesting that as the financial system develops, the architectural setting also changes causing a decrease in liquidity and consequently negatively affecting growth.

This can be a reminder that inasmuch as growth effects of financial development are highly acknowledged, cautious risk management systems must be implemented through policies and regulation to avoid disastrous effects of a malfunctioning financial system. The

general systematic risk potentially from liquidity of financial system can equally have dire consequences on economic growth. This can be a key point for economies to note, economies must spread risk across growth drivers from different sectors as a way of limiting the potential negative effects of a dysfunctional or failing financial system on inequality and poverty alleviation initiatives.

## **2.8 SADC Context**

The current state of affairs in the SADC bloc exhibits extremes within the context of financial development and growth, mainly Zimbabwe and South Africa African (Development Bank Group, 2018). These extremes are attributed to heterogeneity. Taking into considering Kagochi et al. (2013)'s factors that stimulate economic growth, poor government policies and political stability were key factors in the narrative. A conclusion can be derived that factors such as political stability and government policies with reference to land reform and indigenisation programme affected Zimbabwe negatively, (ADB, 2012).

African Development Bank Group (2018)'s outlook on Zimbabwe gave an overall state of affairs within the economy. Summarising this extreme case, Zimbabwe with its multi-currency financial system and a US surrogate bond currency satisfies all anti-financial development characteristics based on the definition. Although other factors are in play, the financial system exhibits inefficiencies of the financial system due to inability to allocate financial resources within the economy, challenges in remitting funds out of the country by businesses who import goods and services; high cost of borrowing on loans for individuals; entrepreneurs and innovators; inability to access one's own savings from banks due to cash shortages; lack of access to mainstream banking products and services by the low-income earners. Growth within the economy has been recorded in the past few years but it is not translating to development as the country is still in a dire situation.

Contrarily South Africa, the most developed Southern African country in GDP terms and has one of the advanced financial systems, ranked in ten best global stock markets (SADC, 2018). The economy to a greater extent thrives on exports to other countries in the region. South Africa's finance sector is the most advanced in the region that includes innovative banking system, advanced financial markets, established insurance companies, strong central bank and treasury, microfinance companies, private funding agencies

(Business Partners, Venture Capital, Private Equity firms) development agencies, public funding institutions (Development Bank of South Africa, Industry Development Corporation). These institutions promote the allocation of resources, funding of entrepreneurs and innovators and are competitive in lending cost to individuals. With all this success, South Africa's inequality ranking is globally recognised, more than 50% of the population still in poverty (Statistics South Africa, 2017).

SADC context provides an opportunity to explore heterogeneity and gives insights on conditions where other financial development levers like foreign direct investment are more pronounced and thrive. These insights can be deduced through factors like government policy and political stability and the general macro-economic environment. It can also be concluded that the rest of the countries on the bloc rank between the two these two narratives.

Chapter 2 reviewed literature linking improvement of financial services and growth of economies by discussing prior findings. This also motivates the need for this study and chapter 3 focusses on the hypotheses for this study. Two hypotheses are to be tested on the grounds of relationship, causality, and theory.

## **CHAPTER 3 - HYPOTHESES**

### **3.1 Introduction**

Chapter 3 focuses on hypotheses of the study. Drawing insights from literature review and research objectives, two hypotheses are to be tested. Firstly, to determine if a financial development-led growth relationship exists. In addition, introducing other growth linked variables to establish same. Secondly, to establish if the relationship follows the supply leading theory.

### **3.2 Research Objectives**

Research Objective 1: To understand the extend of financial development in Southern African and ascertain its relationship with economic growth.

Research Objective 2: To ascertain the growth theory that financial development and economic growth follow in SADC.

Research Objective 3: To establish which independent variables are significant to growth.

The dependent variable (DV) is GDP per capita growth while the independent variables (IVs) are financial development, domestic credit, human capital development, exports, government expenditure, foreign direct Investment and inflation.

### **3.3 Hypothesis 1**

H<sub>0</sub>: There is no relationship between financial development and economic growth in Southern Africa.

H<sub>1</sub>: There is a relationship between financial development and economic growth in Southern Africa.

With conflicting evidence presented the through economic literature on the relationship, establishing if this study confirms the accepts or refutes the hypothesis is of critical importance as it helps to broaden the understanding of the relationship. This is cemented by empirics against positive growth effects of financial development (Ono, 2017; Boyreau-

Debray, 2003; Hassan et al., 2009; Zhang et al., 2012).

### **3.4 Hypothesis 2**

H<sub>0</sub>: Financial development and economic growth relationship in Southern Africa does not follow the supply-leading theory.

H<sub>1</sub>: Financial development and economic growth relationship in Southern Africa follows the supply-leading theory.

Supply-leading theory as stated by King and Levine (1993) argues for growth as product of positive effects that emanates from financial development. If the study follows a supply-leading theory, the assumption that a causal relationship between the two is confirmed. Based on this evidence, and noting the realisation that developing countries are likely to grow their economies by developing their financial sectors through injecting capital to initiate growth by Herwartz and Walle (2014), which financial development facet has the strongest relationship with growth, through which finance can be injected to stimulate growth in Southern Africa.

Seven and Coskun (2016) alluded to the point that if the poor's services and products access is constrained, impact of financial development may not translate to growth. However, some studies show that financial development does not follow supply-leading theory, in fact, follows either demand-following, bi-directional or independent theories. Establishing the theory followed by the study will inform the continuation process of the study.

Chapter 3 discussed the hypotheses. Given all this, what policies can be crafted to enhance growth? The following chapter looks at the methodology to be used in the study and motivates why the methodology was adopted.

# **CHAPTER 4 - RESEARCH METHODOLOGY AND DESIGN**

## **4.1 Introduction**

Chapter 4 discusses the methodology assumed in the study. A panel econometric approach was employed and a panel regression analysis carried out to determine the financial development and growth relationship as explained by the hypotheses. Population, sampling methods, measuring instrument, unit of analysis, data gathering, analysis approach and limitations are discussed in this section.

## **4.2 Choice of methodology and design**

This research followed a positivism philosophy due to the claim about reality based on existing theories its descriptive nature. A deductive approach underpins this study where hypotheses are generated for testing on the basis of existing theory, with empirical verification sought. Saunders, Lewis, and Thornhill (2009) explain the deductive approach stating that hypotheses may be confirmed or refuted resulting in the generation of new theory for further research. By so doing, claim on reality is also put to test. According to Hyde (2000), deductive reasoning, a process of testing theory, tests the applicability of an established theory in different contexts. This is in line with this research which sought to develop hypotheses based on established theories (supply-leading, demand following, bi-directional, non-linear and independent theories) in financial growth and development.

A mono method approach was implemented. This is because only a quantitative methodology was employed, because it makes it possible to create a more coherent and complete picture of the researched subject in a more descriptive and explanatory manner. Other stronger approaches have been developed to improve the quality of results which now exposes containing experimenter and instrumental bias.

The research sought to ascertain the growth and financial development nexus in a descriptive and explanatory manner. Saunders et al. (2009) states that explanatory research involves establishing causal relationships in order to explain the relationships. By establishing the variables that needs to be tested, the reason of the process is also established.

Country data was compiled using excel spreadsheets from the following developmental institutions, Southern African Development Community, African Development Bank, World Bank, United Nations Economic Commission for Africa, OECD and the International Monetary Fund. The variables used in this study are domestic credit to private credit sector to Gross Domestic Product (GDP) per capita growth, human development index, exports to GDP, government expenditure, foreign direct investment inflows, financial development index and inflation.

Research project was a longitudinal panel study since it involved investigating a phenomenon across different groups over a time period to ascertain any relevant changes (Balnaves & Caputi, 2001). The period of study was 1990 to 2016. Panel analysis was assumed on the basis of capturing either fixed or random effects that can explain this relationship in the region. Farrall, Hunter, Sharpe and Calverly (2016) stated the advantage of longitudinal studies over cross-sectional studies, as the allowance it affords the empirics to trace trajectory of events at various points in time over long periods. This allowance makes it possible for researchers to come up with credible causal relationships and are able to pick up unknown effects, this gives a more meaningful analysis to the study.

In addition, Hsiao (2003) stated the widespread use of panel data due to its allowance in enabling robust modelling the complex economic and human behaviour as opposed to cross-sectional or time series data. This results in rich statistical outputs for more pronounced analysis. Data for defined variables was collected and structured country by country for the 26-year period. Countries which had key missing data sets (Angola and Zimbabwe) were taken out of the study.

### **4.3 Population**

A population as defined by Salkind (2012) is a group of possible participants to whom you want to generalize the results of a study. It is against this definition that the fifteen SADC countries namely Angola, Botswana, DRC, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe formulated the population for this study (Southern African Development

Community, 2012). A common characteristic amongst SADC countries is that they are products of a colonial past. Economic growth has been slow in SADC countries and there is need to power-up economic growth as a possible solution to socio-economic problems affecting citizens.

#### **4.4 Unit of analysis**

Annualised data for variables listed below in table 1 collected for Angola, Botswana, DRC, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe is what was analysed.

The GDP growth per capita is annual growth rate in GDP per capita of SADC countries. Three alternative ways of measuring financial development were adopted from Sahay et al. (2015) as depicted in figure 10. Svirydzenka (2016) also adopted the same measures. The financial development composite index was split at two lower levels which allowed the study to have three models for financial development and growth and another three models that included the same financial development measures plus other growth linked variables as discussed below. These alternative financial development measures allowed for robust modelling.



**Figure 10. Alternative ways of measuring financial development**

**Source:** Adapted from Sahay et al. (2015) in Svirydzenka (2016, Figure 1, p.5)

In addition, the base level indexes, depth, access and efficiency for both financial institutions and financial markets are aggregated indicators of facets depicted in figure 11.

CATEGORY	INDICATOR
<b>Financial Institutions</b>	
<b>Depth</b>	Private-sector credit to GDP
	Pension fund assets to GDP
	Mutual fund assets to GDP
	Insurance premiums, life and non-life to GDP
<b>Access</b>	Bank branches per 100,000 adults
	ATMs per 100,000 adults
<b>Efficiency</b>	Net interest margin
	Lending-deposits spread
	Non-interest income to total income
	Overhead costs to total assets
	Return on assets
	Return on equity
<b>Financial Markets</b>	
<b>Depth</b>	Stock market capitalization to GDP
	Stocks traded to GDP
	International debt securities of government to GDP
	Total debt securities of financial corporations to GDP
	Total debt securities of nonfinancial corporations to GDP
<b>Access</b>	Percent of market capitalization outside of top 10 largest companies
	Total number of issuers of debt (domestic and external, nonfinancial and financial corporations)
<b>Efficiency</b>	Stock market turnover ratio (stocks traded to capitalization)

**Figure 11. Description of depth, access and efficiency facets**

**Source:** Adapted from Sahay et al. (2015) in Svirydzenka (2016, Table 1, p.8)

Table 1 shows the variables assumed in model 1 of the study.

**Table 1: Model 1 Variables**

Variable	Annualised Measure	Dependent/Independent
GDP per Capita growth	Percentage	Dependent Variable
Financial Development Index	Index	Independent Variable

Table 2 shows the variables assumed in model 2 of the study.

**Table 2: Model 2 Variables**

<b>Variable</b>	<b>Annualised Measure</b>	<b>Dependent/Independent</b>
GDP per Capita growth	Percentage	Dependent Variable
Financial Institutions Index	Index	Independent Variable
Financial Markets Index	Index	Independent Variable

Table 3 below shows the variables assumed in model 3 of the study.

**Table 3: Model 3 Variables**

<b>Variable</b>	<b>Annualised Measure</b>	<b>Dependent/Independent</b>
GDP per Capita growth	Percentage	Dependent Variable
Financial Institutions Access Index	Index	Independent Variable
Financial Institution Depth Index	Index	Independent Variable
Financial Institutions Efficiency Index	Index	Independent Variable
Financial Markets Access Index	Index	Independent Variable
Financial Markets Depth Index	Index	Independent Variable
Financial Markets Efficiency Index	Index	Independent Variable

Since growth cannot be explained by financial development alone, there are other variables in the growth equation that can help explain the variation in economic growth. The question then remains, will the results from model 1, model 2 and model 3 change if other growth variables (domestic credit to GDP, human capital development, exports to GDP, government expenditure to GDP, foreign direct investment to GDP and inflation) are factored in models 1, 2 and 3 to assume models 4, 5 and 6.

The data was collected from IMF data bank (IMF, 2016). Domestic credit to GDP measure is the annualized percentage of all private credit as a percentage of GDP. The human development index measures the overall level of human development (health, knowledge and standards of living) in a country (United Nations Development Programme, 2018). Exports to GDP measures an economy's exports proportional to the GDP. Government expenditure percentage measure is a gross percentage of government expenditure to the GDP. Foreign direct investment inflows to GDP measures total annual inflows proportional to the GDP. Inflation measures the rate at which the general prices keep rising and the

purchasing power falling in the economy.

After adding other growth related independent variables, variables for model 4, 5 and 6 are shown below in table 4.5, 4.6 and 4.7 respectively. All models are linked to the two hypotheses tested in this study.

**Table 4: Model 4 Variables**

<b>Variable</b>	<b>Annualised Measure</b>	<b>Dependent/Independent</b>
GDP per Capita growth	Percentage	Dependent Variable
Domestic credit to GDP	Percentage	Independent Variable
Human Development Index	Index	Independent Variable
Export to GDP	Percentage	Independent Variable
Government expenditure to GDP	Percentage	Independent Variable
Foreign Direct Investment Inflows to GDP	Percentage	Independent Variable
Inflation	Percentage	Independent Variable
Financial Development Index	Index	Independent Variable

**Table 5: Model 5 Variables**

<b>Variable</b>	<b>Annualised Measure</b>	<b>Dependent/Independent</b>
GDP per Capita growth	Percentage	Dependent Variable
Domestic credit to GDP	Percentage	Independent Variable
Human Development Index	Index	Independent Variable
Export to GDP	Percentage	Independent Variable
Government expenditure to GDP	Percentage	Independent Variable
Foreign Direct Investment Inflows to GDP	Percentage	Independent Variable
Financial Institutions Index	Index	Independent Variable
Financial Markets Index	Index	Independent Variable

**Table 6: Model 6 Variables**

<b>Variable</b>	<b>Annualised Measure</b>	<b>Dependent/Independent</b>
-----------------	---------------------------	------------------------------

GDP per Capita growth	Percentage	Dependent Variable
Domestic credit to GDP	Percentage	Independent Variable
Human Development Index	Index	Independent Variable
Export to GDP	Percentage	Independent Variable
Government expenditure to GDP	Percentage	Independent Variable
Foreign Direct Investment Inflows to GDP	Percentage	Independent Variable
Inflation	Percentage	Independent Variable
Financial Institution Access Index	Index	Independent Variable
Financial Institution Depth Index	Index	Independent Variable
Financial Institutions Efficiency Index	Index	Independent Variable
Financial Markets Access Index	Index	Independent Variable
Financial Markets Depth Index	Index	Independent Variable
Financial Markets Efficiency Index	Index	Independent Variable
Financial Institutions Access Index	Index	Independent Variable

These annualised percentage and index data was collected for each of the 13 SADC countries and presented in a panel format for STATA.

#### **4.5 Sampling methods and size**

Most sampling methods are informed by data access. Given a population of fifteen countries in SADC, the sample was expected to comprise of countries whose data span from 1990 to 2016. For this reason, purposive sampling method was used. Saunders and Lewis (2012) states that this sampling method is used by the researcher to chose the sample that enables achieving the study's objectives and answer hypotheses.

The sample expectation was the possibility of missing data sets and possible elimination of Zimbabwe considering its hyperinflation period experienced in the economy and subsequently the deteriorating of financial services sector that gave rise to a shadow economy and the introduction of a United States dollar surrogate currency, the bond note. Statistics for some years might be missing or misleading due to inconsistencies in measurement during hyperinflation periods. On the other hand, a great expectation for availability of all data sets for South Africa considering its high level of financial development on the African continent and its standing on the SADC bloc. These

expectations were met. Zimbabwe and Angola were eliminated due to unavailability of financial development index data. The sample used in the study comprised of Botswana, DRC, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania and Zambia.

#### **4.6 Measurement instrument**

Recent studies have used gross domestic product (GDP) growth as a growth variable of economic development measure and variables of financial development measures used were explained by banking sector development and stock market development (Ngare, Esman & Roseline, 2014; Pradhan et al., 2014; Pradhan et al., 2017).

Other prior studies on financial sector development, real economy and growth by Zhang et al. (2012) and also Ductor and Grechyna (2015) used individual financial measures. Menyah et al. (2014) in a panel causality study on African countries and Hassan et al. (2011) also used some specific individual financial development measures.

Using the variables that have been used before validates reliability of measurement instrument. This study digressed and used financial development indexes at three levels as shown in figure 10 and figure 11 culminating with three models assumed.

The explained variable is the research focus that the explanatory variables try to predict or explain the variations or changes thereof. The explained and explanatory variable for the study are listed below.

Explained Variable;

- a. Growth was the explained variable and GDP per capita was the measure to be used. This variable measures the aggregate economic output in a country over a period of time and is mostly useful for country comparison.

Explanatory Variables;

- a. Domestic credit to private sector as a percentage of GDP measures the total credit credit advanced to the private sector within the economy.
- b. Human development index measures the overall human development level in a

country.

- c. Exports to GDP measures the export benefits.
- d. Government expenditure measures the aggregate government expenditure.
- e. Foreign direct investment inflows measure the total inflows into the country.
- f. Inflation measures the rate of general prices rise and the purchasing power falls in an economy.
- g. Financial development index is the overall composite financial development measure of a country.
- h. Financial institutions index measures the overall financial institutions development in a country.
- i. Financial markets index measures the overall financial markets development in a country.
- j. Financial institutions access measures the level of access to financial institutions services and products.
- k. Financial institution depth measures the size and liquidity of financial institutions.
- l. Financial institutions efficiency index measures the ability to provide sustainable low cost financial services and products.
- m. Financial markets access measures the accessibility of financial markets by new stock insurers.
- n. Financial markets depth measures the financial markets' size and liquidity.
- o. Financial markets efficiency measures the stock market turnover rate.

#### **4.6.1 Equations**

The panel model equations construction was done using the explained and explanatory variables.

The equation construction followed the panel equation below as outlined by Brooks (2008).

$y_{it} = \alpha + \beta x_{it} + u_{it}$  for  $i = 1, 2, \dots, N$ ,  $t = 1, 2, \dots, T$  (Brooks, 2008). Models 1 to 6 were deduced on this basis.

#### 4.6.1.1: Model 1

$$\text{gdp capit}_{it} = \beta_0 + \beta_1 \text{it} (\text{fd}) + e_{it} \dots \text{Model 1}$$

Where;  $it$  = panel nature study ( $i$  is individual country,  $t$  is time in years)  
 $\text{gdp capit}$  = Gross Domestic Product per Capita Growth  
 $\text{fd}$  = Financial Development

#### 4.6.1.2: Model 2

$$\text{gdp capit}_{it} = \beta_0 + \beta_1 \text{it} (\text{fii}) + \beta_2 \text{it} (\text{fmi}) + e_{it} \dots \text{Model 2}$$

Where;  $it$  = panel nature study ( $i$  is individual country,  $t$  is time in years)  
 $\text{gdp capit}$  = Gross Domestic Product per Capita Growth  
 $\text{fii}$  = Financial Institutions  
 $\text{fmi}$  = Financial Markets

#### 4.6.1.3: Model 3

$$\text{gdp capit}_{it} = \beta_0 + \beta_1 \text{it} (\text{fiai}) + \beta_2 \text{it} (\text{fidi}) + \beta_3 \text{it} (\text{fiei}) + \beta_4 \text{it} (\text{fmai}) + \beta_5 \text{it} (\text{fmdi}) + \beta_6 \text{it} (\text{fmei}) + e_{it} \dots \text{Model 3}$$

Where;  $it$  = panel nature study ( $i$  is individual country,  $t$  is time in years)  
 $\text{gdp capit}$  = Gross Domestic Product per Capita Growth  
 $\text{fiai}$  = Financial Institutions Access  
 $\text{fidi}$  = Financial Institution Depth  
 $\text{fiei}$  = Financial Institutions Efficiency  
 $\text{fmai}$  = Financial Markets Access  
 $\text{fmdi}$  = Financial Markets Depth  
 $\text{fmei}$  = Financial Markets Efficiency

#### 4.6.1.4: Model 4

$$\text{gdp capit}_{it} = \beta_0 + \beta_1 \text{it} (\text{dcgdp}) + \beta_2 \text{it} (\text{hdi}) + \beta_3 \text{it} (\text{expgdp}) + \beta_4 \text{it} (\text{gvtexpgdp}) + \beta_5 \text{it} (\text{fdipgdp}) + \beta_6 \text{it} (\text{infl}) + \beta_7 \text{it} (\text{fd}) + e_{it} \dots \text{Model 4}$$

Where;  $it$  = panel nature study ( $i$  is individual country,  $t$  is time in years)  
 $\text{gdp capit}$  = Gross Domestic Product per Capita Growth  
 $\text{dcgdp}$  = Domestic Credit to GDP  
 $\text{hdi}$  = Human Capital Development  
 $\text{expgdp}$  = Exports to GDP

- gvtexpgdp = Government Expenditure to GDP
- fdipgdp = Foreign Direct Investment to GDP
- infl = Inflation
- fd = Financial Development

**4.6.1.5: Model 5**

$$\text{gdpcapit}_{it} = \beta_0 + \beta_{1it}(\text{dcgdp}) + \beta_{2it}(\text{hdi}) + \beta_{3it}(\text{expgdp}) + \beta_{4it}(\text{gvtexpgdp}) + \beta_{5it}(\text{fdipgdp}) + \beta_{6it}(\text{infl}) + \beta_{7it}(\text{fii}) + \beta_{8it}(\text{fmi}) + e_{it} \dots \text{Model 5}$$

Where;  $_{it}$  = panel nature study ( $_i$  is individual country,  $_t$  is time in years)

- gdpcapit = Gross Domestic Product per Capita Growth
- dcgdp = Domestic Credit to GDP
- hdi = Human Capital Development
- expgdp = Exports to GDP
- gvtexpgdp = Government Expenditure to GDP
- fdipgdp = Foreign Direct Investment to GDP
- infl = Inflation
- fii = Financial Institution
- fmi = Financial Markets

**4.6.1.6: Model 6**

$$\text{gdpcapit}_{it} = \beta_0 + \beta_{1it}(\text{dcgdp}) + \beta_{2it}(\text{hdi}) + \beta_{3it}(\text{expgdp}) + \beta_{4it}(\text{gvtexpgdp}) + \beta_{5it}(\text{fdipgdp}) + \beta_{6it}(\text{infl}) + \beta_{7it}(\text{fi ai}) + \beta_{8it}(\text{fidi}) + \beta_{9it}(\text{fie i}) + \beta_{10it}(\text{fmai}) + \beta_{11it}(\text{fmdi}) + \beta_{12it}(\text{fmei}) + e_{it} \dots \text{Model 6}$$

Where;  $_{it}$  = panel nature study ( $_i$  is individual country,  $_t$  is time in years)

- gdpcapit = Gross Domestic Product per Capita Growth
- dcgdp = Domestic Credit to GDP
- hdi = Human Capital Development
- expgdp = Exports to GDP
- gvtexpgdp = Government Expenditure to GDP
- fdipgdp = Foreign Direct Investment to GDP
- infl = Inflation
- fi ai = Financial Institutions Access
- fidi = Financial Institution Depth

fiei	= Financial Institutions Efficiency
fmai	= Financial Markets Access
fmdi	= Financial Markets Depth
fmei	= Financial Markets Efficiency

Stata was used for the panel data analysis. The panel regression was assumed to establish the direction, strength and significance of the relationship between variables which explain the growth and financial development relationship.

#### 4.7 Data gathering

Secondary data sourced from global developmental institutions and regional developmental institutions was used in the study. Country statistics institutions were not used. To ensure consistency, data was gathered from the World Bank and IMF data banks. Regional development institutions namely SADC and African Development Bank were also used for regional data pertaining to developmental statistics. Global and regional institutions used in collecting data for the study are tabulated below.

**Table 7: Data Sources**

Level	Name	Website
Global	International Monetary Fund	<a href="http://www.imf.org">www.imf.org</a>
Global	World Bank	<a href="http://www.worldbank.org">www.worldbank.org</a>
Global	World Economic Forum	<a href="http://www.weforum.org">www.weforum.org</a>
Global	OECD	<a href="http://www.oecd.org">www.oecd.org</a>
Regional	African Development Bank	<a href="http://www.afdb.org">www.afdb.org</a>
Regional	Development Bank of Southern Africa	<a href="http://www.dbsa.org">www.dbsa.org</a>
Regional	United Nations' Economic Commission for Africa	<a href="http://www.uneca.org">www.uneca.org</a>

## 4.8 Analysis approach

According to Gelman and Hill (2007) the assumptions for regression models that's researchers need to test for are; independence of errors, equal variance of errors, normality of errors, validity, additivity and linearity. In addition, normality and equal variances are important if the model is used to predict individual data points, otherwise they are minor concerns. Osborne and Waters (2002) also listed normal distribution, linearity, reliability and homoscedasticity as assumptions that must be tested for. For this reason, these assumptions will be adopted and tested for in this study.

Jarque and Bera (1980) suggested that violating normality assumption leads to inaccurate inferential statements, in addition, normality, homoscedasticity and serial independent must be tested from the beginning instead of being assumed. According to Hsiao (2007), panel data has a more accurate model inference due to increased degrees of freedom, sample variability allowing for more accurate estimates through combining cross-sectional and time-series data.

Primary process of analysing quantitative data is descriptive and inferential statistics (O'Dwyer & Bernauer, 2014). A panel econometric framework was employed in analysing SADC countries' relationship between financial development and their levels of growth. Model estimations assumed pooled OLS, fixed effects and random effects models to capture the time variant and time invariant effects. The panel method also allowed for the use of unbalanced panels especially where data points were missing. STATA version 15, Student Pack was employed for data analysis and testing.

Microsoft Excel for Mac version 15.15 was used to prepare and format panel data into STATA acceptable format. The excel spreadsheet with the compiled data were imported into STATA and saved. Using STATA commands, descriptive statistics and model estimation results were produced.

Model estimations were done using pooled ols regression, fixed effects and random effects models. In addition, several tests were run; Hausman test, multicollinearity test, heteroskedacity, CD Pasaran test for cross-sectional dependence, Wooldridge test for auto-correlation and lastly the Drisc/Kraay robust fixed model estimator. Test results were

produced for analysis. Robust estimators were used to control for model weaknesses.

In addition, an income disaggregated analysis on the sample was done. Using the World Bank (2015)'s income classification, the sample was broken down into categories based on the level of income (low income, lower middle income and upper middle income) and analysed on how financial development fares in these categories and the relationship thereof.

engendering a robust analysis into the relationship

This was done as a way of engendering a robust analysis into the relationship for models 4, 5 and 6. This econometric method was used by Nawaz (2015) in a study investigating impact of various institutions on economic growth where these impacts were studied as a combined sample representative of the world and also separated into groups based on economic classification.

#### **4.8.1 Pooled OLS regression**

Firstly, a pooled OLS regression was estimated. Assumptions for this estimation is that all observations under study constitute one broad data-set and disregards the cross-section and time-series elements of data-sets (Brooks, 2008). However, heterogeneity exists amongst countries and cannot be disregarded by assuming average estimates from the panel as a single broad cross-section, the estimates were not efficient. The coefficient of determination for the pooled OLS is  $R^2$ , it determines the model fit and the higher the  $R^2$ , the better and stronger the model. To overcome the constraints of the pooled model, fixed effects and random effects model were assumed.

#### **4.8.2 Fixed Effects model**

According to Brooks (2008), fixed effects recognises heterogeneity amongst countries and concedes that each individual country's data-set can be observed individually and although each individual country's intercept may differ across countries, it does not vary over time. This means that time invariance exists. Countries have specific characteristics that do not change over time which make them unique in their own contexts, recognising these fixed fundamentals will allow the model to do away with the unobserved heterogeneity which allows for much better estimates of the parameters.

#### **4.8.2.1 Fixed Effects Least-Square Dummy Variable model (LSDV)**

With varied fixed effect amongst countries, assumptions, intercept and the coefficients (equation model variables), using dummy variables helps isolating country's time specific effects in the model by controlling for unobserved heterogeneity (Nwakuya & Ijoma, 2017). The model absorbs country specific effects. However, a weakness of losing degrees of freedom with each dummy variable added exists and with more dummies added, another problem of multicollinearity among independent variables arises (Baltagi, 2005).

#### **4.8.2.2 Fixed Effects Within-Group model**

According to Nwakuya and Ijoma (2017), LSDV model works when the sample is small. If the sample is large, adding more dummy variables will not be feasible. To overcome estimating numerous dummy variables, the Fixed Effects Within-Group model can be used. This model according to Brookes (2002), transforms data by subtracting the time mean on all country variables. This transformation eliminates the unobservable across-panel differences by restricting action within-group (Nwakuya & Ijoma, 2017).

#### **4.8.2.3 The Fixed Effect First Difference Model**

First differences model looks at each country's observations of each variable as different to other countries. It regresses the first differences of each variable over time and estimates variable based on the average of the differences thereby removing the time invariant omitted variables (Baltagi, 2005). The first differences model does not take into account the unobserved effects or omitted variables as compared to the pooled OLS regression.

#### **4.8.3 Random Effects model**

A Random Effects model was assumed. This model according to Greene (2002), assumes that there is no association between unobserved country heterogeneity and all explanatory variables under study and that all differences that exist across countries are random. The random effects model acknowledges limitations on the heterogeneity and estimates parameters for time invariant variables.

#### **4.8.4 Hausman test**

As a way of choosing the best estimate between the fixed effects and the random effects, a Hausman test was assumed. A significant p value at 5% for the Hausman test confirms

fixed effects model to the best estimator, otherwise, the random effects estimate is selected (Croissant & Millo, 2008).

#### **4.8.5 Breusch Pagan LM test**

Hausman test confirmed that Fixed Effects model was the best estimator. Therefore, the test for independence (Breusch-Pagan LM test) was not run. This is because the Random Effect estimator was not chosen. Breusch Pagan LM Test is used as a way of choosing the best estimator between either random effects or OLS regression estimates (Baltagi, 2005). This is done to test for differences across countries. If there are no significant differences across countries, a OLS regression estimate is assumed.

#### **4.8.6 Multicollinearity VIF test**

Brooks (2009) states that collinearity occurs when high correlation exists amongst variables (explanatory), furthermore, argued that this problem is more of a data problem than it is an estimation or model one. The multicollinearity test was assumed. A result of more than 10 warrants further investigation.

#### **4.8.7 Pesaran CD test**

The Pesaran CD test was run to test for cross-sectional independence. Panel methods have a weakness of correlation between panels and Croissant and Millo (2008) states the Pesaran CD can overcome this. Cross-sectional dependence may result in biased results (Baltagi, 2008). Also, since micro panels were used (between 20 and 30 years), theory notes that the weakness of cross sectional correlation is very unlikely.

#### **4.8.8 Breusch Pagan/Cook Weisberg test for Heteroskedacity**

The problem of cross-sectional independence affects correlation of residuals across countries. Greene (2002) states that the presence is heteroskedacity is detected when the regression errors vary across observations. Standard errors are crucial in establishing confidence intervals and significance. If the standard errors are misleading, significance and estimation will be biased. The Breusch Pagan/Cook Weisberg test was used to test for heteroskedacity.

#### **4.8.9 Wooldridge test for Auto-correlation**

The panels used in the study have a time series of 26 years (1990 to 2016), by virtue of the time series, serial correlation tests must apply (Baltagi, 2008). The Wooldridge test for serial correlation among panels was used to test for this weakness. Drukker (2003) states that if serial correlation exists in panels, the standard errors will be misleading leading to inefficient results. A significant test statistic indicates that serial correlation exists.

#### **4.8.10 Fixed Effects Model with Driscoll Kraay**

If a model has the weaknesses of heteroskedacity, auto-correlation and sectional dependence, these can be treated by assuming the Driscoll-Kraay which is robust to these weaknesses (Hoelchle, 2007). The Fixed Effects model with Driscoll-Kraay was assumed.

### **4.9 Limitations**

Regression and correlation can only indicate the presence or absence of a linear function between two or more constructs. In the event that the data is not linear, the model will be misleading. In addition, if more variables are added to the model, the resultant estimate might also be misleading. Lastly, a possibility that other variables influenced results always exists.

Target population limited the desired objectives. This also trickles down to the sample size of the study which might be too small, consequently leading to the objectives of the study not being met. In this instance, target population was fifteen SADC countries and the sample size was thirteen countries.

Availability of data was another weakness for this study. Missing data sets data might have affect the objective the study. Data was solicited not only from International Monetary Fund but also from World Bank databank, World Economic Forum, African Development Bank and Southern African Development Community databases. Some institutions that gathered data might have been biased. This point is also valid for data collection methods used, these methods might not be suitable for the study or the institution might overlook key factors which might also affect the quality of data. Sources were thoroughly checked before being used.

Selection bias is another limitation of the study. This is according to Hsiao (2003) a limitation because a sample cannot be randomly drawn from the population because the sample will be those countries that have all data sets required for the specified period of time. Another bias along this dimension is in form of data collection of secondary data. According to Higgins and Green (2011), statistical heterogeneity as a consequence of methodological diversity results in lack of consistency between variables across countries creating and possible manipulation of data along the way.

Data quality is one limitation of secondary data. The data was compiled by developmental institutions and this research had no control of the quality assurance of the data collection process and accuracy. The research relied on the data as compiled by third party institutions.

Considering that secondary data is backward looking, some of the data collected over the period might be outdated due to the changes in measuring methods over time. This limits the appropriateness and the relevance of the study on completion.

Heterogeneity bias is another limitation of the study, this according to Hsiao (2003), this assumes that individual countries' economic data is a product of controlled experiments whose results are modelled random variables. The reality is that economic activities are not controlled experiments. Even though we can explore relationships at a regional level, countries remain as heterogeneous entities whose economic behaviour cannot be generalizes across all countries.

Complex statistical analysis is another potential limitation to the study. This speaks to the generation of complex statistical output which might be difficult to interpret or interpreted incorrectly. This is attributed to lack of resources in form of statistical software to run complex statistical tests. The statistical output of quantitative research is also limited to the resultant statistical limitations and constraints.

This chapter discussed the methodology employed in line with the problem statement, literature review and hypotheses. Of great importance to note is the measurement instrument which explains the variables used in the study. The chapter also discussed limitations of the study.

# CHAPTER 5 - PRESENTATION OF RESULTS

## 5.1 Introduction

This chapter presents empirical findings on the relationship between financial development and economic growth in Southern Africa by focussing on the models assumed, tests run and robustness methods. Extracts of relevant results are presented complete statistical outputs are in annexure.

## 5.2 Models description

The relationship was estimated using 6 models with the variation in the models being premised on the way financial development is measured. Figure 10 shows a pictorial depiction of the three different ways of measuring financial development as assumed in this study.

For the purposes of this study, financial development is measured in three ways as depicted in figure 11;

1. As a single composite index (fd).
2. As 2 indexes, one index for financial institutions (fii) and the other index for financial markets (fmi).
3. As 6 sub-indexes, 3 for financial institutions (financial institutions depth (fidi), financial institutions access (fiai) and financial institutions efficiency (fieii)) and 3 for financial markets (financial markets depth (fmdi), financial markets access (fmai) and financial markets efficiency (fmei)).

Table 4.1 provides a detailed presentation of how the facets of financial development (fd) for both financial institutions and financial markets are measured, that is through depth, access and efficiency. It also presents how each facet of depth, access and efficiency is measured as assumed in this study.

The study adopted 6 models to establish the growth and financial development relationship in Southern Africa. Three ways of measuring financial development in figure 10 were assumed.

Models 1, 2 and 3 adopted GDP growth per capita as a dependent variable whereas financial development measured one of the three alternative ways of measuring financial development per model as presented in figure 10.

Model 1 assumed 2 variables, GDP growth per capita as the explained variable and the composite financial development (fd) index as the explanatory variable. Model 1 is as follows;

$$gdpcapit_{it} = \beta_0 + \beta_1_{it} (fd) + e_{it} \dots \dots \dots \text{Model 1}$$

Where;  $it$  = Panel notation ( $i$  is individual country,  $t$  is time in years)  
 $gdpcapit$  = Gross Domestic Product per Capita Growth  
 $fd$  = Financial Development

Model 2 assumed GDP growth per capita as a dependent variable and two financial development measures, financial institutions index (fii) and financial markets (fmi) index which are sub-components of the composite financial development index (fd) as independent variables. Model 2 is as follows;

$$gdpcapit_{it} = \beta_0 + \beta_1_{it} (fii) + \beta_2_{it} (fmi) + e_{it} \dots \dots \dots \text{Model 2}$$

Where;  $it$  = Panel notation ( $i$  is individual country,  $t$  is time in years)  
 $gdpcapit$  = Gross Domestic Product per Capita Growth  
 $fii$  = Financial Institution  
 $fmi$  = Financial Markets

Model 3 assumed 7 variables, GDP growth per capita as a dependent variable and 6 financial development measures, financial institutions depth index (fidi), financial institutions access index (fi ai), financial institutions efficiency index (fie i), financial markets depth index (fmdi), financial markets access index (fmai) and financial markets efficiency index (fmei). Model 3 is shown below;

$$gdpcapit_{it} = \beta_0 + \beta_1_{it} (fi ai) + \beta_2_{it} (fidi) + \beta_3_{it} (fie i) + \beta_4_{it} (fmai) + \beta_5_{it} (fmdi) + \beta_6_{it} (fmei) + e_{it} \dots \dots \dots \text{Model 3}$$

Where;  $it$  = Panel notation ( $i$  is individual country,  $t$  is time in years)  
 $gdpcapit$  = Gross Domestic Product per Capita Growth

- fiai = Financial Institutions Access
- fidi = Financial Institution Depth
- fiei = Financial Institutions Efficiency
- fmai = Financial Markets Access
- fmdi = Financial Markets Depth
- fmei = Financial Markets Efficiency

As a way of infusing robustness in the findings, models 4, 5 and 6 are a replica of models 1, 2 and 3 adjusted to include control variables (domestic credit to GDP, human capital development, exports to GDP, government expenditure to GDP, foreign direct investment inflows to GDP, inflation) by adding them to models 1, model 2 and model 3. This allowed an introspection into whether the significance of financial development in explaining growth changes if control variables are added into the estimation of the relationship.

Model 4 is as follows;

$$gdpcapit_{it} = \beta_0 + \beta_{1it}(dcdp) + \beta_{2it}(hdi) + \beta_{3it}(expdp) + \beta_{4it}(gvtexpdp) + \beta_{5it}(fdipdp) + \beta_{6it}(infl) + \beta_{7it}(fd) + e_{it} \dots \dots \dots \text{Model 4}$$

- Where;  $_{it}$  = panel nature study ( $_i$  is individual country,  $_t$  is time in years)
- gdpcapit = Gross Domestic Product per Capita Growth
- dcdp = Domestic Credit to GDP
- hdi = Human Capital Development
- expdp = Exports to GDP
- gvtexpdp = Government Expenditure to GDP
- fdipdp = Foreign Direct Investment to GDP
- infl = Inflation
- fd = Financial Development

Model 5 is as follows;

$$gdpcapit_{it} = \beta_0 + \beta_{1it}(dcdp) + \beta_{2it}(hdi) + \beta_{3it}(expdp) + \beta_{4it}(gvtexpdp) + \beta_{5it}(fdipdp) + \beta_{6it}(infl) + \beta_{7it}(fii) + \beta_{8it}(fmi) + e_{it} \dots \dots \dots \text{Model 5}$$

- Where;  $_{it}$  = panel nature study ( $_i$  is individual country,  $_t$  is time in years)
- gdpcapit = Gross Domestic Product per Capita Growth
- dcdp = Domestic Credit to GDP
- hdi = Human Capital Development

- expgdp = Exports to GDP
- gvtexpgdp = Government Expenditure to GDP
- fdipgdp = Foreign Direct Investment to GDP
- infl = Inflation
- fii = Financial Institutions
- fmi = Financial Markets

Model 6 is as follows;

$$\begin{aligned}
 \text{gdp capit}_{it} = & \beta_0 + \beta_{1it}(\text{dcdp}) + \beta_{2it}(\text{hdi}) + \beta_{3it}(\text{expgdp}) + \beta_{4it}(\text{gvtexpgdp}) + \beta_{5it}(\text{fdipgdp}) \\
 & + \beta_{6it}(\text{infl}) + \beta_{7it}(\text{fiai}) + \beta_{8it}(\text{fidi}) + \beta_{9it}(\text{fiei}) + \beta_{10it}(\text{fmai}) + \beta_{11it}(\text{fmdi}) + \beta_{12it}(\text{fmei}) + e_{it}
 \end{aligned}$$

.....Model 6

Where;  $_{it}$  = panel nature study ( $_i$  is individual country,  $_t$  is time in years)

- gdp capit = Gross Domestic Product per Capita Growth
- dcdp = Domestic Credit to GDP
- hdi = Human Capital Development
- expgdp = Exports to GDP
- gvtexpgdp = Government Expenditure to GDP
- fdipgdp = Foreign Direct Investment to GDP
- infl = Inflation
- fiai = Financial Institutions Access
- fidi = Financial Institution Depth
- fiei = Financial Institutions Efficiency
- fmai = Financial Markets Access
- fmdi = Financial Markets Depth
- fmei = Financial Markets Efficiency

Lastly, the sample of 13 countries was further disaggregated for models 4, 5 and 6 according to the income level as prescribed by the The World Bank (World Bank, 2014). This disaggregation gave three sub-samples namely low income, lower middle income and upper middle income as shown in table 8. Model 4, 5 and 6 were run again assuming the three-disaggregated samples at a time. The intuition being to allow for the establishment of the said relationship whilst catering for the homogeneity of countries in one level of income thereby embracing the robustness of the results.

**Table 8: Sample disaggregation by level of income**

<b>Lower Income Countries (6)</b>	<b>Lower Middle Income Countries (2)</b>	<b>Upper Middle Income Countries (5)</b>
DRC, Malawi, Mozambique, Tanzania, Madagascar and Zambia	Lesotho and Swaziland	Botswana, Mauritius, Namibia, South Africa and Seychelles

### 5.3 Presentation of Model 1 results

Model 1 was run assuming the basic panel regression model to establish if financial development can explain the variation in GDP per capita growth in SADC.

Results in table 9 show that financial development as measured by the composite financial development index is not significant to economic growth in SADC.

**Table 9: Model 1 results**

<b>gdpcapit</b>	<b>Coef.</b>	<b>Std. Err.</b>	<b>t</b>	<b>P&gt;t</b>	<b>[95% Conf.</b>	<b>Interval]</b>
fd	2.2929	2.1150	1.08	0.278	-1.8525	6.4383
_cons	1.4274	.7348	1.94	0.052	-.0128	2.8676

**NB: \*significant at 10% \*\*significant at 5% \*\*\*significant at 1%**

### 5.4 Presentation of Model 2 results

Model 2 was run assuming the basic panel regression model to establish if financial development is significant to economic growth assuming financial institutions (fii) and financial markets (fmi) indexes as proxies of financial development.

Results in table 10 shows that financial development as measures; financial institutions index (fii) and financial markets index (fmi) are at 5% significant level not significant in explaining the variation in GDP per capita growth in SADC at 5% significant level.

**Table 10: Model 2 results**

gdpcapit	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
fii	.6405	2.4659	0.26	0.795	-4.1925	5.4737
fmi	1.9261	2.6704	0.72	0.471	-3.3078	7.1601
_cons	1.5308	.8776	1.74	0.081	-.1893	3.2510

**NB: \*significant at 10% \*\*significant at 5% \*\*\*significant at 1%**

## 5.5 Presentation of Model 3 results

Model 3 was run assuming the basic panel regression model to establish if financial development is significant to economic growth assuming financial institutions depth index (fidi), financial institutions access index (fiai), financial institutions efficiency index (fiei), financial markets depth index (fmdi), financial markets access index (fmai) and financial markets efficiency index (fmei) as facets of financial development.

Results in table 11 show that only one facet of financial development, financial markets access index (fmai) is significant in explaining the variation in GDP per capita growth in SADC. All other facets of financial development (fidi, fiai fiei, fmdi and fmei) are not significant.

**Table 11: Model 3 results**

gdpcapit	Coef.	Std. Err.	z	P>t	[95% Conf.	Interval]
fiai	2.1759	2.2654	0.96	0.337	-2.2642	6.6161
fidi	1.2539	2.5697	0.49	0.626	-3.7826	6.2904
fiei	-2.1947	4.1643	-0.53	0.598	-10.3567	5.9671
fmai	3.24***	1.0825	3.00	0.003	1.1279	5.3713
fmdi	-1.2903	1.8990	-0.68	0.497	-5.0124	2.4317
fmei	-.1416	.9672	-0.15	0.884	-2.0374	1.7541
_cons	2.3511	1.6146	1.46	0.145	-.8135	5.5158

**NB: \*significant at 10% \*\*significant at 5% \*\*\*significant at 1%**

## 5.5 Presentation of Model 4 results

### 5.5.1 Summary Statistics

The descriptive statistics are provided for the whole sample of 13 countries as well and for individual countries. The average annual data for each variable and the average of each variable by country was computed for the period 1990 to 2015 (tables 12 and 13). This enabled a comparison of country averages per variable in relation to the total sample average.

**Table 12: Descriptive statistics for the whole sample**

Variable	Obs	Mean	Std. Dev.	Min	Max
gdpcapit	338	1.8577	4.2625	-16.7834	23.0270
dcdgdp	336	28.2108	34.2690	2.0972	160.1248
hdi	319	.5128	.1305	.2080	.8080
expgdp	333	40.2668	21.5617	6.7657	107.9944
gvtexpgdp	301	19.5622	11.7293	2.0575	88.9828
fdipgdp	338	4.5107	6.4188	-6.8976	57.8772
infl	338	129.0224	1483.6650	-4.2127	26765.8600
fd	338	.1876	.1316	0	.6058

Table 12 shows the average statistics for all variables under study in model 4. The mean GDP per capita growth (gdpcapit) for the sample is 1.85%. The domestic credit to GDP (dcdgdp) sample average is 28.21% while the average human development index (hdi) for the panel is 0.512. Government expenditure to GDP (gvtexpgdp) sample average is 19.56%. The sample average for foreign direct investment inflows to GDP (fdipgdp) is 4.5. On average, the exports to GDP for the whole sample is 40.26% and lastly the average inflation (infl) is 129. Looking at financial development index (fd), the average is 0.18.

At this stage, it is obligatory to delineate the best performing countries and the worst performers per variable as shown in table 13.

**Table 13: Variables by Country**

Country	gdpcapit	dcdgdp	hdi	expgdp	gvtexpgdp	fdipgdp	infl	fd
Botswana	2.7069	19.76	.6157	51.07	22.9958	2.5653	8.02	.2197
DRC	-2.2080	8.20	.3646	71.57	9.3848	3.1120	1515.64	.0516
Lesotho	2.8073	14.04	.4670	32.39	35.7022	7.1217	8.77	.1417
Madagascar	-.5968	11.44	.4886	24.80	8.9891	3.6984	12.55	.0906
Malawi	1.6788	8.17	.3945	24.23	29.7649	2.5062	25.38	.0885
Mauritius	3.9353	66.33	.6969	57.53	13.9532	1.8617	5.26	.3562
Mozambique	4.3581	15.78	.3187	21.75	18.4500	9.4666	18.21	.1057
Namibia	2.1298	42.82	.5879	44.19	23.8328	4.8345	8.06	.3227
Seychelles	2.5229	18.20	.7437	59.71	32.1040	10.9578	6.06	.2439
South Africa	.8703	129.33	.6349	26.96	19.2217	1.2685	8.54	.4740
Swaziland	2.0882	16.97	.5258	59.62	17.5645	2.9407	9.63	.1553
Tanzania	2.2082	9.47	.4299	17.45	15.0430	3.0703	15.27	.1046
Zambia	1.6490	9.38	.4686	31.62	12.1685	5.2352	35.89	.0847

Table 13 shows that Mozambique (4.5%) and Mauritius's (3.9%) mean GDP per capita growth is more than double the average of the sample. On the other hand, Zambia, South Africa and Malawi's averages are below average while Madagascar (-0.59%) and DRC's (-2.2%) averages are showing negative GDP per capita growth. Only Mauritius and Namibia are best performers with above average GDP per capita growth.

On domestic credit to GDP, South Africa has the highest average of 129.33% which is more than 4 times the average followed by Mauritius (66.33%) and Namibia (42.82%). The rest of the sample is below average and the worst performers being DRC (8,20%) and Malawi (8.17%).

On human development, statistics shows that DRC, Lesotho, Madagascar, Malawi, Mozambique, Tanzania and Zambia's averages are below sample average with the worst performer being Mozambique (0.318). Seychelles (0.743), Mauritius (0.696), South Africa (0.634) and Botswana (0,615) lead the bloc in human development average performance.

DRC (71.57%) has the highest average exports to GDP on the bloc. Seychelles (59,71%) and Swaziland (59.62%) also have the second and third highest exports to GDP average.

The country with the lowest average is Tanzania (17.62%).

Lesotho (35.70%) has the highest government expenditure to GDP compared to sample average. Seychelles' (32.10%) Malawi (29.76%), Namibia (23.83%) and Botswana's (22.99%) also have above average government expenditure to GDP. South Africa spends (19.22%) almost equal to the sample average and the rest of the countries spend less with the least spender, on average being being Madagascar (8.98%).

Seychelles (10.95%) has the highest foreign direct investment inflows. Lesotho (7.12%), Mozambique (9.46%), Namibia (4.8%) and Zambia (5.23%) also have foreign direct investment above the average of 4.5%. All other countries have averages below 4.5% and the country with the least average being South Africa (1.26%).

The inflation (infl) sample average is 129, this figure however includes an outlier, DRC whose average inflation is 1515.64. If this country is taken out, the sample average becomes 13.47%. It also important to note that Mauritius has the lowest average inflation rate at 5.6%

Looking at financial development, Botswana (0.219), Mauritius (0.356), Namibia (0.322), Seychelles (0.243) and South Africa (0.47) have averages of more than 0.18 (sample average). South Africa leads the bloc with an average of almost three times more than the sample average. The rest of the countries' average financial development indexes are below sample average. The countries with the least averages are Zambia (0.084) and Malawi (0.088).

The pairwise correlation analysis was run to establish the linear dependency between growth and financial development. Results tabulated in table 14 show a significant positive correlation at 5% for human development index (hdi) and GDP per capita (gdpcapit). Another variable with a positive significant relationship with GDP per capita growth is foreign direct investment inflows (fdipgdp) at 5%. Inflation (infl) has a negative significant relationship with GDP per capita. It is important to note that financial development index (fd) does not have a significant correlation with GDP per capita growth.

**Table 14: Pairwise Correlation**

	gdpcapit
gdpcapit	1
dcdgdp	0.030
hdi	0.1**
expgdp	0.000
gvtexpgdp	0.050
fdipgdp	0.1**
infl	-0.1**
fd	0.099

**NB: \*significant at 10% \*\*significant at 5% \*\*\*significant at 1%**

### 5.5.2 Model 4 Estimation

Firstly, the Pooled OLS regression estimation was run and the results are presented in table 15. Results show a  $R^2$  test statistic of 8.21% indicating a weak explanatory power of the model as it can only explain 8.21% variation in the GDP per capita growth (gdpcapit). However, the test results confirmed that domestic credit to GDP (dcdgdp), exports to GDP (expgdp), foreign direct investment to GDP (fdipgdp) and inflation have a significant relationship with growth. However, financial development is not significant in explaining growth. To overcome the low explanatory power, the panel framework under fixed effects and random effects was assumed.

**Table 15: Pooled OLS Model Results**

gdpcapit	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
dcdgdp	-.030*	.0177	-1.74	0.084	-.0655	.0041
hdi	4.8152	3.5460	1.36	0.176	-2.1658	11.7963
expgdp	-.024*	.0143	-1.69	0.092	-.0526	.0040
gvtexpgdp	-.0237	.0226	-1.05	0.295	-.0684	.0208
fdipgdp	.0713	.0421	1.69	0.091	-.0115	.1543
infl	-.000*	.0001	-3.12	0.002	-.0008	-.0001
fd	6.6652	5.7417	1.16	0.247	-4.6387	17.9691
_cons	.3688	1.2019	0.31	0.759	-1.9974	2.7352

**NB: \*significant at 10% \*\*significant at 5% \*\*\*significant at 1%**

The fixed and random effects models are run assuming robust standard errors as a way of insulating the estimations from heteroskedasticity and autocorrelation weakness. Results for the Fixed Effects model results are presented in table 16.

Results in table 16 show model significance as indicated by a p value of 0.0000. Results confirm that human development (hdi), government expenditure (gvtexpgdp) and inflation (infl) are significant at 10%, 5% and 5% respectively in explaining GDP per capita growth. Financial development is not significant.

**Table 16: Fixed Effects Model Results**

<b>gdpcapit</b>	<b>Coef.</b>	<b>Std. Err.</b>	<b>t</b>	<b>P&gt;t</b>	<b>[95% Conf.</b>	<b>Interval]</b>
dcdp	-.0128	.0441	-0.29	0.775	-.1090	.0832
hdi	21.744*	11.8326	1.84	0.091	-4.0366	47.5255
expgdp	.1009	.0759	1.33	0.208	-.0644	.2663
gvtexpgdp	-.06**	.0225	-2.87	0.014	-.1137	-.0156
fdipgdp	-.0453	.0259	-1.75	0.106	-.1019	.0112
infl	-.0***	.0000	-3.29	0.006	-.0004	-.0000
fd	-4.9405	5.6915	-0.87	0.402	-17.3413	7.4603
_cons	-10.8082	5.9289	-1.82	0.093	-23.7263	2.1098

**NB: \*significant at 10% \*\*significant at 5% \*\*\*significant at 1%**

However, it is mandatory to run a random effects model so that the best estimator can be chosen between fixed effects and random effects models. Table 17 shows the results of the random effects estimator and the 0.000 p-value confirmed the significance of the model in explaining the GDP per capita growth. The results confirmed that government expenditure (gvtexpgdp) and inflation (infl) are significant in explaining growth in SADC. However, financial development is not significant.

**Table 17: Random Effects Model Results**

gdpcapit	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
dcdgdp	-.0114	.0102	-1.12	0.264	-.0314	.0086
hdi	7.5926	6.6822	1.14	0.256	-5.5044	20.6896
expgdp	.0067	.0252	0.27	0.790	-.0428	.0563
gvtexpdp	-.037*	.0193	-1.92	0.055	-.0752	.0007
fdipgdp	.0398	.0433	0.92	0.358	-.0451	.1247
infl	-.00***	.0000	-10.58	0.000	-.0004	-.0003
fd	-.6010	4.6121	-0.13	0.896	-9.6407	8.4386
_cons	-1.2091	3.3171	-0.36	0.715	-7.7107	5.2924

**NB: \*significant at 10% \*\*significant at 5% \*\*\*significant at 1%**

While both fixed and random effects models are significant, a Hausman test was run to define the most appropriate estimator of the relationship between GDP per capita growth and financial development whilst controlling for other key variables defining the relationship. Hausman test results in table 18 show a significant p value at 1% meaning that the fixed effects model is the most appropriate estimator of the relationship.

**Table 18: Hausman Test Results**

	— Coefficients —			
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
dcdgdp	-.0128903	-.0114257	-.0014646	.0282469
hdi	21.74444	7.592614	14.15183	5.511378
expgdp	.1009679	.0067432	.0942247	.0231044
gvtexpdp	-.0647077	-.0372293	-.0274784	.0097018
fdipgdp	-.0453392	.0398421	-.0851813	.0244174
infl	-.0002478	-.0003946	.0001468	.
fd	-4.940516	-.6010532	-4.339463	3.747331

b = consistent under Ho and Ha; obtained from xtreg  
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\begin{aligned}
 \text{chi2(6)} &= (b-B)'[(V_b-V_B)^{-1}](b-B) \\
 &= \mathbf{25.16} \\
 \text{Prob>chi2} &= \mathbf{0.0003} \\
 &(\text{V}_b\text{-V}_B \text{ is not positive definite})
 \end{aligned}$$

The Pesaran test was run to test for cross sectional dependence among panels. The results in figure 12 shows a significant p value of at 1%. This means that cross sectional dependence exists. The assumed fixed effects model had to be insulated for this weakness.

Pesaran's test of cross sectional independence = **4.405**, Pr = **0.0000**

Average absolute value of the off-diagonal elements = **0.238**

**Figure 12. Pesaran Test Results**

Another weakness for panel study is multicollinearity. This weakness was tested for using the VIF Muticollinearity test. Test results in table 19 shows an average VIF of 3.52 which is less than 10, confirming that multicollinearity is a non-issue.

**Table 19: Multicollinearity Test Results**

<b>Variable</b>	<b>VIF</b>	<b>1/VIF</b>
fd	9.79	0.1021
dcgdp	6.50	0.1537
hdi	3.59	0.2786
expgdp	1.50	0.6661
gvtexpdgp	1.12	0.8942
fdipgdp	1.08	0.9221
inf	1.04	0.9603
<b>Mean VIF</b>	<b>3.54</b>	

The Breusch-Pagan/Cook-Weisberg test was run to test for heteroskedacity, another weakness of panel studies. Test results presented in figure 13 were significant at 1% confirming the presence of heteroskedacity. This meant the Fixed Effects model had to be treated for this weakness.

```

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: dcdp hdi expgdp gvtexpgdp fdipgdp infl fd

chi2(7)      =    46.50
Prob > chi2  =    0.0000

```

**Figure 13. Heteroskedacity Test Results**

Lastly, the Wooldridge test was run to test for autocorrelation. Test results in figure 14 shows an insignificant p value of 0.4639 (more than 5%) confirmed that autocorrelation does not exist. However, the Fixed Effects estimator could still be fool-proofed for this weakness.

```

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
F( 1,      12) =    0.572
Prob > F =    0.4639

```

**Figure 14. Wooldridge test Results**

Given the weaknesses identified, the fixed effects model assumed Driscoll-Kraay standard errors capable of addressing the same weaknesses (Hoelchle, 2007). The results of the Driscoll-Kraay robust fixed effects model are tabulated in table 20. Results show that human development index (hdi) at 1%, government expenditure (gvtexpgdp) at 5% and inflation (infl) at 5% are significant in explaining the variation in GDP per capita growth. However, the financial development index (fd) is not significant.

**Table 20: Fixed Effects Model with Driscoll-Kraay robust standard errors**

<b>gdpcapit</b>	<b>Coef.</b>	<b>Std. Err.</b>	<b>t</b>	<b>P&gt;t</b>	<b>[95% Conf.</b>	<b>Interval]</b>
dcdgdp	-.0128	.0239	-0.54	0.596	-.0623	.0365
hdi	21.7***	6.2326	3.49	0.002	8.9081	34.5507
expgdp	.1009	.0606	1.66	0.109	-.0239	.2259
gvtexpgdp	-.06**	.0278	-2.32	0.029	-.1221	-.0073
fdipgdp	.0453	.0441	-1.03	0.314	-.1361	.0455
infl	-.000*	.0001	-1.94	0.064	-.0005	.0000
fd	-4.9405	4.1970	-1.18	0.250	-13.5845	3.7035
_cons	-10.8082	4.4195	-2.45	0.022	-19.9104	-1.7060

**NB: \*significant at 10% \*\*significant at 5% \*\*\*significant at 1%**

### 5.5.3 Disaggregated samples

To establish whether the same relationship estimated in the prior section holds across countries of different income levels, a disaggregated panel analysis was instituted.

#### 5.5.3.1 Lower Income Countries

For lower income countries panel, following the model estimation steps from Pooled OLS, running the fixed and random effects models, applying the Hausman test and testing for autocorrelation, cross sectional dependence, heteroskedacity and multicollinearity, the most appropriate estimator is the Fixed Effects model with Driscoll-Kraay robust standard errors. The empirical results for the sample of low income countries are presented in table 21 confirm that human development index (hdi) and export to GDP (expgdp) are significant to GDP per capita growth at 5%. Financial developments as measured by financial development index (fd) is not significant.

**Table 21: Fixed Effects with Discoll-Kraay Results for Lower Income Countries**

<b>gdpcapit</b>	<b>Coef.</b>	<b>Std. Err.</b>	<b>t</b>	<b>P&gt;t</b>	<b>[95% Conf.</b>	<b>Interval]</b>
dcdgdp	-.1985	.1327	-1.50	0.147	-.4718	.0747
hdi	30.56**	11.6655	2.62	0.015	6.5408	54.5921
expgdp	.15**	.0648	2.37	0.026	.0198	.2869
gvtexpgdp	-.0392	.0318	-1.23	0.229	-.1049	.0263
fdipgdp	.0024	.0563	0.04	0.966	-.1135	.1184
infl	-.0000	.0001	-0.30	0.764	-.0003	.0002
fd	-49.4611	37.0018	-1.34	0.193	-125.6679	26.7456
_cons	-8.7296	2.8012	-3.12	0.005	-14.4989	-2.9602

**NB: \*significant at 10% \*\*significant at 5% \*\*\*significant at 1%**

### **5.5.3.2 Lower Middle Income Countries**

Empirical results for lower middle income countries were estimated using the Pooled OLS regression which was the best model estimator after the model estimation process. Though data limitations affected the running of Fixed Effects and Random Effects models, the random effects models emerged the superior estimator after running the Hausman test. However, the Bresuch-Pagan LM Test for random effects accredited the OLS as the best estimator with an  $R^2$  of 29.57%. The results in table 22 confirm that exports to GDP (expgdp) is the only significant variable (at 10% significance) explaining GDP per capita growth for lower middle income countries. Financial development is however not significant.

**Table 22: Pooled OLS Results for Lower Middle Income Countries**

<b>gdpcapit</b>	<b>Coef.</b>	<b>Std. Err.</b>	<b>t</b>	<b>P&gt;t</b>	<b>[95% Conf.</b>	<b>Interval]</b>
dcdgdp	-.1347	.1992	-0.68	0.505	-.5436	.2741
hdi	-55.4502	47.9881	-1.16	0.258	-153.9138	43.0132
expdgd	-.132*	.0765	-1.73	0.094	-.2899	.0242
gvtexpdgd	-.2161	.1825	-1.18	0.247	-.5908	.1584
fdpdgd	-.2629	.1559	-1.69	0.103	-.5828	.0569
infl	.2376	.2399	0.99	0.331	-.2547	.7299
fd	-1.9096	8.6705	-0.22	0.827	-19.7001	15.8808
_cons	44.0840	27.8267	1.58	0.125	-13.0117	101.1798

**NB: \*significant at 10% \*\*significant at 5% \*\*\*significant at 1%**

**5.5.3.3 Upper Middle Income Countries**

Empirical results for upper middle income countries were estimated using the Pooled OLS regression which was the best model estimator after going through all the relevant model estimation process. Data limitations affected the running of Fixed Effects and Random Effects models and the random effects models emerged the superior estimator after running the Hausman test. However, the Bresuch-Pagan LM Test for random effects accredited the OLS as the best estimator with an R<sup>2</sup> of 22.74%. The results in table 23 confirm that government expenditure to GDP (expdgd) and inflation are significant (at 5% significance) to GDP per capita growth whereas financial development is not significant.

**Table 23: Pooled OLS Results for Upper Middle Income Countries**

<b>Gdpcapit</b>	<b>Coef.</b>	<b>Std. Err.</b>	<b>t</b>	<b>P&gt;t</b>	<b>[95% Conf.</b>	<b>Interval]</b>
dcdgdp	-.0201	.0220	-0.91	0.364	-.0638	.0236
hdi	-2.2312	8.3058	-0.27	0.789	-18.6897	14.2272
expdgd	.0353	.0425	0.83	0.408	-.0489	.1195
gvtexpdgd	-.15***	.0513	-2.96	0.004	-.2535	-.0501
fdpdgd	.0093	.0603	0.15	0.877	-.1103	.1290
infl	-.20***	.0485	-4.28	0.000	-.3039	-.1114
fd	3.5231	5.4295	0.65	0.518	-7.2358	14.2820
_cons	6.9671	4.0158	1.73	0.086	-.9906	14.9249

**NB: \*significant at 10% \*\*significant at 5% \*\*\*significant at 1%**

## 5.6 Presentation of results: Model 5

### 5.6.1 Descriptive statistics

Table 24 presents average statistics for all financial development variables under study in model 5. The focus for model 2 is on the second financial development measure assumed in this study, financial institution index (fii) and financial markets index (fmi). It can be noted that the average financial institution index (fii) for the sample is 0.3040 and the average financial market index (fmi) is 0.0685. The range for the indexes is between 0 and 1 (Svirydzenka, 2016). The average for financial market index (fmi) paints a picture of less developed financial markets compared to financial institutions.

**Table 24: Sample Variables**

Variable	Obs	Mean	Std. Dev.	Min	Max
fii	338	.3040	.1718	0	.7428
fmi	338	.0685	.1129	0	.4796

**NB: \*significant at 10% \*\*significant at 5% \*\*\*significant at 1%**

Using the sample average statistics, delineating the best performing countries and the worst performers per variable as shown in table 24 becomes obligatory. Table 25 shows average financial institution index (fii) and financial markets index (fmi) by country. It can be noted that Botswana, Mauritius, Namibia, Seychelles and South Africa's have average financial institution indexes (fii) that are above sample average of 0.3040. The country with the least average is DRC at 0.1003. However, in terms of the financial markets index (fmi), only Mauritius, Namibia and South Africa are above the sample average of 0.0685. Botswana is slightly below the sample average. The rest of the countries' average financial markets indices (fmi) are below sample average of 0.0685. DRC and Lesotho have the least averages of 0.0021 and 0.0022 respectively.

**Table 25: Variables by Country**

Country	Mean fii	Mean fmi
Botswana	.3763	.0600
DRC	.1003	.0021
Lesotho	.2792	.0022

Madagascar	.1685	.0115
Malawi	.1579	.0178
Mauritius	.4589	.2483
Mozambique	.1900	.0197
Namibia	.5515	.0892
Seychelles	.4714	.0128
South Africa	.5951	.3459
Swaziland	.2603	.0480
Tanzania	.1925	.0152
Zambia	.1499	.0182

The correlation analysis sought to establish the existence of a linear association between financial development measures (financial institution index (fii) and financial markets index (fmi)) and GDP growth. Tabulated results presented in table 26 shows that a significant relationship exists between financial institution index (fii) at 0.0379. However, no association was established between GDP per capita (gdpcapit) and financial markets index (fmi). Other explanatory variables with a significant relationship with GDP per capita growth are human development (hdi), foreign direct investment inflows (fdipgdp) and inflation (infl).

**Table 26: Correlation matrix**

	gdpcapit
gdpcapit	1
dcdgdp	0.030
hdi	0.1***
expgdp	0.000
gvtexpgdp	0.050
fdipgdp	0.11**
infl	-0.1***
fii	0.11**
fmi	0.058

**NB: \*significant at 10% \*\*significant at 5% \*\*\*significant at 1%**

### 5.6.2 Model 5 Estimation

Model 5 estimation process followed the same process assumed in model 4. Results are presented in appendix 9.1. Pooled OLS was run and the results showed an 8.5%  $R^2$  statistic. This statistic proved that the explanatory power of the model is low. Fixed and Random Effects models were run and results showed that both models were significant at 1%. A Hausman test confirmed the superiority of Fixed Effects was to be assumed.

The Perasan test for cross sectional independence was run and the results were significant at 0.0000 confirming the existence of cross sectional dependence. Multicollinearity test was run and a result of 3.47 (less than 10) confirmed the absence of multicollinearity. Heteroskedacity test using the Breusch-Pagan/Cook-Weisberg test was significant at 1% confirming the presence of heteroskedacity. The Wooldridge test for autocorrelation was adopted and an insignificant result of 0.4639 (more than 5%) confirmed that autocorrelation does not exist.

With the weaknesses identified, the Fixed Effects estimator with Driscoll-Kraay robust standard errors was assumed as the appropriate estimator of the relationship between GDP per capita growth and financial development (financial institution index (fii) and financial markets index (fmi)).

Table 27 shows model 5 results assuming the whole sample of 13 countries. The results show that human development index (hdi) at 1%, exports to GDP (expgdp) and government expenditure (gvtexpgdp) at 5% are significant in explaining GDP per capita growth in SADC. However, financial development as measured by financial institution index (fii) and financial markets index (fmi) are not significant in explaining GDP per capita growth.

**Table 27: Fixed Effects Model with Driscoll-Kraay results**

<b>gdpcapit</b>	<b>Coef.</b>	<b>Std. Err.</b>	<b>t</b>	<b>P&gt;t</b>	<b>[95% Conf.</b>	<b>Interval]</b>
dcgdp	-.0043	.0239	-0.18	0.857	-.0537	.0450
hdi	22.50***	6.4160	3.51	0.002	9.2865	35.7147
expgdp	.097*	.0563	1.74	0.095	-.0182	.2140
gvtexpgdp	-.06**	.0283	-2.33	0.028	-.1243	-.0077
fdipgdp	-.0435	.0435	-1.00	0.326	-.1332	.0461
infl	-.0002	.0001	-1.64	0.113	-.0005	.0000
fii	-7.3684	6.1868	-1.19	0.245	-20.1104	5.3734
fmi	1.5417	3.8372	0.40	0.691	-6.3611	9.4446
_cons	-10.0821	4.1064	-2.46	0.021	-18.5395	-1.6246

**NB: \*significant at 10% \*\*significant at 5% \*\*\*significant at 1%**

### **5.6.3 Model 5 disaggregated panels analysis**

To establish whether the same relationship estimated in the prior section holds across countries of different income levels, a disaggregated panel analysis was instituted.

#### **5.6.3.1 Low Income Countries**

For low income countries panel, after running all model and weakness tests, the most appropriate estimator of the GDP per capita growth and financial development assumed was the Fixed Effects model with Driscoll-Kraay robust standard errors and results for same are presented in table 28.

**Table 28: Fixed Effects with Discoll-Kraay for Low Income countries**

<b>gdpcapit</b>	<b>Coef.</b>	<b>Std. Err.</b>	<b>t</b>	<b>P&gt;t</b>	<b>[95% Conf.</b>	<b>Interval]</b>
dcdgdp	-.1924	.1349	-1.43	0.166	-.4703	.0855
hdi	30.95**	11.7940	2.62	0.015	6.6604	55.2412
expdgd	.15**	.0645	2.44	0.022	.0242	.2900
gvtexpdgd	-.0396	.0328	-1.21	0.239	-.1073	.0280
fdipdgd	.0041	.05374	0.08	0.939	-.1065	.1148
infl	-.0000	.0001	-0.31	0.762	-.0003	.0002
fii	-23.6286	17.7617	-1.33	0.195	-60.2095	12.9522
fmi	-50.7395	76.1259	-0.67	0.511	-207.5238	106.0447
_cons	-8.9332	2.6873	-3.32	0.003	-14.4679	-3.3984

**NB: \*significant at 10% \*\*significant at 5% \*\*\*significant at 1%**

Results for the low income countries presented in table 28 confirmed that human development index (hdi) and exports to GDP (expdgd) are significant at 5% in explaining GDP per capita growth. However, financial institution index (fii) and financial markets index (fmi) as proxies of financial development are not significant to GDP per capita growth.

### **5.6.3.2 Lower Middle Income Countries**

The Pooled OLS regression was the best model estimator for the lower middle income subsample after modelling estimation process. Data limitations affected the running of Fixed and Random Effects models, thus OLS estimator ( $R^2$  of 29.86%) was assumed.

The Pooled OLS results in table 29 confirmed that no variable is significant in explaining GDP per capita growth with special focus on financial development as measured by financial institution index (fii) and financial markets index (fmi) for the sub-sample in Southern Africa.

**Table 29: Pooled OLS Results for Lower Middle Income countries**

<b>gdpcapit</b>	<b>Coef.</b>	<b>Std. Err.</b>	<b>t</b>	<b>P&gt;t</b>	<b>[95% Conf.</b>	<b>Interval]</b>
dcdgdp	-.1806	.2680	-0.67	0.506	-.7315	.37028
hdi	-46.9781	57.1248	-0.82	0.418	-164.4	70.4437
expdgd	-.1024	.0983	-1.04	0.307	-.3046	.0997
gvtexpdgd	-.1901	.1939	-0.98	0.336	-.5887	.2085
fdipdgd	-.2619	.1583	-1.65	0.110	-.5873	.0635
infl	.2332	.2349	0.99	0.330	-.2497	.7162
fii	6.7833	22.0292	0.31	0.761	-38.4984	52.0652
fmi	-1.4367	4.7703	-0.30	0.766	-11.2424	8.3689
_cons	36.1775	36.7739	0.98	0.334	-39.4123	111.7675

**NB: \*significant at 10% \*\*significant at 5% \*\*\*significant at 1%**

### 5.6.3.3 Upper Middle Income Countries

Data limitations also affected the running of Fixed and Random Effects for model estimation in upper middle income sub-sample thus results were estimated using Pooled OLS ( $R^2 = 22.78\%$ ). The results in table 30 confirmed that government expenditure to GDP (expdgd) and inflation (infl) are significant to GDP per capita growth whereas financial development as measured by financial institution index (fii) and financial markets index (fmi) is not significant.

**Table 30: Pooled OLS Results for Upper Middle Income countries**

<b>gdpcapit</b>	<b>Coef.</b>	<b>Std. Err.</b>	<b>t</b>	<b>P&gt;t</b>	<b>[95% Conf.</b>	<b>Interval]</b>
dcdgdp	-.0180	.0241	-0.74	0.458	-.0659	.0299
hdi	-2.2705	8.4493	-0.27	0.789	-19.0151	14.4740
expdgd	.0367	.0442	0.83	0.409	-.0510	.1245
gvtexpdgd	-.15***	.0592	-2.68	0.008	-.2764	-.0416
fdipdgd	.0039	.0632	0.06	0.951	-.1214	.1293
infl	-.20***	.0498	-4.18	0.000	-.3072	-.1097
fii	2.3396	3.1479	0.74	0.459	-3.8989	8.5781
fmi	.6260	4.8693	0.13	0.898	-9.0238	10.2759
_cons	6.8917	4.0095	1.72	0.088	-1.0541	14.8376

**NB: \*significant at 10% \*\*significant at 5% \*\*\*significant at 1%**

## 5.7 Presentation of results Model 6

### 5.7.1 Descriptive statistics presentation

Results tabulated in table 31 presents average statistics for all variables under study in model 6. Focus for model 6 is on the third bottom of the pyramid financial development measures as depicted in figure 10. The assumed measures and their respective averages are as follows; financial institution access index (fiai) at 0.1477, financial institution depth index (fidi) at 0.2240, financial institutions efficiency index (fiei) at 0.5484, financial markets access index (fmai) at 0.0678, financial markets efficiency index (fmei) at 0.0518 and lastly financial markets depth index (fmdi) with an average of 0.0817.

**Table 31: Mean statistics for financial development measures**

<b>Variable</b>	<b>Obs</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min</b>	<b>Max</b>
fiai	338	.1477	.1744	0	.8016
fidi	338	.2240	.2468	0	.8951
fiei	338	.5484	.1672	0	.8525
fmai	338	.0678	.1525	0	.5927
fmdi	338	.0817	.1468	0	.7815
fmei	338	.0518	.1294	0	1

Table 32 delineates the best performing countries and the worst performers per indicator of financial development. Table 31 shows average financial institution access index (fiai), financial institution depth index (fidi), financial institutions efficiency index (fie), financial markets access index (fmai), financial markets efficiency index (fmei) and lastly financial markets depth index (fmdi) by country.

It can be noted that for financial institution access index (fiai), Botswana, Mauritius, Namibia, Seychelles and South Africa are the only countries with above sample average of 0.1477 indexes while DRC lags on the bloc with the least average of 0.0079. For financial institution depth index (fidi) Botswana, Lesotho, Mauritius, Namibia and South Africa are above the sample average of 0.2240 and the DRC has the least average of 0.0139. For financial institutions efficiency index (fie) Botswana, Lesotho, Mauritius, Mozambique, Namibia, Seychelles, South Africa and Swaziland are above sample average of 0.5484. The rest of the countries in the sample are below average and the country with the least average being DRC with an average of 0.3148.

Looking at financial markets access index (fmai), only Mauritius and South Africa have means above sample average indexes of 0.0678. DRC, Lesotho, Madagascar, Malawi, Seychelles and Swaziland have a zero mean for financial markets access index (fmai). For financial markets depth index (fmdi), Botswana, Mauritius and South Africa have above sample average (0.08174) indexes. The countries with the least averages are DRC with 0.0055 and Lesotho with 0.0058. Lastly, for financial markets efficiency index (fmei), Mauritius, Namibia, South Africa and Swaziland are above sample average of 0.0518 while the rest of the sample is below sample average. DRC, Lesotho, Madagascar, Mozambique and Seychelles have a zero average for financial markets efficiency index (fmei).

**Table 32: Fiai, fidi, fiei, fmai, fmdi and fmei by country**

<b>country_id</b>	<b>Mean fiai</b>	<b>Mean fidi</b>	<b>Mean fiei</b>	<b>Mean fmai</b>	<b>Mean fmdi</b>	<b>Mean fmei</b>
Botswana	.1656	.2849	.6920	.0422	.0853	.0465
DRC	.0079	.0139	.3148	0	.0055	0
Lesotho	.0557	.2658	.5321	0	.0058	0
Madagascar	.0169	.0471	.4927	0	.0306	0
Malawi	.0247	.0835	.3980	0	.0241	.0287
Mauritius	.3481	.3322	.6676	.5317	.1579	.0534
Mozambique	.0468	.0661	.5014	.0056	.0475	0
Namibia	.2128	.7032	.6779	.0577	.0342	.1900
Seychelles	.5947	.1004	.6845	0	.0341	0
South Africa	.2416	.7702	.7006	.2392	.5351	.2192
Swaziland	.1269	.0895	.6040	0	.0329	.1176
Tanzania	.0264	.0794	.5200	.0056	.0271	.0105
Zambia	.0525	.0759	.3433	0	.0419	.0081

The correlation analysis was done to establish the existence of some linear association between GDP per capita growth and financial development measures (financial institution access index (fiai), financial institution depth index (fidi), financial institutions efficiency index (fiei), financial markets access index (fmai), financial markets efficiency index (fmei) and lastly financial markets depth index (fmdi)). Table 33 results show that a significant relationship exists between GDP per capita (gdpcapit) and only two financial development measures, that is, financial institution access index (fiai) and financial markets access index (fmai). However, no association was established between growth and all financial development measures.

**Table 33: Pairwise correlation analysis**

	gdpcapit
gdpcapit	1
dcdgdp	0.030
hdi	0.1***
expgdp	0.000
gvtexpdp	0.050
fdipgdp	0.11**
infl	-0.1***
fiai	0.12**
fidi	0.059
fiei	0.165
fmai	0.11**
fmdi	0.005
fmei	0.010

**NB: \*significant at 10% \*\*significant at 5% \*\*\*significant at 1%**

### **5.7.2 Model 6 Estimation**

Model 6 estimation process followed the same process assumed in models 4 and 5. Results are presented in appendix 9.2. Pooled OLS was run and the results showed a 10.16%  $R^2$  statistic. This statistic proved that the explanatory power of the model is low. Fixed and Random Effects models were run and results showed that both models were significant at 1%. The Hausman test was confirmed Fixed Effects model to be the appropriate estimator for the relationship.

Pesaran test for cross sectional independence was run and the results were significant at 1% confirming the existence of cross sectional dependence. Multicollinearity test was run and a VIF of 4.84 (less than 10) confirmed the absence of multicollinearity. Heteroskedacity was tested using the Breusch-Pagan/Cook-Weisberg test, results were significant at 1% confirming the presence of heteroskedacity. The Wooldridge test for autocorrelation was adopted and an insignificant result of 0.4270 (more than 5%) confirmed non-existence of autocorrelation.

Weaknesses identified were insulated by assuming the Fixed Effects estimator with Driscoll-Kraay robust standard errors. This was the appropriate estimator of the relationship between GDP per capita growth and financial development for the sample.

Table 34 shows model 6 results assuming the whole sample of 13 countries. The results show that human development index (hdi) is significant at 1%, exports to GDP (expgdp) is significant at 10%, government expenditure (gvtexpgdp) is significant at 5% to GDP per capita growth in SADC. However, financial development as measured by financial institution access index (fiai), financial institution depth index (fidi), financial institutions efficiency index (fie), financial markets access index (fmai), financial markets efficiency index (fmei) and lastly financial markets depth index (fmdi) are not significant.

**Table 34: Fixed Effects Model with Driscoll-Kraay robust standars errors**

gdp capit	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
dkgdp	-.0387	.0253	-1.53	0.139	-.0910	.0134
hdi	23.84***	4.6687	5.11	0.000	14.2265	33.4573
expgdp	.096*	.0501	1.93	0.065	-.0066	.1997
gvtexpgdp	-.065**	.0268	-2.44	0.022	-.1206	-.0101
fdipgdp	-.0449	.0411	-1.09	0.286	-.1297	.0399
infl	-.0001	.0001	-1.06	0.299	-.0005	.0001
fiai	-8.6879	8.4710	-1.03	0.315	-26.1343	8.7584
fidi	8.2860	5.0552	1.64	0.114	-2.1253	18.6974
fiei	-4.2815	4.1787	-1.02	0.315	-12.8879	4.3248
fmai	1.4458	3.9334	0.37	0.716	-6.6551	9.5468
fmdi	1.8218	4.5549	0.40	0.693	-7.5593	11.2029
fmei	-.0674	1.2249	-0.06	0.957	-2.5903	2.4554
_cons	-10.3848	3.4935	-2.97	0.006	-17.5799	-3.1897

**NB: \*significant at 10% \*\*significant at 5% \*\*\*significant at 1%**

### 5.7.3 Disaggregated panels analysis

To establish whether the same relationship estimated in the prior section holds across countries of different income levels, a disaggregated panel analysis was instituted.

### 5.7.3.1 Low Income sub-sample

For lower income subsample, the most appropriate estimator assumed was the Fixed Effects model with Driscoll-Kraay robust standard errors.

Results for the low income countries presented in table 35 show that human development index (hdi) and exports to GDP (expgdp) are significant to GDP per capita growth at 5%. However, financial development as measured by financial institution access index (fiai), financial institution depth index (fidi), financial institutions efficiency index (fiei, financial markets access index (fmai, financial markets efficiency index (fmei) and lastly financial markets depth index (fmdi) is not significant.

**Table 35: Fixed Effects with Discoll-Kraay Results for Lower Income countries**

gdpcapit	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
dcdgdp	-.1836	.1808	-1.02	0.320	-.5561	.1888
hdi	42.278**	17.4404	2.42	0.023	6.3595	78.1982
expgdp	.140*	.0756	1.85	0.076	-.0158	.2958
gvtexpgdp	-.0385	.0439	-0.88	0.388	-.1290	.0519
fdipgdp	.0131	.0594	0.22	0.827	-.1092	.1355
infl	-.0000	.0001	-0.07	0.943	-.0003	.0003
fiai	-79.8867	61.4391	-1.30	0.205	-206.4229	46.6495
fidi	20.0880	44.5035	0.45	0.656	-71.5687	111.7448
fiei	-7.3005	5.8199	-1.25	0.221	-19.2869	4.6859
fmai	183.6118	551.2485	0.33	0.742	-951.7057	1318.9290
fmdi	-28.5705	39.1314	-0.73	0.472	-109.1632	52.0221
fmei	-27.348	55.1704	-0.50	0.624	-140.9736	86.2776
_cons	-12.7200	5.3753	-2.37	0.026	-23.7908	-1.6493

**NB: \*significant at 10% \*\*significant at 5% \*\*\*significant at 1%**

### 5.7.3.2 Lower Middle Income Countries

The Pooled OLS regression was the best model estimator for the lower middle income sub-sample after the model estimation process. Data limitations affected the running of Fixed and Random Effects models, thus OLS estimator ( $R^2$  of 39.09%) assumed.

The Pooled OLS results in table 36 confirmed that exports to GDP (expgdp), government expenditure to GDP (gvtexpgdp), foreign direct investment inflows to GDP (fdipgdp) are the only significant variables in explaining growth for lower middle income countries in Southern Africa. Only one financial development facet is significant, financial institution access index (fiai). It is important to note that financial markets access index (fmai) was omitted in the estimation due to multicollinearity. The rest of the facets are however not significant in explaining the growth in the GDP per capita.

**Table 36: Pooled OLS Results for Lower Middle Income countries**

gdpcapit	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
dcdp	-.1659	.2868	-0.58	0.569	-.7593	.4275
hdi	11.3401	74.2763	0.15	0.880	-142.3122	164.9926
expgdp	-.174**	.0828	-2.11	0.046	-.3457	-.0031
gvtexpgdp	-.587**	.2222	-2.64	0.015	-1.0473	-.1278
fdipgdp	-.485*	.2657	-1.83	0.080	-1.0356	.0638
infl	.1204	.2080	0.58	0.568	-.3100	.5508
fiai	-57.4611	31.2054	-1.84	0.078	-122.0145	7.0921
fidi	28.988	21.1698	1.37	0.184	-14.8051	72.7811
fiei	2.9605	8.9925	0.33	0.745	-15.6419	21.5630
fmai	0	(omitted)				
fmdi	-52.8786	37.5742	-1.41	0.173	-130.607	24.8496
fmei	3.5234	3.2236	1.09	0.286	-3.1451	10.1920
_cons	24.1576	38.9998	0.62	0.542	-56.5196	104.8349

**NB: \*significant at 10% \*\*significant at 5% \*\*\*significant at 1%**

### 5.7.3.3 Upper Middle Income Countries

Data limitations also affected the running of Fixed and Random Effects models for upper middle income subsample. Thus the results were estimated using the Pooled OLS. The Pooled OLS model had a  $R^2$  of 26.43%. The results in table 37 confirmed that government expenditure to GDP (expgdp), inflation (infl) and only one facet of financial development - financial institution efficiency index (fiei) are significant in explaining the variation in the GDP per capita growth. All other financial development facets are not significant to GDP growth per capita.

**Table 37: Pooled OLS Results for Upper Middle Income countries**

<b>gdpcapit</b>	<b>Coef.</b>	<b>Std. Err.</b>	<b>t</b>	<b>P&gt;t</b>	<b>[95% Conf.</b>	<b>Interval]</b>
dcdgdp	.0146	.0361	0.41	0.685	-.0568	.0862
hdi	1.1671	14.6107	0.08	0.936	-27.8001	30.1344
expgdp	.0421	.0688	0.61	0.542	-.0943	.1786
gvtexpgdp	-.192**	.0942	-2.04	0.044	-.3794	-.0055
fdipgdp	-.0043	.0653	-0.07	0.947	-.1339	.1251
infl	-.21***	.0505	-4.23	0.000	-.3144	-.1138
fiai	-2.7655	6.9701	-0.40	0.692	-16.5846	11.0535
fidi	-3.0814	2.9725	-1.04	0.302	-8.9749	2.8119
fiei	8.090**	3.9791	2.03	0.045	.2012	15.9794
fmai	-2.7470	2.7896	-0.98	0.327	-8.2778	2.7836
fmdi	-3.8479	4.2096	-0.91	0.363	-12.1939	4.4980
fmei	3.1298	3.2654	0.96	0.340	-3.3442	9.6039
_cons	2.1078	11.8658	0.18	0.859	-21.41742	25.6331

**NB: \*significant at 10% \*\*significant at 5% \*\*\*significant at 1%**

## 5.8 Conclusion

Chapter 5 presented the findings of the study sought to determine the link between financial development and growth as proxied by GDP per capita. Noting the various ways in which financial development is measured, three models were assumed and after adopting the relevant tests and addressing the weaknesses thereof, empirical results were presented.

Results for Model 1 show that human development index (hdi), government expenditure (gvtexpgdp) and inflation (infl) are significant in explaining GDP per capita growth in SADC. More importantly, financial development is not significant in explaining growth in GDP per capita. The same is confirmed where the sample is disaggregated to account for the levels of income per country.

The disaggregated sub-sample results for low income countries confirmed that human development index (hdi), exports to GDP (expgdp) are significant in explaining GDP per capita growth. Results for lower middle income subsample confirmed that exports to GDP

(expgdp) is significant too. Lastly, results for upper middle income sub-sample confirmed government expenditure to GDP (expgdp) and inflation (infl) to be significant in explaining GDP per capita growth.

Results for Model 2 show that human development index (hdi), exports to GDP (expgdp) and government expenditure (gvtexpgdp) are significant in explaining GDP per capita growth in SADC. Financial development as proxied by financial institution index (fii) and financial markets index (fmi) is not significant in explaining growth in GDP per capita. The same is confirmed where the sample is disaggregated to account for the levels of income per country.

The disaggregated sub-sample results for low income countries confirmed that human development index (hdi), exports to GDP (expgdp) are significant in explaining GDP per capita growth. Sub-sample results for lower middle income countries confirmed that that no variable is significant in explaining growth in GDP per capita including financial development proxies, that is, financial institution index (fii) and financial markets index (fmi). Sub-sample results for upper middle income countries confirmed that government expenditure to GDP (expgdp) and inflation (infl) are significant in explaining the variation in GDP per capita growth.

Results for Model 3 show that human development index (hdi) at 1%, exports to GDP (expgdp) at 10% and government expenditure (gvtexpgdp) at 5% are significant in explaining GDP per capita growth in SADC. Financial development as measured by financial institution access index (fiai), financial institution depth index (fidi), financial institutions efficiency index (fie), financial markets access index (fmai), financial markets efficiency index (fmei) and lastly financial markets depth index (fmdi) is not significant.

The disaggregated results for low income sub-sample confirmed that human development index (hdi) and exports to GDP (expgdp) are significant at 5% in explaining GDP per capita growth. Sub-sample results for lower middle income countries confirmed that exports to GDP (expgdp), government expenditure to GDP (gvtexpgdp) and foreign direct investment inflows to GDP (fdipgdp) are significant in explaining the variation in GDP per capita growth.

Lastly, sub-sample results for upper middle income countries confirmed that government expenditure to GDP (expgdp), inflation (infl) and only one facet of financial development, that is financial institution efficiency index (fie) are significant in explaining the variation in growth. All other financial development proxies, financial institution access index (fiai), financial institution depth index (fidi), financial markets access index (fmai, financial markets efficiency index (fmei) and lastly financial markets depth index (fmdi) are not significant

Of all the three models, only the disaggregated sample for upper middle income under model 3 had one proxy of financial development significant in explaining the variation in GDP per capita growth. These findings support the robustness of the models and confirm that looking at the composite index of financial development and its proxies (financial institutions index and financial markets index) do not support growth. However, by further splitting the 2 sub-indexes into 6 proxies provided a more robust analysis of the results. This means that if financial institution efficiency index (fie) as a lever for financial development is pulled, it will have a significant influence to the GDP per capita growth in SADC.

# CHAPTER 6 – DISCUSSION OF RESULTS

## 6.1 Introduction

This chapter provides a discussion of findings presented in Chapter 5 based on the methodology assumed in Chapter 4. It also seeks to achieve research objectives and answer hypotheses on financial development and economic growth as outlined in Chapter 3 by incorporating literature in Chapter 2.

## 6.2 Hypothesis 1

$H_0$ : There is no relationship between financial development and economic growth in Southern Africa.

$H_1$ : There is a relationship between financial development and economic growth in Southern Africa.

### 6.2.1 Model 1, 2 and 3 results

Model 1 results where financial development composite index (fd) is a used confirmed that financial development is not significant in explaining economic growth in SADC.

Model 2 results where financial development is proxied by financial institutions index (fii) and financial markets index (fmi) also confirmed that financial development is not significant in explaining the variation in growth. Implication is that the development of financial institutions and financial markets of SADC economies does not have positive impact on growth.

Whereas model 3 results give different results when the financial development measures (financial institution index (fmi) and financial market index (fmi)) are disaggregated into financial institution access index (fiai), financial institution depth index (fidi), financial institutions efficiency index (fiei), financial markets access index (fmai), financial markets efficiency index (fmei) and financial markets depth index (fmdi), only one index, financial markets access index (fmai) is significant in explaining the variation in growth while all other indexes are not significant.

Disaggregating financial development measures allows a for a robust study of the relationship. Inasmuch as one facet of disaggregated financial markets index measure (fmi), that is financial markets access index (fmai) is significant, when it is aggregated with the other two measures, financial markets efficiency index (fmei) and financial markets depth index (fmdi) to form financial markets index measure (fmi), it is overpowered resulting in the model 2 results being insignificant same as the results of model 1. Overall financial development (fd) is insignificant in explaining growth though one facet, financial markets access index (fmai) is significant.

Model 1 and model 2 results confirm that there is no relationship between financial development and growth in SADC. This is explained by the fact that financial development is insignificant in explaining the variation in growth when different measures of financial development are assumed in the two models. However, model 3 with disaggregated financial development measures confirmed that financial markets access is significant in explaining GDP per capita growth in Southern Africa.

### **6.2.2 Growth linked variables**

Since growth cannot be explained by financial development alone, there are other variables in the growth equation that can help explain the variation in economic growth. The question then remains, will the results from models 1, 2 and 3 change if other growth variables (domestic credit to GDP, human capital development, exports to GDP, government expenditure to GDP, foreign direct investment to GDP and inflation) are factored in modelling to assume models 4, 5 and 6. After adding other growth related independent variables, the results are discussed below.

#### **6.2.2.1 Model 4 results**

Human development index (hdi), government expenditure (gvtexpgdp) and (infl) are significant to the variation in growth. However, financial development (fd) is insignificant in explaining growth.

By disaggregating the sample by income level, results for the low income subsample confirmed that human development index (hdi) and export to GDP (expgdp) are significant to GDP per capita growth. Financial developments as measured by financial development index (fd) is not significant.

Results for lower middle income confirmed that exports to GDP (expgdp) is the only significant variable in explaining the variation to GDP per capita growth. Financial development is however not significant.

Results for upper middle income confirm that government expenditure to GDP (expgdp) and inflation are significant (at 5% significance) to GDP per capita growth whereas financial development is not significant.

#### **6.2.2.2 Model 5 results**

The results show that human development index (hdi), exports to GDP (expgdp) and government expenditure (gvtexpgdp) are significant to GDP per capita growth in SADC. However, financial development as measured by financial institution index (fii) and financial markets index (fmi) are not significant.

Results for the low income countries confirmed that human development index (hdi) and exports to GDP (expgdp) are significant to GDP per capita growth. However, financial institution index (fii) and financial markets index (fmi) as proxies of financial development are not significant.

Results for lower middle income confirmed that no variable is significant to GDP per capita growth including financial development as measured by financial institution index (fii) and financial markets index (fmi).

For upper middle income, results confirmed that government expenditure to GDP (expgdp) and inflation (infl) are significant to GDP per capita growth whereas financial development as measured by financial institution index (fii) and financial markets index (fmi) is not significant.

#### **6.2.2.3 Model 6 results**

Results show that human development index (hdi), exports to GDP (expgdp) and government expenditure (gvtexpgdp) is significant at 5% to GDP per capita growth in SADC. However, financial development as measured by financial institution access index (fiai), financial institution depth index (fidi), financial institutions efficiency index (fie), financial markets access index (fmai), financial markets efficiency index (fmei) and lastly

financial markets depth index (fmdi) is not significant.

Low income subsample' results show human development index (hdi) and exports to GDP (expgdp) to be significant in explaining growth at 5%. Financial development as measured by financial financial institution access index (fiai), financial institution depth index (fidi), financial institutions efficiency index (fiei, financial markets access index (fmai, financial markets efficiency index (fmei) and lastly financial markets depth index (fmdi) are not significant.

Lower middle income subsample results confirmed that exports to GDP (expgdp), government expenditure to GDP (gvtexpgdp) and foreign direct investment inflows to GDP (fdipgdp) are significant in explaining variation in growth while only one facet of financial development is significant, financial institution access index (fiai). The rest of the financial development facets are however not significant in explaining the growth in the GDP per capita.

The upper middle income subsample confirmed that government expenditure to GDP (expgdp), inflation (infl) and only one facet of financial development, financial institution efficiency index (fiei) is significant in explaining the variation in the GDP per capita growth. All other facets are not significant in explaining growth.

### **6.2.3 Comparison with literature – financial development**

Findings of this accord to findings by Ono (2017) in that the banking facet of financial improvement was assumed to ascertain the financial development and economic growth relationship. Ono (2017) found that the banking sector in Russia is of no significance in explaining growth. The study found that factor endowments, were significant to Russia's economic growth. The fact that most SADC countries have natural resources in form of oil, various minerals, good climate and arable land presents an opportunity to drive growth. This can explain the insignificance of financial development in explaining growth in the region. Hassan et al. (2009)'s study concluded with similar findings confirming a negatively related link. These findings also accord with the argument that financial development is insignificant to economic growth.

Zhang et al. (2012)'s findings add support to the insignificance of financial development

discussion. These findings concluded that rapid growth that China enjoyed in excess of three decades was not fuelled by financial development since the financial sector was still underdeveloped and state controlled. The assertion that China's financial sector was underdeveloped can explain and confirm the findings of this study from a level of financial development's perspective. This means that underdeveloped financial systems are not significant in explaining variation in GDP per capita growth.

Results from model 3 according to Ikhida (2015)'s definition of financial development means that the size, liquidity and easily accessible and access to financial products and services at low and sustainable cost influences economic growth. In addition, Karimo and Ogbonna (2017)'s study on the same (supply-leading) found that financial development can impact growth if economies put effort in making it easy to do business at the stock market. These findings coming from a developing African country supports the findings of model 3 where financial markets access index (fmai) is significant to growth.

Ho and Lyke (2017)'s study in China confirmed the supply-leading hypothesis and found that improvements in banking impacts growth. Model 2 used a financial institutions index that included facets of banking sector development's access and efficiency. The results of the financial institutions index were not significant to growth confirming that banking are insignificant to growth.

Looking at summary statistics, the average financial development index (fd) for advanced economies is almost 0.6, and the average for SADC's is 0.18. Countries with financial development indexes higher than the region's average are Botswana (0.219), Mauritius (0.356), Namibia (0.322), Seychelles (0.243) and South Africa (0.47) (Sahay et al., 2015).

The average financial institutions index (fii) and financial markets index (fmi) for developed economies are almost 0.7 and 0.5 respectively (Sahay et al., 2015). The average average financial institutions index (fii) and financial markets index (fmi) for SADC are 0.3 and 0.06 respectively.

Noting the average indexes for developed economies, financial institution access index (fiai) at 0.59, financial institution depth index (fidi) at 0.58, financial institutions efficiency index (fie) 0.65, financial markets access index (fmai) at 0.47, financial markets efficiency

index (fmei) at 0.45 and financial markets depth index (fmdi) at 0.45. SADC's average indexes are as follows, financial institution access index (fai) at 0.14, financial institution depth index (fidi) at 0.22, financial institutions efficiency index (fie) at 0.5, financial markets access index (fmai) at 0.06, financial markets efficiency index (fmei) at 0.08 and financial markets depth index (fmdi) at 0.05 (Sahay et al., 2015).

It can be noted that the average indexes for developed economies are all way higher than the averages of the SADC region presented. These statistics show how the region lags when compared to developed economies. A clear distinction between developed financial systems and less developed financial systems as denoted by the indexes can be noted confirming that SADC is still underdeveloped, hence its insignificance in explaining growth.

Financial development level in an economy determines if financial development can ignite and drive economic growth. As Pradhan et al. (2014) asserted, developed financial markets and integrated banking systems provides access to services and products that help to ignite and stimulate growth. This means a developed financial system (financial markets and financial institutions) ignites growth in the real economy over time. In addition, Herwartz and Walle (2014) confirmed the argument for financial development by advocating that the development of the financial services ignites and drives innovation in an economy.

Insignificance of financial improvement in explaining growth can be justified by the fact that financial development for SADC countries is low hence the commitment to innovation, resource allocation, nurturing of innovation and risk absorption which drive growth is low. Therefore, the current level of development cannot be significant enough to stir growth.

The argument by Berglof and Bolton (2002) that financial intermediation reforms need to be the key focus for developing countries in order to achieve future growth is true for SADC countries. Empirical evidence shows that financial intermediation and future growth in developing economies have a strong relationship. The same relationship tends to be negatively correlated in developed economies. This point digresses the focus and facet of financial development to financial intermediation in growth pursuit. In this instance, the facet focused on is not significant to economic growth for SADC countries.

Economies with underdeveloped financial systems (as suggested by the summary statistics) as suggested by Fung (2009) are stuck in a continuous unpleasant situation. This is because the country's economies will continue to perform poorly until the status quo changes through some form of financial development. This status quo might be what Berglof and Bolton (2002) referred to as financial intermediation reforms. This means that financial development cannot be significant to growth as long as the status quo is maintained thereby witnessing a continued limited access to financial services and products.

The United Nations (2015) report stated that the financial services sector has growth-driving potential that can filter down and address infrastructural and social development challenges faced in Africa. The key word in this statement is potential. The context and results of SADC confirmed the non-significance of financial development's potential to influence growth activities, hence potential growth effects as highlighted by United Nations (2015) can not be realised until a certain level is reached for sustainable growth (Law & Singh, 2014).

A study by Nawaz (2015) argued three ingredients (physical capital, human capital and technological advancement) determine an economy's per capita output (GDP per capita). Financial development was not mentioned in these ingredients confirming the propositions that it is an enhancer and not a significant influencer, hence the findings of the study.

Law and Singh (2014) added inefficiencies to the discussion by stating that in an inefficient financial system, financial development can lead to counter growth. This means that conditional on efficiency, financial development can be counter growth through stagnating the economy meaning there is a negative relationship exists. This discussion adds to the continuous debate on the subject.

#### **6.2.4 Comparison with literature – financial development and growth variables**

Seven and Coksun (2016)'s emerging countries study and findings affirmed that financial improvement is a growth enabler not necessarily the key influencer of growth. Looking at financial development alone does not explain growth. In addition, Kagochi et al. (2013)'s investigation on financial development's growth effects in Sub-Saharan Africa postulated it is also central element of a growth conducive environment. These points clearly show that

financial development cannot be expected to be significant in explaining growth but is rather an enabler of growth.

Badunenko and Romero - Avila (2013)'s study looked at growth in both developed economies and developing economies and found significant growth effects driven by physical capital accumulation is realised through financial development acting as an efficiency-enhancer. This highlights that other growth variables are more profound in stimulating growth than financial development in the growth argument. Manova (2012)'s study also alludes with the enabler function of financial advancement. Manova (2012) asserted international trade flow is hindered by dysfunctional financial markets due to the great need of external capital. This shows that financial development is insignificant in explaining growth but rather facilitates trade that in turn explains growth.

When other variables are included and samples disaggregated on income level, financial development as measured by financial institution access index (fiai) for lower middle income sub-sample and financial institution efficiency index (fie) for upper middle income sub-sample becomes significant in explaining variation in growth.

These results align with the financial development definition by Ikhida (2015) of a combination of depth, efficiency and access of financial sector, the disaggregated sample results (lower middle middle and upper middle income) confirm that financial development facets are significant in explaining economic growth.

These results defy the prior findings only in developed countries is financial development significant to growth and not significant in less developed economies. Hsu et al. (2014) stated that the level of commitment and appetite for innovation (and its associated risks) is informed by the financial development level. This shows that developed economies' financial systems are capable of funding and allocating more resources towards innovation, manage risks for both short and long innovation cycles efficiently. However, results from the disaggregated sub-samples; lower middle and upper middle income confirm otherwise.

Ease access to financial sector in lower middle income subsamples in SADC can ignite growth. Considering that access can to savings products or credit facilities can ignite

growth, the results for lower middle income subsample are in line with King and Levine (1993)'s study results that found that financial systems, through facilitating savings and efficiently allocating resources, play a major function in economic growth. Facilitation of savings can be achieved through improved access to financial sector services and products.

Adding on, Ueda (2012) found that banks are core to growth because they improve capital formation through pooling savings. This can be channelled into growth-driving investments. In addition, an experimental study that supports access to financial services and products was done by Brune et al. (2016) where farmers were grouped into two groups. One group had bank accounts opened for them and the other did not have bank accounts. The experiment results found that farmers who had access to bank accounts had saved more for the next farming season compared to farmers who had nothing. This shows how formal banking institutions can mobilise and facilitate savings which can be used to fund investments.

One of roles of financial systems (mobilizing savings) in economic development as claimed by Schumpeter (1911)'s is also supported by the results. Karimo and Ogbonna (2017)'s study in Nigeria found that positive growth effects of financial development can achieve to growth if products (capital) and services from financial institutions are easily accessed and provided efficiently at lower cost. This point supports the findings of model 6, financial institutions access index (fiai) and financial institution efficiency index (fiei) are significant to growth.

In support of efficiency from the upper middle income results, Sharma and Bardhan (2012)'s in their study across Indian states found that through efficient credit provision. This can be a focus for upper middle income countries. If efficiency is improved through financial intermediation, growth can be realised.

In addition, Badunenko and Romero - Avila (2013) argued that the efficient resource allocation at low cost through the financial system is integral to growth and makes it possible for entrepreneurs and small businesses to create employment which is a necessary condition in poverty and inequality reduction. If services and products are provided at the lowest and sustainable cost, people can empower themselves through

education, access to health and economic participation through entrepreneurial activities which can also lead to economic development. On the other hand, Inefficiencies in a financial system as discussed by Law and Singh (2014) lead to a malfunctioning financial system which results in lower savings leading to underinvestment, misallocation of scarce capital resources and rise in speculation.

Low income sub-sample found no significant relationship. These results are inline with Dincecco and Katz (2014)'s argument on poor extractive capacity of developing countries and its effect on providing and funding infrastructure needed to facilitate and nurture economic growth. This speaks to the underdeveloped financial system that do not have the capacity to extract revenue for the government, consequently impacting infrastructural projects that can ignite growth, revenue collection rate, governments can increase expenditure on projects that improve social standing and reduce inequality and poverty.

However, South Africa is ranked highly in its financial development competitiveness index as highlighted in the WEF 12 pillars of competitiveness (WEF, 2015). Regardless of this high ranking, financial development is not translating to economic growth. Seven and Coskun (2016) concurs this suggestion stating that inasmuch as financial development improves (banking and financial markets), if the poor do not have access, growth brought forth will be meaningless because the access (services and products) by the poor complements development.

Biswas et al. (2017) posits that inequality hinders development due to government implementation of income and wealth redistribution policies meant to reduce inequality and poverty. Funding most of these policies diverts funds from other growth igniting projects and investments. This is true for Southern Africa, where economic policies are implemented to redistribute income and wealth due high and persistent inequality of global note.

The significance of human capital development is supported by Kagochi et al. (2013)'s study which included human capital development as one factor that help stimulate growth and highlighted its a contributing element to the growth equation as it helps reduce inequality and poverty. Developed human capital (skills, ease access to health services and education), is able to continuously empower itself with more education, skills ability to

create employment through entrepreneurship. This will greatly improve living conditions of society. In addition, the WEF (2015)'s pillars put health and education (both primary and higher education and training) as basic pillars in the sustainable growth equation citing how access to education and health is to human capital development.

Looking at exports to GDP, Manova (2012) argued that economies with developed financial systems have an added advantage in trade as they export and sell more, to countries with less developed ones, confirming that dysfunctional financial systems restrict trade.

Menyah et al. (2014)'s findings concur with the trade openness variable highlighting its co-growth effects financial services improvement in driving economic growth. This means that trade openness and exports can ignite economic growth through revenue generated from exports more based on the country's comparative advantage and that a developed financial system is only there to facilitate transactions efficiently without necessarily affecting economic growth.

Government expenditure to GDP shows that if government spends money on growth propelling sectors, economic growth can be achieved. A study by Bangake and Eggoh (2011) added government expenditure to the equation and established a co-integrated growth effect of financial development, trade openness and government expenditure. This means that these variables cannot operate in isolation, growth is realised through co-integrating growth linked variables.

The study found that inflation was significant to growth. These findings are inline with Fischer (1993) and Ghosh and Phillips (1993) which confirmed inversely related variables meaning means that SADC economies should thrive for fast growth and low inflation.

Foreign direct investment inflows to GDP was found to be significant to growth. These findings concur with the ancient supply-leading theory established by Schumpeter (1911) suggesting that capital injection in the economy yields positive results on growth for developing countries. McKinnon (1973) also established growth potential for developing countries through injection of capital compared to developed countries. Azzimonti (2018) also alluded that developing countries can achieve growth through foreign direct

investment during developmental stages. Considering that SADC countries have developing economies, Azzimonti (2018)'s are relevant to SADC's growth equation. This implies that SADC nations can grow their economies by attracting foreign direct investment.

However, Stiglitz (2000) states that capital inflows must be long-term capital inflows because short-term capital flows are counter growth and exposes the economy to capital flight. China's investment policies are against short-term capital inflows (Zhang et al., 2012). Chile also restricted short-term inflows by imposing taxes on short-term inflows and yet this did not have any effect on the long-term productive capital inflows (Stiglitz, 2000). Attracting long-term capital inflows will allow economies to invest in sectors that can grow economies.

Domestic credit to GDP is not significant to growth as presented in the results. These results go against Ductor and Grechyna (2015)'s findings that credit to be growth significant. In addition, Jedida et al. (2014)'s study in Tunisia established that private credit stimulates long-run economic growth. These studies show that private credit, can be significant to growth, however, this study's findings differ from these results. A conclusion can be made that the private credit offered in Southern Africa is not being used in economic activities that enhance growth but rather for private use.

## **6.3 Hypothesis 2**

H<sub>0</sub>: Financial development and economic growth relationship in Southern Africa does not follow the supply-leading theory.

H<sub>1</sub>: Financial development and economic growth relationship in Southern Africa follow the supply-leading theory.

### **6.3.1 Results**

Summary statistics showed, the average financial development index (fd) for advanced economies is almost 0.6, and the average for SADC's is 0.18. The average financial institutions index (fii) and financial markets index (fmi) for developed economies are almost 0.7 and 0.5 respectively (Sahay et al., 2015). The average average financial institutions index (fii) and financial markets index (fmi) for SADC are 0.3 and 0.06 respectively.

Average indexes for developed economies, financial institution access index (fiai) at 0.59, financial institution depth index (fidi) at 0.58, financial institutions efficiency index (fie) 0.65, financial markets access index (fmai) at 0.47, financial markets efficiency index (fmei) at 0.45 and financial markets depth index (fmdi) at 0.45. Average indexes for Southern Africa are as follows, financial institution access index (fiai) at 0.14, financial institution depth index (fidi) at 0.22, financial institutions efficiency index (fie) at 0.5, financial markets access index (fmai) at 0.06, financial markets efficiency index (fmei) at 0.08 and financial markets depth index (fmdi) at 0.05 (Sahay et al., 2015).

The general findings of the study based on model 1 and model 2 results confirm that financial development is not significant in explaining the variation in GDP per capita growth in Southern Africa. However, model 3 results show a significant facet of financial development, financial markets access index (fmai). Although financial markets access index (fmai), it is not representative of the financial development index but rather a sub lever of financial markets index (fmi). Its effect on growth is overshadowed when other facets are put in the picture thereby discounting its significance to growth.

Model 4 and 5 results where financial development is measured by the financial development index (fd) and financial institution index (fii) and financial markets index (fmi) respectively, financial development was not significant at both levels including disaggregated subsamples.

Results for model 6 where financial development is measured by financial development as measured by financial financial institution access index (fiai), financial institution depth index (fidi), financial institutions efficiency index (fie), financial markets access index (fmai), financial markets efficiency index (fmei) and lastly financial markets depth index (fmdi) does not support SADC region's growth function. Significance to growth was found when the sample was disaggregated according to income level, where only two facets are significant in two different subsamples. For lower middle income, financial development facet that is significant is financial institution access index (fiai) and for upper middle income, financial institution efficiency index (fie) is significant. The rest of the financial development facets are however not significant in any subsample.

Although financial institution access index (fiai) and financial institution efficiency index (fie) are significant, they are not representative of the financial development index but

rather proxies of financial institution index (fii). The two proxies' effect on growth is overshadowed when other facets are put in the picture thereby discounting their significance to growth. These results suggest that the independent theory holds.

### **6.3.2 Comparison with literature**

Theory states it is highly probable for developing economies to benefit from positive growth effects of financial development are, implying supply-leading hypothesis in developing their economies (Schumpeter (1911)).

Given the facts presented in chapter 1 on the sluggish growth rates in Southern Africa over the research period, the sampled countries are continuously expected to benefit from the injection of capital no wonder these countries are continuously in need of attracting foreign investment as a way of financing the growth need of their economies.

This study did not seek to substantiate the existence of the demand following hypothesis in Southern Africa since this hypothesis confirms with the growth trends in developed countries. Robinson (1952)' demand-following theory argues against supply-side theory and states that growth in the economy ignites financial improvement serving new needs and growing needs for products and services. Abid et al. (2016) agreed with this theory by highlighting that GDP growth as an economic performance measure is not always a consequence but at times its is the cause of the economy's financial performance.

Theory connotes that the demands of the developed economies contributes to financial sector development. As the financial sector upgrades to match the financial needs of the real sector. Intuitively, the demand-following is theory non-existent in Southern Africa thus the focus is on supply-leading hypothesis.

In addition, due to the inapplicability of the demand-following hypothesis, the bi-directional theory also falls away. Patrick (1966)'s bi-directional theory claims that the financial development-growth link is co-explained by supply-leading and demand-following.

Cecchetti and Kharroubi (2015) proposed a non-linear theory which suggests that positive effects brought forth by financial development are enjoyed by an economy up to a particular point. Beyond this point, the variables become inversely related and financial

development starts to suppresses growth. Hassan et al. (2009)'s study in China found a negatively related growth and financial development relationship association. The consensus with this finding is that, inasmuch as an inverse link exists, it does not follow the dominant supply-leading theory.

Lastly, for the independent view, Menyah et al. (2014) purports little substantiation to support growth effects of financial development exists implying no relationship that exists between variables. This theory goes against all theories mentioned above which have a consensus on the relationship but differ on the direction.

Theories substantiate one-directional (supply-leading and demand following), both directions (bi-directional) and one-directional up to a point then inversely related (non-linear theory), whereas the independent view (no direction) claims no relationship exists.

Ikhide (2015) argues that inasmuch as evidence and hypotheses remain at loggerheads given the conflicting evidence of the same, significant evidence exists that supports a strong correlation between growth of financial services and economic growth. This argument supports supply-leading hypothesis.

The supply-leading hypothesis is more aligned to the provision of capital to the real and productive sector through either the financial institutions or financial market as assumed in this study. To substantiate the existence of the supply-leading hypothesis, this study relied on the capital provision indicators for financial institutions and financial markets. These indicators are financial institutions depth index (fidi) and financial markets depth index (fmdi). For models 3 and 6, the two indicators were not significant in explaining growth. Private credit to GDP as an additional growth linked variable remained insignificant for all models. This suggests that the supply of private credit in Southern Africa does not stimulate growth.

Focusing on depth indicators which are proxies providing financial services and products, financial institutions depth index (fidi) and financial markets depth index (fmdi), the averages for Southern Africa lag behind those for the developed economies. This explains the insignificant relationship between financial institutions depth index (fidi) and financial markets depth index (fmdi) and growth thereby nullifying the supply-leading hypothesis.

Drawing back on Law and Singh (2014)'s question on the size of financial systems in economies that can achieve sustainable growth, a conclusion can be reached to the effect that financial development has to improve to a particular point for growth significance to be realised. In this instance, financial development in SADC has not reached a level where it be growth significant based on the descriptive statistics and average financial development indexes.

Deductively, since the supply leading and demand-following are not supported by either the theoretical underpinnings as well as the empirical results of this study, it essentially cements other forces outside the financial development rhetoric explain SADC's growth thereby motivating for the independent theory. Growth is supposedly induced by other levers as assumed in this study; trade, investment, human development and government expenditure.

Samargandi, Firdumuc and Ghosh (2015) stated an independent view as a theory that no link between variables. Based on this assertion, independence of variables supports the independent theory in SADC.

## **6.4 Conclusion**

This chapter discussed results as presented in chapter 5. The chapter also linked to literature discussed in chapter 2. The findings of this study as presented in chapter 5 confirms with prior in support of the argument that financial development not significant in explaining growth. In addition, literature also supports the second hypothesis which confirmed that financial development does not follow supply-leading theory. This discussion adds to the existing contentious debate on the relationship.

The next chapter, chapter 7 concludes the study by reflecting on the previous chapters and presents recommendation based on the findings.

# **CHAPTER 7 – CONCLUSION AND RECOMMENDATIONS**

## **7.1 Introduction**

This study sought to delineate the relationship between growth and financial development (as proxied by financial markets indicators and financial institutions indicators) in SADC. Noting theoretical foundations applauding the effects of growth on poverty, unemployment and income inequality; seeking to maximise growth becomes the major responsibility of the poverty-stricken region (Southern Africa) and income inequality of world-record. Riding on the theoretical underpinnings alluding to the positive effect of financial development on growth, this study sought to track the link in Southern Africa with the intent of contributing to policy formulation in the region. This chapter provides a conclusion of the study by reflecting on the purpose, the objectives and the findings, hence policy recommendations as well as the gap that future studies are expected to bridge is laid out.

## **7.2 Background and purpose of research**

Reflecting back on the background of the research, SADC is a host to poverty stricken countries whose inequality levels are of global note. With this persistent problem and other developmental issues in SADC, the countries in the region are still to synthesize feasible policies to abate these social ills.

Theory and evidence though conflicting, validates the role of economic growth in addressing poverty and inequality in developing countries. Growth in the region has not only been sluggish, paltry and inconsistent but does not have the capacity to be translated into significant poverty and inequality reduction implying that there is an unending urge to craft sustainable policies to stimulate growth.

Acknowledging SADC's initiatives and efforts of urging countries to grow their economies in order to address social issues, these efforts have not achieved the intended goal. The RISDP target of 7% growth for countries on the bloc has not been met, hence the ambition to achieve Millennium Development Goal 1, (eradication of poverty) is still to be achieved.

With the erratic growth in SADC lacking sustenance required to alleviate poverty and inequality, the search for feasible solutions and policies to the deficient growth continues to

be obligatory and prioritised in pursuit of economic and social redress in SADC. Synthesis of policies meant to enhance both economic growth and financial development will help alleviate poverty and inequality in the region.

Given the obligation to grow economies in Southern Africa and the theoretical suggestion stating that financial development triggers growth, this study explored whether financial development facets can explain growth. A trajectory stock of financial progress and development in SADC countries was assumed. Known gains of financial progress on growth have been discussed since Schumpeter (1911) whose supply leading argument asserted that access to finance provides an opportunity to ignite growth funding innovators and entrepreneurs. Although more theories around the nexus exist, the consensus of the existence of a relationship stands.

### **7.3 Research objectives and overview of findings**

The study sought to investigate the relationship between financial development and economic growth using different financial development measures. It also sought to establish a relationship of the same when other growth linked variables are included in the modelling by pursuing the following objectives.

1. To understand the extent of financial development in Southern African and ascertain its relationship with economic growth.
2. To ascertain the growth theory that financial development and economic growth follow in SADC.
3. To establish which independent variables are significant to growth.

The study met the objectives. Findings confirmed that financial development and its measures as assumed are not growth significant. Furthermore, confirmed that financial development and growth relationship does not follow supply-leading theory in SADC but rather the independent theory. After adding other growth linked variables, human development, exports to GDP, government expenditure to GDP and inflation were significant in explaining GDP per capita growth variation in SADC

Although vast evidence substantiates the presence of a relationship, theories are not accordance on link direction. The study dismissed existing findings on the existence of a

relationship and also refuted the dominant following supply-leading theory.

Whereas other growth related variables (as supported by literature) were added to the models, the following were significant to growth; human development, exports, government expenditure and inflation. Literature supports significance of these variables in explaining the variation in GDP per capita growth.

## **7.4 Conclusion**

Looking at the background of the study, research objects and findings, it can be concluded that SADC countries need to continue looking for other feasible ways of igniting growth. This is because financial development with the measures assumed in the study is not significant to trigger growth, hence cannot be the lever to pull for SADC to achieve the much needed growth.

SADC's financial development standards are still in early developmental stages as compared to developed countries, thus at the current level of development, financial development cannot be expected to trigger growth as evidenced by various models assumed in this study.

Though theory and evidence supports positive growth effects of financial advancement in less developed economies as advocated by supply-leading theory, the evidence from SADC suggests otherwise. The role of financial development in SADC is insignificant to ignite growth. It however facilitates for other variables to impact growth, as supported by theory for exports and foreign direct investment inflows.

The significance of financial markets access index (fmai) to growth when financial development measures are disaggregated and the significance of financial institution access index (fiai) and financial institution efficiency index (fie) for model 6 disaggregated samples signals an opportunity for SADC. Although the significance is discounted when other facets are added to create composite indexes, a starting point for financial development can be established as such. Effectively improving financial markets access improves the growth impact level for SADC.

Improving financial institutions access for lower middle income countries might also have a favourable significance on growth. In addition, an improvement in financial institutions efficiency (fie) for upper middle income countries is also likely to result in positive growth prospects.

Other financial development facets can also be explored as highlighted through theory and evidence because financial development measures assumed in this study are not conclusive. There might be other financial development facets that can find a significant relationship with growth.

However, the findings for other growth linked variables showed significance to variation in GDP growth for SADC. These variables are human development, exports to GDP, government expenditure to GDP and inflation. If SADC countries can use these lever, growth can be achieved in the region.

## **7.5 Limitations of the study**

The study limited the financial development measures assumed. Even though robust methods were used (assuming six models and disaggregating the sample by income levels), affirmation of results could have been more robust by assuming other financial development measures beyond access, efficiency and depth.

The period under study was a limitation. Financial development measures were available from 1990 to 2015. Availability of more years of data could have improved analysis.

Secondary data is collected by third parties. A limitation exists in terms of data quality involving consistency in collection methods. In addition, financial development indexes assumed in this study were introduced in 2015 and compiled for prior years. Measuring methods over time change and this adds to the data quality and reliability limitations.

Personal biases on the methodology was a limitation of the study. Assuming a panel framework and data analysis using STATA amongst a variety of models and statistical software's' limited the modelling and level of analysis.

Zimbabwe and Angola were left out due to lack of financial development indexes data. The sample might be representative of SADC but the results cannot be generalised for all countries as some countries were dropped in the sampling process.

## **7.6 Implication to management**

The study confirmed that financial development is not significant in explaining growth. However, key insights from the study presents an opportunity to develop the financial services in order to achieve other benefits while stimulating its growth effects.

Mobilising savings into the financial system through accessible channels, either pension funds, private or public or standard savings accounts will improve financial depth which forms the pool of funds available for investment.

However, for this to happen, financial literacy must be prioritised in developing economies. This will improve the understanding of the role, use and benefits of financial services and products and may increase uptake of resources. Management has a role of educating the population about financial development and even going to the extent of carrying out experiments to edify the objectives of the exercises as Brune et al. (2016) did with subsistence farmers in Malawi.

## **7.7 Recommendations**

### **7.7.1 Improve financial institutions and markets (access and depth)**

Increased access and depth can improve growth impact of financial development. Durusu-Ciftci, Ispir and Yetkiner (2017)'s study confirmed long-run positive steady state growth effects of credit and stock market improvement although, credit market improvement outweighed stock market improvement. In addition, recommended that access to financial markets must be improved citing complex processes to partake in financial markets activities.

Levine (1997) argued that as economies develop from poor to rich, stock markets capitalisation and liquidity improves in relation to the GDP. Also financial intermediaries grow, banks improve credit allocation and other financial institutions (insurance, pension funds, finance companies)'s importance improves in the economy.

Based on the components of financial institutions depth (fidi) as assumed by this study in table 4.1, SADC economies can implement policies targeted at improving such. For private sector credit, this can be done by stimulating entrepreneurial activity and making funding accessible to the private sector thereby improving the depth of the financial development facet. For example, pension funds and mutual funds require savings to build asset base. Insurance premiums growth also require uptake of policies. This brings in the role of financial development in mobilizing savings and channelling them into investments. In addition, domestic savings signals a conducive environment for attracting more foreign capital (Trabelsi & Cherif, 2017).

### **7.7.2 Financial Inclusion**

Financial inclusion can be another way of improving accessibility of the financial sector. Financial inclusion as proposed by Hajilee, Stringer and Metghalchi (2017) is a supply-leading theory that involves the provision of quality and sufficient financial services and products to the financially excluded and previously unbanked. The provision of such is a way of pooling financial resources through savings, extending credit and investing in order to achieve growth.

Hajilee et al. (2017) suggests that developing countries centre attention on improving financial inclusion to address shadow economy issues. In addition, developing economies should find ways to deal with challenges involving the provision of financial products and services to the unbanked. This will lead to expanded access to financial sector thereby improving access facet of financial development.

With technology taking over business operations, improved accessibility and provision of financial services and products can be enabled through technology, in particular, mobile smartphones platforms.

### **7.7.3 Improve financial literacy**

However, financial inclusion requires extensive financial literacy which Lusardi and Mitchell (2014) defines as the capacity to understand economic information pertaining to financial planning (savings planning, wealth creation, pension plan and debt structuring) and make rational decisions based on the information. In addition, theory and evidence substantiate positive effects of financial literacy on economic decisions. This in itself serves a basis to

advocate for policies that help improve financial knowledge for people. Financial literacy can be taught through workshops provided by financial institutions in partnership with the government. Employers can also partake in educating employees about sound financial literacy. Improved financial literacy can substantially boost savings levels through the mobilization of savings and accumulation of capital reserves for investment purposes.

#### **7.7.4 Financial inclusion and financial literacy**

Grohmann, Klühs and Menkhoff (2018), asserts that financial literacy is significant in explaining financial inclusion which helps improve financial depth. Financial inclusion and financial literacy have a key function to play in the improvement of capital provision facets of financial development, financial depth. For financial institutions depth to improve, access and uptake of the products and services must be made accessible and available to the population in an efficient manner. Through improved financial literacy, financial inclusion also improves. As depth improves, the financial systems become more efficient at mobilizing resources, fund allocation, risk mitigation, diversification and innovation projects evaluation (Ho, Huang, Shi & Wu, 2018). These improvements are brought about through access and use of markets and institutions' services and products by the population, hence improving access consequentially improves depth over time.

#### **7.7.5 Implement financial reforms for financial intermediation and efficiency**

SADC countries must implement financial as a way of improving financial development in inline with theory and evidence established. Munemo (2017)'s study concluded that developed countries can benefit from financial development reforms that aim to improve the financial development level of an economy to a stage where entrepreneurship can be triggered through crowding-in effect of foreign direct investment. This will lead to job creation and positive growth.

Literature and evidence substantiate a financial growth and development link, however, it seems more prevalent in developed countries. Fung (2009) suggested that developing countries with weak financial systems are trapped in a poor growth cycle and this cycle will continue until the status quo changes through some form of financial development. Change in the status quo can be brought about through financial reforms in order to ignite growth.

For financial development to be significant in explaining growth in developing countries, Berglof and Bolton (2002) posits that implementing financial reforms around financial intermediation for developing countries is crucial. In addition, evidence suggests a solid link between intermediation and future growth. Sharma and Bardhan (2012) found that efficient financial mediation fuels growth through savings mobilization by banks through which credit is extended. SADC countries should implement financial intermediation reforms in the financial sector. These reforms will help efficiency in the system which and can ignite growth.

Financial services might develop at a pace that might immediately affect growth but evidence shows that it is an enabler for other variables to impact growth. Manova (2012) argues that developed financial system is an enabler of international trade flows. Badunenko and Romero - Avila also found that growth effects of physical capital accumulation is a result of efficiency enhancing effects of financial development.

Aghion (2015) stated that growth-enhancing policies vary across countries due to heterogeneity. For developing countries, particularly SADC, financial development may be necessary as an efficiency enhancer but not sufficient to directly impact growth, hence pursuing financial development and growth effects nexus is purely for synthesizing policies that develop the financial services sector.

#### **7.7.6 Investment in basics for human development (education and health)**

Samstad and Pipkin (2005)'s study focused on human capital development because it is an external growth factor, life-long skills can be transferable in the long-term and that targeted investment can be directly beneficial to the poor leading to inclusive growth.

Improved human capital development will greatly improve financial literacy and inclusion. This will set a conducive environment for easy of understanding how financial systems operate and what benefits accrue from utilizing services and products. It will be a less humongous task to implement financial literacy policies in countries with developed human capital that it is when literacy rates are low.

Kahn (2015) states that targeted investment in human development from a young age is vital for growth. This means that for future potential growth to be achieved, the basics

should be fixed, in this case education and health. In addition, the amount of funds spent on education and health might sets an environment conducive for long-term growth. This means that what government policies and spend can be an indicator of what is being prioritized and can be used to gauge the level of development to be achieved. SADC countries must invest more in basic education and health as they are key human developmental elements significant to growth. Furthermore, financial numeracy and education can be implemented in the school curriculum and this ensures that knowledge is embedded as children progress through school. This will help prepare them for life while equipped with basic financial literacy skills that are needed to improve financial inclusion and subsequently financial development.

In addition, Rodrik (2006) alludes to this point by stating that improving one's capabilities and functions through education and productive skills provides an opportunity for one to realise their potential. When human development is high, people will have education and skills to start businesses through entrepreneurial activities, get employed and improve living conditions. Inequality and poverty can be reduced significantly. Kagochi et al. (2013)'s study notes human capital development as a long run growth stimulator and highlighting its contribution to reducing inequality and poverty. This is also in synch with the basic pillar categorisation of human development facets (health, primary and secondary education) in the growth equation (WEF, 2015).

SADC is home to Zimbabwe whose education system has for decades been praised for producing highly educated students. South Africa is moving towards implementing the National Health Insurance that will see access to quality health for everyone will greatly improve. Addressing education and health is key to growth. Learning from each country's policies which are working well and incorporating them in countries that lag behind provides a platform for the region's growth.

#### **7.7.7 Attracting long-term capital investment inflows**

Durusu-Ciftci et al. (2017) argue that economic policy should critically focus at enhancing macro-economic stability in order to gain investor confidence for capital to inflow. Noting that a balance between policies implemented and expected outcome might require certainty on other linked aspects. Rodrik (2006) states that enhancing property rights might be the balance required to sustain private investment incentives.

SADC rich in minerals and although some natural resources are yet to be tapped, the region should incentive new investments in technology and capital to exploit mineral reserves at their own terms. Kahn (2015) raises a point on the critical function of incentives and government policy in advocating for technological change and investment. This assertion emphasises the significance of policy formulation and implementation as a lever to attract investment and push technological change. In addition, it cements Aghion (2015) assertion that host country's level of technological advancement determines the growth enhancing policies to be adopted. Government policies should be aligned to attracting investment through incentives. Incentivising capital inflows and technological advancement is critical in achieving growth.

In terms of attracting capital inflows and foreign direct investment, SADC countries must implement policies that attract long-term investments compared to short-term capital inflows. Although evidence insinuates that growth effects of capital inflows, Stiglitz (2000) strongly advocates for long-term capital inflows. This is because long-term capital investment allows for sustainable investments to be made in sectors that can grow economies over a period of time. In addition, Stiglitz (2000) argued that short-term capital investments are counter-growth as they cannot sustain long-term investments which are conducive for growth. Short-term capital inflows also expose the economy to capital flight, more prone during crises periods.

## **7.8 Recommendation for future studies**

Further studies should pursue other facets of financial development and divert focus from composite financial indexes. Other financial development facets to be explored are financial inclusion and financial intermediation. These recommendations are in line with the modern digital intermediation age and investigating how this is impacting access to financial services and growth in SADC might be worthwhile. In addition, financial inclusion is another study that can be focussed on. This study as a build up on financial intermediation can capture the impact of including the financially excluded on growth.

Lastly, understanding the value of the informal sector and its impact on the SADC economies in terms of micro-finance is worth pursuing. This, considering that the informal sector constitutes a huge portion of economic activity the region therefore understanding micro-finance dynamics in the informal sector and growth might be worth pursuing.

## **7.9 Conclusion of the study**

Noting the need to abate poverty and income inequality in Southern Africa as well as the role economic growth plays in correcting the same, this study, capitalising on the supposed complementary theoretical link between financial development and economic growth sought to label this relationship in Southern Africa with the intent of infusing policy formulation aligned to growth prioritization. Robust panel methods show that financial development is still low in Southern Africa hence the insignificant effect of financial development on growth in the region. Though findings confirmed that financial development is not significant in explaining the growth of economies in SADC at this stage, it remains a critical component in the growth equation through its various ways of facilitating trade, government extraction efforts, mobilizing financial resources and allocation of capital resources. Therefore, effort should focus on continuous development of the financial sector. It remains vital to prioritize other feasible policies that can help spur growth in SADC especially after recognizing that it is not only financial development which is additive to growth but trade, FDI and government expenditure.

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## Appendix

### 9.1 Model 5 statistical outputs (Model estimation)

#### 9.1.1 Pooled OLS results

Source	SS	df	MS	Number of obs	=	280
Model	456.163626	8	57.0204533	F(8, 271)	=	3.18
Residual	4865.49019	271	17.9538383	Prob > F	=	0.0019
				R-squared	=	0.0857
				Adj R-squared	=	0.0587
Total	5321.65382	279	19.074028	Root MSE	=	4.2372

gdpcapit	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
dcgdp	-.0395548	.0196563	-2.01	0.045	-.0782532	-.0008563
hdi	5.653175	3.637096	1.55	0.121	-1.50738	12.81373
expgdp	-.0252057	.0144126	-1.75	0.081	-.0535806	.0031692
gvtexpgdp	-.0188145	.0231711	-0.81	0.418	-.0644328	.0268038
fdipgdp	.079195	.0427907	1.85	0.065	-.0050494	.1634394
infl	-.0004851	.0001592	-3.05	0.003	-.0007985	-.0001718
fii	1.812627	3.254971	0.56	0.578	-4.595617	8.220872
fmi	7.707903	5.107452	1.51	0.132	-2.347426	17.76323
_cons	.2658598	1.205954	0.22	0.826	-2.108369	2.640089

## 9.1.2 Fixed Effects model results

```

Fixed-effects (within) regression
Group variable: country_id

Number of obs   =      280
Number of groups =      13

R-sq:
  within = 0.1139
  between = 0.0041
  overall = 0.0071

Obs per group:
  min =      6
  avg =     21.5
  max =     26

corr(u_i, Xb) = -0.8367

F(8,12) = 36843.28
Prob > F = 0.0000

```

(Std. Err. adjusted for 13 clusters in country\_id)

gdpcapit	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
dcdp	-.0043577	.0460365	-0.09	0.926	-.1046625	.0959471
hdi	22.50066	11.42717	1.97	0.072	-2.397007	47.39833
expd	.0979112	.0729436	1.34	0.204	-.0610192	.2568417
gvtexpd	-.0660767	.0224238	-2.95	0.012	-.1149338	-.0172195
fdipd	-.0435886	.0260608	-1.67	0.120	-.1003703	.0131931
infl	-.0002233	.0000827	-2.70	0.019	-.0004034	-.0000433
fii	-7.36848	7.838622	-0.94	0.366	-24.44737	9.71041
fmi	1.541707	5.462078	0.28	0.783	-10.35914	13.44255
_cons	-10.0821	5.894051	-1.71	0.113	-22.92413	2.759934
sigma_u	3.9717474					
sigma_e	3.9190316					
rho	.50668038	(fraction of variance due to u_i)				

### 9.1.3 Random Effects model results

```

Random-effects GLS regression              Number of obs   =       280
Group variable: country_id                Number of groups =       13

R-sq:                                     Obs per group:
  within = 0.0663                          min =           6
  between = 0.0345                          avg  =          21.5
  overall = 0.0540                          max  =           26

corr(u_i, X) = 0 (assumed)                 Wald chi2(8)    =    32617.45
                                           Prob > chi2     =         0.0000

```

```

----- theta -----
   min      5%      median      95%      max
0.2038  0.2038  0.4656  0.4656  0.4656

```

(Std. Err. adjusted for 13 clusters in country\_id)

gdpcapit	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
dcdp	-.0168	.0151109	-1.11	0.266	-.0464169	.0128168
hdi	8.768631	7.444255	1.18	0.239	-5.821841	23.3591
expdp	.0046459	.0242724	0.19	0.848	-.0429271	.0522188
gvtexpdp	-.0341543	.0173	-1.97	0.048	-.0680616	-.000247
fdipdp	.0436386	.0449561	0.97	0.332	-.0444736	.1317509
infl	-.0003849	.0000444	-8.67	0.000	-.000472	-.0002979
fii	-2.455941	3.991127	-0.62	0.538	-10.27841	5.366524
fmi	3.495397	4.796309	0.73	0.466	-5.905196	12.89599
_cons	-1.245468	3.37853	-0.37	0.712	-7.867266	5.37633
sigma_u	1.2156358					
sigma_e	3.9190316					
rho	.08777142	(fraction of variance due to u_i)				

### 9.1.4 Hausman test results

Note: the rank of the differenced variance matrix (7) does not equal the number of coefficients being tested (8); be sure this is what you expect, or there may be problems computing the test. Examine the output of your estimators for anything unexpected and possibly consider scaling your variables so that the coefficients are on a similar scale.

	---- Coefficients ----		(b-B)	sqrt(diag(V_b-V_B))
	(b)	(B)	Difference	S.E.
	fixed	random		
dcgdp	-.0043577	-.0168	.0124423	.0290146
hdi	22.50066	8.768631	13.73203	5.397155
expgdp	.0979112	.0046459	.0932654	.0234312
gvtexpgdp	-.0660767	-.0341543	-.0319224	.0094624
fdipgdp	-.0435886	.0436386	-.0872273	.0243792
infl	-.0002233	-.0003849	.0001616	.
fii	-7.36848	-2.455941	-4.91254	4.266957
fmi	1.541707	3.495397	-1.95369	1.101297

b = consistent under Ho and Ha; obtained from xtreg  
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(7) = (b-B)'[(V\_b-V\_B)^(-1)](b-B)  
 = 22.00  
 Prob>chi2 = 0.0025  
 (V\_b-V\_B is not positive definite)

### 9.1.5 Pesaran's test results

Pesaran's test of cross sectional independence = 4.569, Pr = 0.0000

Average absolute value of the off-diagonal elements = 0.245

### 9.16 Multicollinearity test results

Variable	VIF	1/VIF
dcgdp	8.02	0.124668
fmi	5.91	0.169267
fii	5.21	0.191858
hdi	3.78	0.264804
expgdp	1.51	0.663706
gvtexpgdp	1.17	0.855720
fdipgdp	1.12	0.893305
infl	1.05	0.956503
Mean VIF	3.47	

### 9.1.7 Heteroskedasticity test results

```

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: dcgdp hdi expgdp gvtexpgdp fdipgdp infl fii fmi

chi2(8)      =    53.96
Prob > chi2  =    0.0000

```

### 9.18 Wooldridge test results

```

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
F( 1,      12) =    0.573
Prob > F      =    0.4639

```

## 9.2 Model 6 statistical outputs (Model estimation)

### 9.2.1 Pooled OLS

Source	SS	df	MS	Number of obs	=	280
Model	540.57215	12	45.0476792	F(12, 267)	=	2.52
Residual	4781.08167	267	17.9066729	Prob > F	=	0.0038
				R-squared	=	0.1016
				Adj R-squared	=	0.0612
Total	5321.65382	279	19.074028	Root MSE	=	4.2316

gdpcapit	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
dcgdp	-.0649815	.032574	-1.99	0.047	-.129116 - .000847
hdi	3.498859	4.063572	0.86	0.390	-4.501862 11.49958
expgdp	-.0250577	.0160072	-1.57	0.119	-.0565741 .0064587
gvtexpgdp	-.0124389	.0237859	-0.52	0.601	-.0592708 .0343929
fdipgdp	.0953257	.044681	2.13	0.034	.0073537 .1832977
infl	-.0004764	.0001618	-2.94	0.004	-.0007951 -.0001578
fiai	1.315078	2.945859	0.45	0.656	-4.48499 7.115146
fidi	2.975644	2.262994	1.31	0.190	-1.479938 7.431227
fiei	.1160882	2.368782	0.05	0.961	-4.547779 4.779956
fmai	6.749433	2.576497	2.62	0.009	1.676598 11.82227
fmdi	4.961627	5.01289	0.99	0.323	-4.908196 14.83145
fmei	-.391672	2.143249	-0.18	0.855	-4.611491 3.828147
_cons	1.211044	1.796817	0.67	0.501	-2.32669 4.748777

## 9.2.2 Fixed Effects model

```

Fixed-effects (within) regression      Number of obs   =      280
Group variable: country_id           Number of groups =      13

R-sq:                                Obs per group:
    within = 0.1279                  min =          6
    between = 0.0083                 avg =         21.5
    overall = 0.0074                 max =         26

corr(u_i, Xb) = -0.8333              F(12,12)       = 6.32e+08
                                        Prob > F        = 0.0000

```

(Std. Err. adjusted for 13 clusters in country\_id)

gdpcapit	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
dcgdp	-.0387926	.0601267	-0.65	0.531	-.1697975	.0922123
hdi	23.84194	12.50523	1.91	0.081	-3.40462	51.0885
expgdp	.0965539	.0681947	1.42	0.182	-.0520295	.2451373
gvtexpgdp	-.0654052	.0205578	-3.18	0.008	-.1101968	-.0206136
fdipgdp	-.0449264	.0236018	-1.90	0.081	-.0963503	.0064976
infl	-.0001768	.0000895	-1.97	0.072	-.0003718	.0000183
fiai	-8.68797	8.719776	-1.00	0.339	-27.68673	10.31079
fidi	8.286046	7.075709	1.17	0.264	-7.1306	23.70269
fiei	-4.281533	3.486888	-1.23	0.243	-11.87881	3.315745
fmai	1.44584	5.676681	0.25	0.803	-10.92259	13.81427
fmdi	1.821815	5.331668	0.34	0.738	-9.794891	13.43852
fmei	-.067433	2.131697	-0.03	0.975	-4.712002	4.577136
_cons	-10.38483	6.693522	-1.55	0.147	-24.96876	4.199097
sigma_u	3.8452502					
sigma_e	3.9182933					
rho	.49059237	(fraction of variance due to u_i)				

### 9.2.3 Random Effects model

```

Random-effects GLS regression              Number of obs   =       280
Group variable: country_id                Number of groups =        13

R-sq:                                     Obs per group:
    within = 0.0276                        min =           6
    between = 0.4753                       avg  =          21.5
    overall = 0.1016                       max  =           26

corr(u_i, X) = 0 (assumed)                Wald chi2(12)   =  709118.57
                                           Prob > chi2     =    0.0000

```

```

-----+----- theta -----+-----
min      5%      median      95%      max
0.0000   0.0000   0.0000   0.0000   0.0000

                                     (Std. Err. adjusted for 13 clusters in country_id)
-----+-----

```

gdpcapit	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
dcgdp	-.0649815	.0384226	-1.69	0.091	-.1402884	.0103254
hdi	3.498859	8.39133	0.42	0.677	-12.94785	19.94556
expgdp	-.0250577	.0241565	-1.04	0.300	-.0724036	.0222882
gvtexpgdp	-.0124389	.0194007	-0.64	0.521	-.0504637	.0255858
fdipgdp	.0953257	.0621371	1.53	0.125	-.0264609	.2171123
infl	-.0004764	.0001049	-4.54	0.000	-.0006821	-.0002708
fiai	1.315078	3.770184	0.35	0.727	-6.074347	8.704503
fidi	2.975644	2.514125	1.18	0.237	-1.95195	7.903239
fiei	.1160882	2.976399	0.04	0.969	-5.717546	5.949723
fmai	6.749433	1.961116	3.44	0.001	2.905716	10.59315
fmdi	4.961627	4.684217	1.06	0.289	-4.21927	14.14252
fmei	-.391672	.7734107	-0.51	0.613	-1.907529	1.124185
_cons	1.211044	3.606014	0.34	0.737	-5.856613	8.278701

```

-----+-----
sigma_u | 0
sigma_e | 3.9182933
rho     | 0 (fraction of variance due to u_i)
-----+-----

```

## 9.2.4 Hausman test results

Note: the rank of the differenced variance matrix (11) does not equal the number of coefficients being tested (12); be sure this is what you expect, or there may be problems computing the test. Examine the output of your estimators for anything unexpected and possibly consider scaling your variables so that the coefficients are on a similar scale.

	---- Coefficients ----			
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
dcdp	-.0387926	-.0649815	.0261889	.0324688
hdi	23.84194	3.498859	20.34308	6.178881
expdp	.0965539	-.0250577	.1216116	.026928
gvtexpdp	-.0654052	-.0124389	-.0529662	.011624
fdipdp	-.0449264	.0953257	-.140252	.0259796
infl	-.0001768	-.0004764	.0002997	
fiai	-8.68797	1.315078	-10.00305	6.421998
fidi	8.286046	2.975644	5.310402	5.698601
fiei	-4.281533	.1160882	-4.397621	1.234872
fmai	1.44584	6.749433	-5.303593	6.560696
fmdi	1.821815	4.961627	-3.139812	3.477462
fmei	-.067433	-.391672	.324239	.286764

b = consistent under Ho and Ha; obtained from xtreg  
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(11) = (b-B)'[(V\_b-V\_B)^(-1)](b-B)  
 = 74.84  
 Prob>chi2 = 0.0000  
 (V\_b-V\_B is not positive definite)

## 9.2.5 Pesaran's test results

Pesaran's test of cross sectional independence = 4.191, Pr = 0.0000

Average absolute value of the off-diagonal elements = 0.246

### 9.2.6 Multicollinearity test results

Variable	VIF	1/VIF
dcgdp	22.09	0.045277
fmdi	9.83	0.101695
fidi	5.48	0.182445
hdi	4.73	0.211581
fiai	4.08	0.244802
fmai	2.79	0.358364
fiei	2.29	0.435914
expgdp	1.86	0.536645
fmei	1.41	0.711128
gvtexpgdp	1.23	0.809924
fdipgdp	1.22	0.817164
infl	1.08	0.922579
Mean VIF	4.84	

### 9.2.7 Heteroskedasticity test results

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: dcgdp hdi expgdp gvtexpgdp fdipgdp infl fiai fidi fiei fmai  
fmdi fmei

chi2(12) = 79.07  
Prob > chi2 = 0.0000

### 9.2.8 Wooldridge test results

Wooldridge test for autocorrelation in panel data

H0: no first-order autocorrelation

F( 1, 12) = 0.676  
Prob > F = 0.4270

### 9.3 Millennium Development Goals



### 9.4 Sustainable Development Goals



**Gordon  
Institute  
of Business  
Science**  
University  
of Pretoria

12 July 2018

Chatora Tapiwa

Dear Tapiwa

*Please be advised that your application for Ethical Clearance has been approved.*

*You are therefore allowed to continue collecting your data.*

*Please note that approval is granted based on the methodology and research instruments provided in the application. If there is any deviation change or addition to the research method or tools, a supplementary application for approval must be obtained*

*We wish you everything of the best for the rest of the project.*

*Kind Regards*

GIBS MBA Research Ethical Clearance Committee