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The relationship between Stock Market Development and Economic Growth: A case of South Africa

By

Zanele Ndima

Student Number: 537 525

Supervisor: Dr Euphemia Godspower-Akpomiemie

Thesis submitted in partial fulfilment of the requirements for the degree of

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Declaration

I, Zanele Ndima declare that the research work reported in this dissertation is my own, except where otherwise indicated and acknowledged. It is submitted for the degree of Master of Management in Finance and Investment as the University of the Witwatersrand, Johannesburg. This thesis has not, either in whole or in part, been submitted for a degree or diploma to any other universities.

Signature of candidate: Date:

:

Acknowledgements

Through this research, I had the opportunity to contribute to an area that is of great interest to me, the development of the capital markets, specifically the Johannesburg Stock Exchange, and economic growth of my country. This was my primary inspiration, having the awareness that I was working towards making an impact in areas very close to my heart.

First and foremost, praises and thanks to God for granting me the opportunity to pursue this degree. I am thankful to God for blessing me with the wisdom, peace of mind and good health that has allowed me to obtain this degree. Without Him, this could not have been achieved.

I am beholden to my parents, Thembinkosi and Jabulile Ndima. Thank you for the love, prayers and always motivating me to be at my best, in all my endeavours. I guarantee to continue making you proud.

I owe a special thank you to my sisters, Sindi, Zama, Thobile and Khanyo Ndima, who have supported me throughout this journey.

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I would like to articulate my appreciation to my research supervisor Dr Euphemia Godspower-Akpomiemie for her supervision, time, and patience.

Finally, thank you to all my friends for the words of motivation and support.

Abstract

The association between the growth in the economy and development of the stock market has fascinated the attention of several economists and researchers across the world. This area of research has predominantly been performed through panel studies. However, the institutional differences and capital allocation differences between economies makes it challenging to generalise the results. Therefore, there is a need for country specific studies.

This research examines the causal connection between the expansion of the equities market (Johannesburg Stock Exchange) and the advancement in the economy from a South African perspective. The research study first establishes the presence of a cointegration relation between the stock market development and economic growth. Secondly, the study explores the ultimate direction of the causal relationship.

The outcomes of the Johansen cointegration assessment reveal that the proxies used for stock market development does not affect economic growth except for the number of stocks traded. Using the causality test, the study discovered the existence of a unidirectional causality from stock turnover to growth in the economy. As such, policy makers should focus on developing policies and strategies that promote the liquidity of the stock exchange because it influences the growth in the economy.

Originality was incorporated in the research paper by focusing on the period between 2000 and 2019. Since most of the empirical studies examining the association between the expansion of the stock market and advancement in the economy employed panel data, this research employs a time series data, with a concentration on South Africa.

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Chapter 1

Scope and Framework of the Study

1.1 Introduction

This chapter provides details on the purpose and aims of this study. Many sections are outlined, ranging from background of the study, through to the importance of a stock exchange in an economy. The problem statement, the hypothesis, research motivation, and the outline of the paper are also discussed in this chapter.

1.2 Background of the study

Financial systems play a very pivotal role in developing an economy. Retail and commercial banks, brokerage firms, credit unions, insurance institutions and central banks make up the financial system of an economy. Financial systems serve the purpose of facilitating and mobilizing the allocation of idle funds (savings) from surplus stakeholders to deficit stakeholders to be utilised for expansion of businesses. It is for this reason that first world countries can be characterised to possess well-established financial systems and known as financial hubs.

The connection between the growth of financial markets and progress in the economy has been a centre of controversy since the 20th century and research papers in this domain have explored the existence of the relationship. It was pioneered through the efforts of Schumpeter (1912) who concluded that a well-organized financial establishment assists in enhancing the growth in the economy through channelling funds to entrepreneurs to implement them through innovative methods. Following to the argument, further authors investigated the relationship of which some were in support of the assessment of Schumpeter (1912) and some claiming that financial institutions are irrelevant to growth in the economy. For instance, Shliefer and Summers (1988) proclaimed that equity markets (financial system) provide a domain for counterproductive merger and acquisitions that may hamper economic growth.

The historical inconsistent assessments in the investigation of the relationship have resulted in a need for empirical research to be conducted to ascertain whether advancement of stock market encourages the expansion in the economy.

1.3 The importance of stock exchange in an economy

Stock exchanges are often seen as barometers for business and economic conditions in a country. The business and economic atmosphere can be measured by assessing how the stock market is performing as the market provides information about the companies listed in the exchange. Economic growth is a mechanism that fosters reduced unemployment rate, improvement in the quality of the standard of living and consequently, a reduction in poverty levels. A well-functioning exchange enables advancement in the economy by facilitating the mobilisation of financial resources through creating a market for those participants who require capital to innovate and grow and those participants that have the capital to invest.

The expansion in an economy is driven by the sourcing of capital, using assets efficiently and redistribution of wealth. The gross domestic product (GDP) is a widely accepted and widely used metric for economic growth. Financial intermediaries such as the Johannesburg Stock Exchange provide a platform for investment development in an economy by mobilizing idle savings of economic participants for investment. The Johannesburg Stock Exchange provides a platform that permits the allocation of funds to their optimal productive use; and provides liquidity to those economic participants that can utilise the funds for innovative methods that will stimulate the economy.

Alile (1984) argued that financial development encompasses the creation and growth of financial establishments that influence the investment activities, and lead to the acceleration of growth in the economy. The function of financial institutions is to fundamentally convert household savings into entrepreneurial investment. It is known that the purpose of all financial intermediaries has been to convert household surplus funds into investments. Furthermore, the financial intermediaries (banks and non-banks) exist to facilitating the allocation of financial resources, monitoring of investments, to add value and spread risk. Although financial intermediaries have a multitude of positive externalities, its function can also lead to systematic financial crises which are prevalent in market systems. There is an apparent connection between the growth of the financial segment in an economy and advancement in an economy. This association has been one of continuous debate amongst the economists, academics, and policy makers.

In the works concerning the finance-growth nexus, the financial system serves as a fundamental catalyst of a country's development. Therefore, expansion of the economy can be accomplished through an efficient provision of financial. (Pradhan et al., 2017a, 2017b).

Research to date that has explored this relationship and resolved that expansion in the economy can occur through developing the financial sector have provided evidence that this phenomenon can transpire because the financial sector assists in achieving the following:

- Mobilizing idle savings for investment
- Redistribution of wealth
- Improving corporate governance
- Ensuring financial stability
- Creating investment opportunities for smaller investors
- Diversification of risk

The function of financial market expansion on the advancement of the economy has been a core area of research amongst economists. The contributions by various authors in this domain can be separated into numerous elements. First, the purpose of financial systems in developing an economy by allocating funds efficiently (Greenwood and Jovanovic, 1990). Second, diversification of portfolios, increased liquidity, risk reduction and stimulation of economic growth can be achieved through financial markets (Levine, 1997). Third, an exit mechanism and efficiency of financial intermediation is provided to different stakeholders (Arestis et al., 2001). Fourth, issues that arise from the information asymmetry (principal – agent problem) can be limited through the ability of a financial market to positively influence the advancement in the economy by effecting improvements in incentives for ownership of shares (Demirguc-Kunt and Levine, 1996).

Furthermore, researchers have explored the function of financial development on economic growth by combining the different sub-categories of the financial markets (equity market, banking sector, bond market) (Berthelemy and Varoudikis., 1996). These studies have confirmed that the various financial activities have a considerable impression to the growth in the economy.

Bond markets, the banking segment and the equity market are included in the wide concept of financial development. This research report focuses on the advancement of the equities market and the influence it has on progress of the economy in a South African setting. The results of this investigation will add to the finance-growth body of research, both theoretically and empirically.

1.4 The South African stock exchange: JSE

In the country of South Africa, the Johannesburg Stock Exchange (JSE) is a significant and meaningful institution in the economy. Africa's biggest stock exchange was founded in 1887 after the discovery of gold in Witwatersrand, South Africa. The discovery of the gold in 1886 resulted in the development of mining and financial merchants and a surge in the trading of gold. Therefore, there was a necessity for a central platform to facilitate the gold trades and for investors to access capital. It was for this function that the Johannesburg Stock Exchange (JSE) was established.

The stock exchange has become a pivotal component in South Africa's economic landscape providing a regulated market for security dealings and thereby generating new investment opportunities in South Africa. The exchange connects market participants in different financial markets to transact in different products, namely, stocks, various derivatives (stocks, commodities, and currency) and interest rate instruments. It provides a domain for listed entities and government entities to increase long term capital and provides investors an avenue to invest their surplus funds in a regulated, transparent, and equitable environment, while creating job opportunities and encouraging wealth creation. The JSE offers an efficient and effective price determination environment and price risk management instrument (Southafrica Info, 2012). The JSE also promotes good corporate governance amongst their listed issuers and encourages transparency and accountability of the listed entities to its stakeholders.

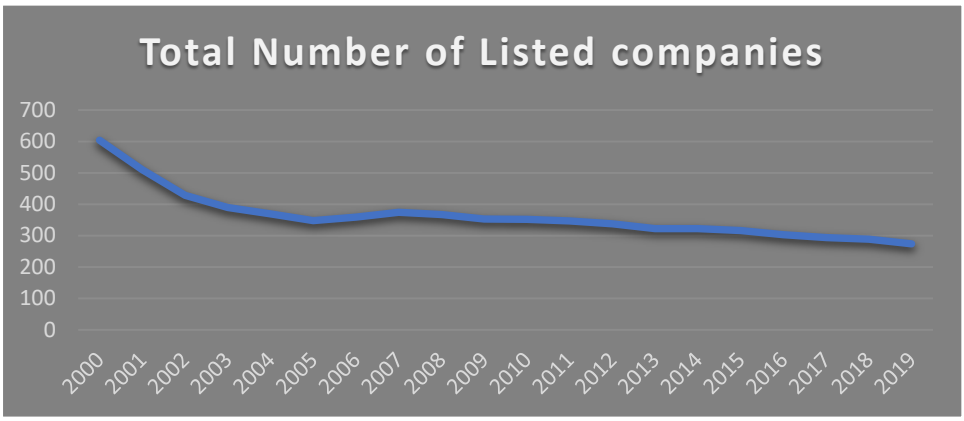
Most recently, the function of the Johannesburg Stock Exchange has become more dynamic and diverse which resulted in its efficiency and international standing. The electronic clearing and settlement concept were introduced through the Shares Transactions Totally Electronic (STRATE) system. In year 2002, the JSE formed a strategic partnership with the London Stock Exchange (LSE). The partnership resulted in several improvements, such as the enablement of trading between two boards and upgrading the JSE's trading system with that of the LSE. Furthermore, the institution adopted listing regulations that similar with global best practice (Odhiambo, 2010).

In year 2019, the Johannesburg Stock exchange has advanced to hold the title of the 19th largest stock exchange in a global scale by market capitalisation (R 10.4 billion) and the biggest capital market in the African continent. The Johannesburg Stock Exchange has 312 companies listed on the main board, 947 securities available in the exchange and an average liquidity (total value

traded and annualised market capitalisation ratio) of 54%. (JSE Limited Integrated Annual Report for year ended 31 December 2019).

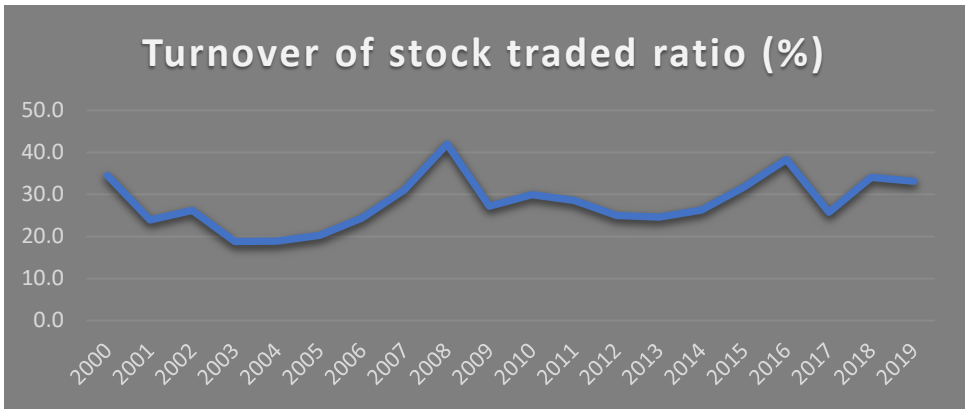
Figure 1: Variables used to measure stock market

a. Total Number of Listed Companies



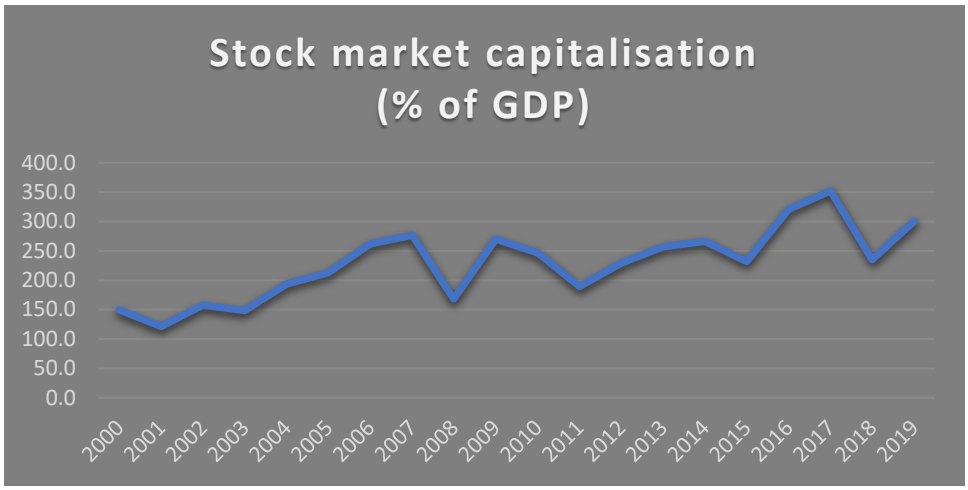
Source: data sourced from World Bank database

b. Turnover of Stock Traded Ratio (%)



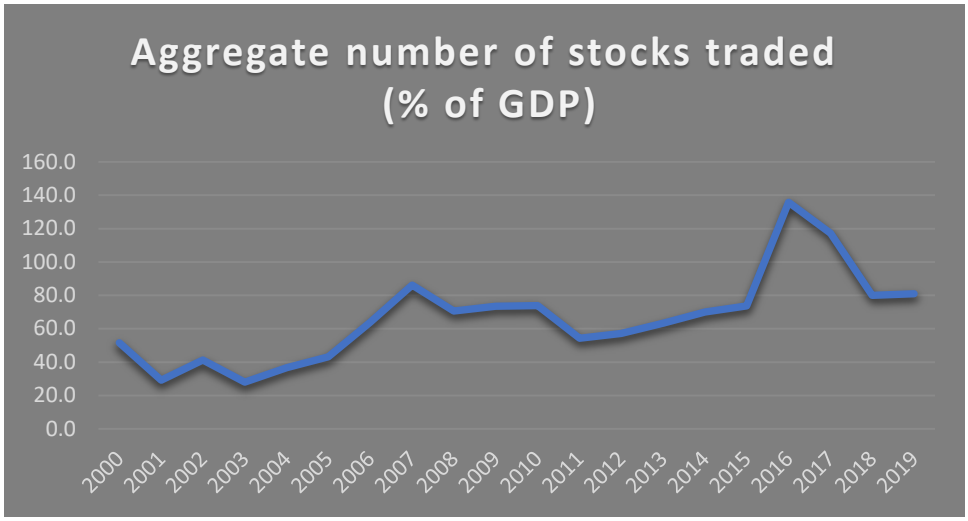
Source: data sourced from World Bank database

c. Stock Market Capitalisation (% of GDP)



Source: data sourced from World Bank database

d. Aggregate Number of Stocks Traded (% of GDP)



Source: data sourced from World Bank database

Figure 1 reflects an analysis of the stock market variables over the time frame covering 2000 to 2019. It can be observed that there is a large expansion between the time frame of 2002 and 2008 for the turnover of stock traded, market capitalisation and the number of stocks traded. This is due to the activities that resulted in the 2008 global financial crisis. The large decline between 2016 -2018 can be attributable to political tensions that occurred in the country which dampened investor confidence.

The diagrams in figure 1 demonstrate that the seasonal trends among the different stock market variations portray positive correlations to the advancement of the economy of the country. The

graphs specify that as economic growth expands, so does the stock market capitalisation, turnover of stock traded, and the aggregate number of stocks traded.

A country's economic growth is dependent on a well-established and well organised financial system. Financial services assist in the facilitation of idle capital to productive use. Financial services intermediaries convert the idle capital by utilising it to invest in innovative and entrepreneurial platforms. These platforms result in economic growth through job creation, poverty alleviation, the construction of required infrastructure and sustainable development. The South African National Treasury (2017) notes that access to capital and financial services are key to achieve the economic and social transformation. Therefore, financial services development can be used as a tool to achieve the economic and social transformations of South Africa. The lessons learnt from the effects of the COVID-19 pandemic stressed the significance of the financial sector. It is noted that the financial intermediaries are vital in accomplishing the objectives of the monetary policy by the application of expansionary monetary policies with the intention to drive economic growth.

As South Africa's economy continues to develop, additional funding is required to finance the expansion within the economy and therefore, the JSE serves as a vital mechanism for the facilitation of mobilization of capital. It is in this context that the Johannesburg Stock Exchange is considered as an instrument/catalyst that encourages economic activity and ultimately leads to economic growth.

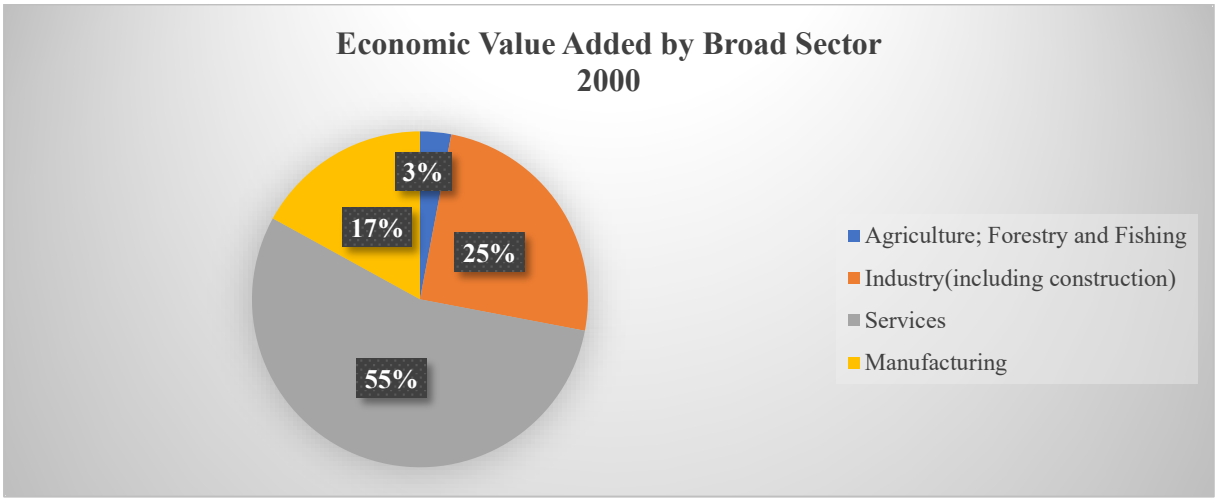
1.5 Composition of the economy of South Africa

South Africa is the second greatest economy by gross domestic product in the African continent. For decades, the South African economy has been primarily rooted in the agricultural and mineral resources sector in which the country has a comparative advantage in. This is attributable to the abundance of the mineral resources that as well as the favourable agricultural conditions in the country.

Since the early 1990's, South Africa has seen a structural change in output and economic growth has been influenced mainly by the services sector. Figure 2a and Figure 2b reflects the economic value added by sector for the year 2000 and 2019. Several important patterns are apparent. The country is moving towards becoming a service-driven economy, with the primary focus being on technology, ecommerce, financial and other services. The services sector has grown substantially faster and contributes three-quarters to the GDP of South Africa. The main segment which encompasses agriculture, forestry and fishing has been in a long-term

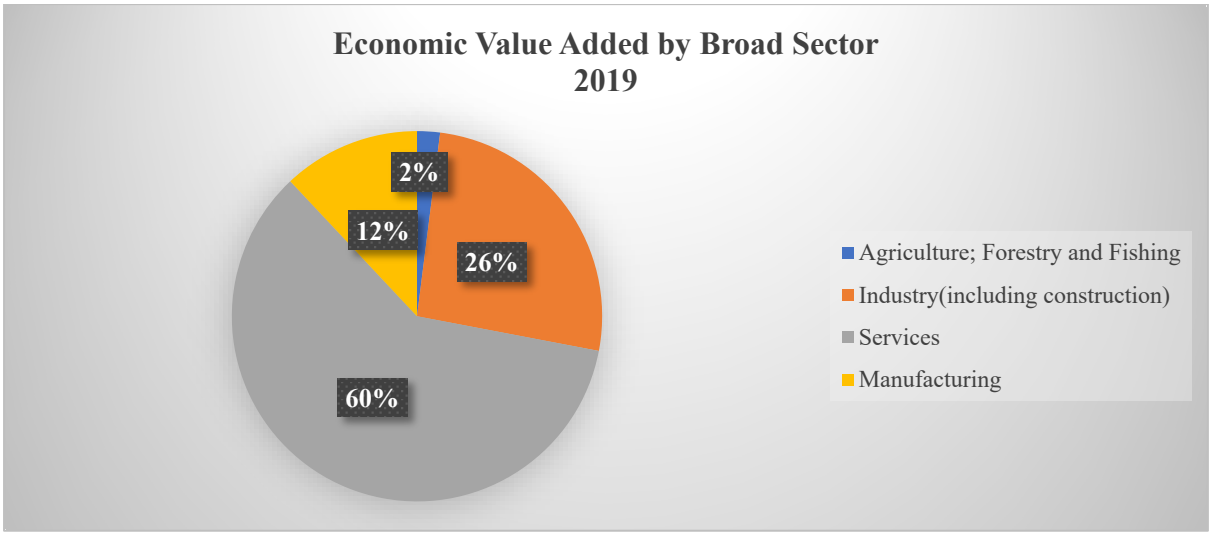
decline. The influential role played by the manufacturing industry to the GDP has decreased. The contribution of the industry, which includes construction sector has slightly increased.

Figure 2a: Composition of the Economy of South Africa: Economic Value Added (2000)



Source: data from worldbank.com

Figure 2b: Composition of the Economy of South Africa: Economic Value Added (2019)

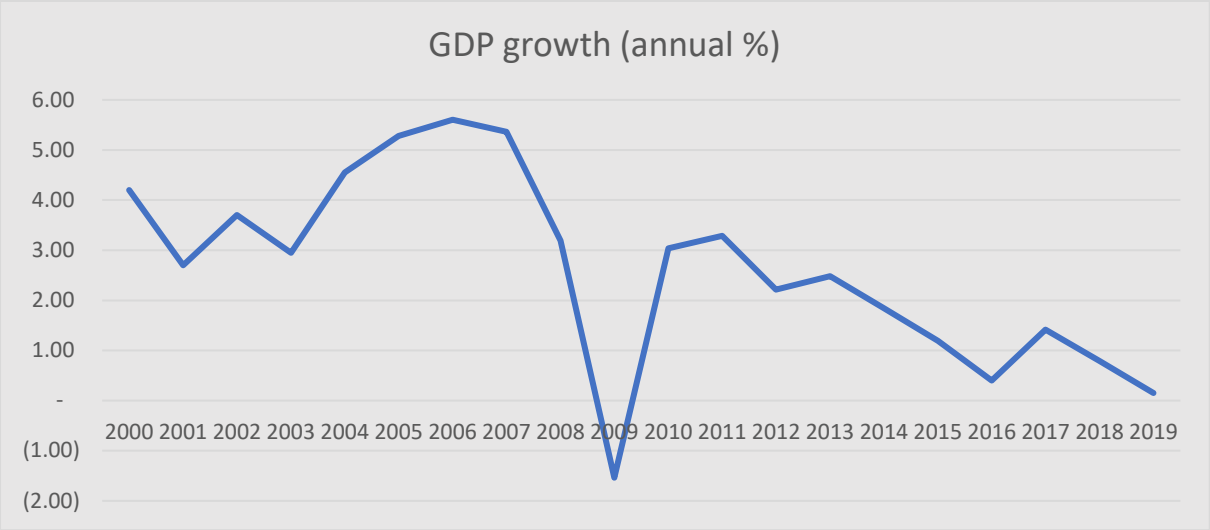


Source: data from worldbank.com

As discovered by the Industrial Development Corporation (IDC), South Africa's economic performance has been fluctuating and is influenced by the economic performance of international markets. The IDC cited global events that hampered the GDP growth rate of South Africa. Figure 3 illustrates the volatility in the GDP growth rate between 2000 and 2019. Between 2000 and 2001, we note a deterioration in the GDP growth rate attributable to the "dot.com crisis of 2000" and the terrorist incident known as the "9/11" that occurred in the

United State of America. Between 2002 and 2003, there was an avalanche of corporate scandals that de-stabilised financial markets. Corporate scandals related to Enron, WorldCom, Arthur Anderson, Tyco, and Freddie Mac scandals amongst others came into light. The Global Financial Crisis which manifested in 2007 and intensified in 2008 affected the South African GDP growth rate, leading South Africa, and the rest of the globe into a financial and global recession. In the year 2017, there were political tensions that plagued the country which saw S&P Global reduce the credit rating of South Africa to a standing described as junk. Fitch Ratings downgraded the South Africa's credit position to BBB- sub investment grade. Furthermore, the value of the currency of South Africa reduced by 11%.

Figure 3: South African Annual GDP Growth Rate (2000 – 2019)



Source: data fromworldbank.com

1.6 Problem Statement

South Africa can be viewed as one of the most sophisticated and developing markets in the globe. The country is popular for being the gateway into Africa due to its well-functioning first-class financial markets and an accelerating emerging economy. The South African economy can be characterised by its entrepreneurial and effective investment environment which gives it international competitive advantages, opportunities, and recognition. Although the country has one of the greatest ranked equity markets through the Johannesburg Stock Exchange (JSE), there is an apparent discrepancy in the growth in the economy noted in South Africa and other countries. Furthermore, the size and well-establishment of the Johannesburg Stock Exchange has not resulted in the creation of jobs, poverty alleviation, reduction of the income inequality, and achievement of social and economic transformation. South Africa is

still plagued with high levels of unemployment and inequality with many citizens not having access to essential financial services.

The pioneers contributed to the body of knowledge exploring the connection between the financial system development and the progress in the economy. Literature has evidenced that a well-established financial system provides a constructive and beneficial influence on the economy.

The question that remains to be resolved therefore is; if the expansion of the stock exchange can be a mechanism to foster economic growth, why is there an evident misalignment between the development of the Johannesburg stock market and the economic growth rate achieved by South Africa, despite having the largest stock exchange in Africa? It also needs to be investigated whether a causal connection is present between the expansion of the stock market and improvement in the economy of South African.

1.7 Research Motivation

The connection between the expansion of the equity market and progress in an economy has sparked debate and investigations by academics in different countries over the past years. This debate originated by the study of Schumpeter (1912) which theorised that financial intermediaries provide facilities which boost economic development by permitting the best allocation of resources. Most studies including Enisan and Olifasayo (2009) have been panel studies (focusing on seven sub-Sahara African countries). Such studies may obstruct the observations of characteristics which are unique to each country's stock exchange and growth in the economy. Though a similar research has been conducted by Adaramola and Kolapo (2012), which focused in Nigeria. This research study borrows a leaf from previous studies in this research area, but with a focus in South Africa, using the Johannesburg Stock Exchange data.

1.8 Significance of the study

This research report is vital in comprehending the role capital markets play, particularly the JSE, in the advancement of the economy of South Africa. The study explores the connection between the advancement of the Johannesburg Stock Exchange and the growth of the South African economy.

Furthermore, studies on variables that boost economic growth are particularly important. This is because every developing economy, like South Africa, strives to achieve increasing growth

to alleviate poverty, improve standard of living of citizens and increase revenue for the government. The conclusions of this research will provide evidence to assist policy makers in designing reforms and establishing policies that are geared towards the expansion of the financial sector. The study will also contribute to the growing information around the significance of capital markets in developing economies.

1.9 Objective of the study

This research is designed to explore the connection between the stock market development and the economic growth in South Africa.

Therefore, this research aims to establish whether:

i. The presence of the casual association between the development of the stock market contributes and growth in the South African economy.

ii. The uni-directional or bi-directional or no direction of the casual association exist between the stock market development and economic growth in the economy.

1.10 Hypothesis

Considering the outlined objectives, this study attempts to formulate empirical evidence on the significant role the development of the stock market has on the growth of the South African economy.

The objectives are tested using the following two hypotheses:

H_{01}: A causal relationship between the development of the stock market and growth in the economy does not exist.

H_{02}: The direction of the casual relationship does not exist between the development of the stock market and growth in the economy.

1.11 Limitations of the study

This research report is constrained to a single country, South Africa, to ensure that the findings are reflective of characteristics which are unique to the country's financial market and growth.

There are several capital markets in South Africa such as A2X Markets, 4 Africa Exchange and ZAR X, which also serve as exchanges. This study only focuses on the Johannesburg Stock Exchange, which is the greatest equity market in Africa. The sample period for the study is

from 2000 to 2019, with the aim of using the most recent data to assess the connection between stock development and economic growth.

1.12 Outline of the study

Chapter 1 introduced the topic and provided the motivation for conducting this research. Chapter 2 reviews and compares previous literature and past empirical evidence that has been compiled on the connection between the development of the equities market and advancement in the economy. Chapter 3 outlines the data collection relevant for this research report and the econometric methodology adopted to carry out the research. Chapter 4 presents the empirical evidence of the investigation and examination of the outcomes to address the purpose of the research which is to observe the existence and direction of the association. The final chapter summarises the research paper by discussing the findings and conclusions drawn from the empirical investigation performed.

Chapter 2

Literature Review

2.1 Introduction

This report explores the presence and direction of the stock market expansion and the growth in the economy of South Africa. This relationship has sparked continuous debate amongst academics, economic scientists, and policy makers. It is for this reason that this topic has been extensively investigated through empirical studies with varying conclusions across the various research studies.

This chapter evaluates and compares previous studies and conclusions reached on the association between the expansion of the equity market and advancement of the economy. Additionally, an evaluation of the financial system in South Africa and the Johannesburg Stock Exchange are presented. A graphical presentation of the variables used to quantify the equity market is illustrated to demonstrate the trends of the variables over the years between 2000 and 2019. A discussion of the South African economy is also provided within this chapter, which also includes the different sectors that are instrumental in fostering economic growth.

2.2 Theoretical Review

2.2.1 Finance - Growth Nexus

The finance-growth nexus continues to be the centre of debate amongst academics, economists, and policy makers. Levine's statement that "economists hold startlingly different opinions regarding the importance of the financial system for economic growth" (1997: 688) remains relevant today. Some researchers have argued that financial development have an adverse impact or neutral impact to economic growth (Akinlo, 2004; Gaffeo & Garalova, 2014) and some authors have claimed that other factors, such as human capital, is important to enhance economic growth. A substantial portion of the research that has explored the finance-growth nexus have emphasized the significant role that is played by a well-established financial system in the enhancement of economic growth. Ojah and Kodongo (2014) state that the supply leading hypothesis has been well received by reputable and respectable development units, namely, the International Monetary Fund and the World Bank. Therefore, strategies, policies and objectives have been established that led to the development, liberation and restructuring of the financial sector in developing and emerging economies.

The focal point of the finance growth nexus is not one that questions the presence of the connection between the expansion of the financial sector and the growth in the GDP, but one that questions the nature of the direction. Therefore, the finance growth nexus answers the question of whether financial development enhances growth in the economy or vice versa or if there is an equal feedback between development of the financial sector and growth in the economy or if the association is neutral.

Blum et al highlights the 5 schools of thoughts that were previously explored to describe the connection between the financial system and increase in GDP.

i. Supply leading hypothesis

The first body of knowledge claims that the improvement of the financial sector influences economic growth. Simply put, an under-developed financial market will be a deterrent to achieving economic growth and a sophisticated financial market will be a catalyst to achieving high economic growth rates, if all other factors remain constant. Therefore, financial markets create and supply capital which can be used by market participants into productive activities that will promote economic growth. Advocates of the supply-leading hypothesis state that sophisticated equity exchanges have the potential to mobilize savings, which can be used as a substance for investment and economic development as observed by Greenwood and Smith (1997). Levine and Zervos (1996)

further strengthened this argument by exploring the topic through applying cross-country regressions. It was concluded in the research that the magnitude, liquidity, and incorporation of the stock market with international capital markets may influence growth in the economy. The authors, Levine and Zervos noted that there is a greater boosting impact on economic growth when there is existence of more liquid and integrated markets.

ii. Demand-leading hypothesis

Several authors such as Odhiambo, 2007, 2010 and Puente-Ajovin and Sanso-Navarro, 2015 advocated for the second school of thought. This school of thought is the demand-leading hypothesis that claims that advancement in the economy influences and encourages growth of the financial sector. Advocates of the demand leading school of thought maintain that a well-established financial system is influenced or exists because of economic growth. This approach suggests that high economic growth rates encourage market participants to demand more capital, i.e. financial services, which consequently results in the development of financial

markets. Ndlovu (2013), a supporter of the demand-leading hypothesis, emphasizes that financial development occurs when sophisticated capital markets act as catalysts for economic growth. In the research paper, Ndlovu found that the liberalization of trade, promotion of investments and the removal of trade barriers are more effective strategies than developing the financial system.

iii. The feedback hypothesis

The feedback school of thought states that the progress in the economy and financial sector advancement influence each other. There is a reciprocated connection between progress in the economy and financial market development. The two variables complement and reinforce one another. Authors of the feedback school of thought are Caporale et al (2004), Puente-Ajovin and Sanso-Navarro (2015), Darrat et al (2006).

iv. The neutrality hypothesis

The neutrality school of thought states that financial sector expansion and economic growth do not influence one another. The advocates of this school of thought include Pradhan, 2018; Puente-Ajovin and Sanso-Navarro, 2015; Pradhan et al., 2013b. The school of thought implies that financial market development and economic growth are not connected. The two variables are independent of each other. Advocates of the neutrality school of thought have a strong belief that economic growth is attributable to other aspects within the economy.

v. The negative effects of financial system hypothesis

Some advocates state that the expansion of the financial sector, if not regulated and monitored adequately, can result in negative effects on the growth of the economy. Asanovic (2019) noted that this phenomenon can be supported by the 2008 global financial crisis.

2.3 Empirical Review

There is an increasing build in economic research that is performed to substantiate the nature and direction of the connection between financial market development and growth in the economy. This body of research has been performed in all levels, namely at a company level, sector level, country levels. The research has been done in a manner of time series studies, panel evaluations and cross-country assessments and analysis.

2.3.1 Evidence from developed and developing markets

Greenwood and Jovanovic (1990) have observed how an effective and functioning financial industry can accelerate progress in the economy by using idle financial resources to their most efficient and productive use. This is attributable to the well -developed stock exchange which provides access to capital to be utilised for business investments. Montiel (1995) observed that the stock market provides a platform for the collection of long-term funds required for industrial investments and permits the stock market to invest in risky but lucrative long-term industrial investments.

A highly liquid stock exchange provides an opportunity for investors to obtain financial assets and businesses are granted a platform to access capital (Bencivenga, et al. (1996), Demirguc-Kunt and Levine (1996) and Levine (1991)). Levine (1991) emphasized that the investment risk can be limited in a well-developed stock market by providing opportunities necessary for portfolio diversification.

Becsi and Wang (1997) also assert that a fair and equitable allocation and conversion of idle savings into lucrative long-term investments can be achieved in a well-functioning stock market. Graff and Karmann (2006) work demonstrated that a sophisticated banking system and capital market is critical for economic growth. This is because these financial institutions function to provide capital to entrepreneurs that will be used in productive activities which will contribute to economic growth. Bitterncort (2012) concluded from the study focused in Latin America that financial development resulted in the acceleration of the economic growth. Bitterncort highlighted that an open and competitive financial sector is a prerequisite to a growing and prosperous Latin America because the financial sector channels funds to entrepreneurs, creates macro-economic stability (in the form of low inflation rates) and creates a regulators framework. Agarwal (2007) detected a positive association between the development of stock market and growth in the economy of African countries.

Research in this domain that has been performed in the African context has produced contradictory outcomes. Ghali (1999) observed that high transactional and information costs and the absence of competition in the financial segment provides sufficient evidence of the lack of positive impact that financial systems can have on improving developing economies. Esso (2010) studied the finance growth nexus in 6 countries based in Africa (Cote d'Ivoire, Cape Verde, Burkina Faso, Liberia, Ghana and Sierra Lione). From the empirical study, it was concluded that economic growth led to financial development in Burkina Faso, Sierra Lione

and Cote d'Ivoire, financial development boosts economic growth in Mali and Ghana and finally, financial development and economic growth influence each other (bidirectional connection) in Liberia and Cape Verde.

Using market size as a proxy for the expansion in the equity market, Enisan and Olufisayo (2009) observed that there is a lack of evidence proving a demand leading hypothesis in Nigeria. A study by Ndako (2010) proved that in Nigeria, financial development results in economic growth when a banking institution providing funds to the private sector is considered as a representative for financial development. Ndako (2010) also found that a bidirectional relationship exists when borrowed funds are advanced to the government and bank deposit liabilities are utilised to denote the expansion of the financial sector.

Hasan (2018) performed a study covering the annual periods beginning 1981 to 2017 to research the relationship between stock market development and economic growth in Bangladesh. Through the adoption of the ARDL Test, it was found that the stock market capitalisation has an important and long-term influence on real economic growth. In the study, it was determined that in the long term, the causality runs from the development of the stock market to the real economic growth. In the short term, there is a lack of causality between real economic growth and development of the stock market development.

Mingwe and Yingchao (2018) researched the topic by focusing on the quarterly data in China. From the empirical research performed using the ARDL Test and the Toda-Yamamoto Causality Test, it was concluded that there is a reciprocal connection between the economic growth and stock market exchange in the long term.

2.3.2 Evidence from South Africa

In South Africa, Odhiambho (2004) found that a demand following hypothesis exists in the country. Odhiambho (2009) re-explored the research and reconfirmed that financial development results in economic growth. Nyasha and Odhiambo (2015) explored the relationship between the banking system and the stock market development to economic growth. A time series data concentrating on the years from 1980 to 2012 was employed. From the econometric methodologies that were applied in this study, it revealed that there is a supply driven connection between the development of banking institutions and stock exchanges to growth in the economy.

Ndako (2008) explored the relationship between financial development and economic growth in South Africa by applying a quarterly data from 1983 to 2007. The focus of the study was on the effect that the banck and stock markets have on the growth of the economy. It was found that there exists a feedback causality connection between the granting of bank credit to the private sector and the growth in the economy. For the stock market, a one directional causality that runs from economic growth to stock market was found if the stock turnover ratio and the value of shares traded are used as proxies for stock market development. In the study, it was found that in the short run, financial development proxies such as advancement of credit to the private sector, turnover ratio, and the value of shares traded can be used to estimate the growth of the economy.

Tinavapi (2017) examined the existence of a causal association between stock market development (JSE) and the economic growth in South Africa by adopting the Autoregressive Distributed Lag (ARDL) method. The research employed a time series analysis and covered the time frame between 1975 and 2013. The ARDL method was applied because of the presence of the structural disruption in the time series. The research focused on the before and after– apartheid era in the country. The results deduced from this study confirmed the positive correlation between the equities market development and the South African economic growth.

Khetshi and Mongale (2015) discovered is a direct link between the growth in the economy and stock markets in South Africa after the investigation of data from 1971 – 2013 in their study. They noted that factors that influence the development of capital markets should be a major focus as they influence economic growth in a positive manner.

Ho (2018) performed the research from annual date beginning from 1975 to 2015 in South Africa and discovered that the development of the banking sector development and economic growth has a positive impact on the development of the stock market. In the contrary, the rate of inflation and real interest had a negative impact on the development of the stock market. Furthermore, deficit of foreign trade influenced the development of the stock market in a negative manner.

2.4 Conclusion

Chapter 2 presented an overview of literature from historical authors on the finance growth nexus. From the above, it can be noted that the observations from different authors are not uniform, therefore, the nature of the link between development of the financial sector and growth in the economy will continue to be a debate. It is also observed that it is critical to

perform the analysis per country across a consistent time series data to ascertain that the outcomes replicate the inherent features of a country. Given that the financial services segment's input to gross domestic product of South Africa has grown exponentially, it is vital to carry out research on whether financial development (particularly, the Johannesburg Stock Exchange) can influence and be utilised to forecast the economic growth of South Africa so as to provide policy makers an indication of the reforms that need to be implemented to accelerate economic growth.

Chapter 3

Methodology

3.1 Introduction

Chapter 3 provides the empirical model that is utilized in this study and the econometric techniques applied in estimating the model. Furthermore, this section provides detail on the data collection methods used for purposes of this investigation.

3.2 Research Design

This research study is quantitative in nature, concentrating on the association between the advancement of the equity market (JSE) and advancement in the economy in South Africa. Following the standard practice of adopting a time series to investigate the association between stock market development and economic growth (Olweny and Kimani, 2011), this research study adopts a time series analysis method utilising the period from 2000 to 2019.

3.3 Population and Sampling

For purposes of the research, the population encompasses a yearly time series data, which focuses on the years from 2000 to 2019. The period has been selected as this study aims to utilise the recent 20 years of data to satisfy the purpose of the study.

This research concentrates on the South African stock market and economic growth. This population is chosen because there is minimal research that has explored the correlation between the financial development and the economic growth, as well as the link between the two variables in the South African context. Johannesburg Stock Exchange is preferred to other smaller exchanges in the country because of how advanced it has become and the number years the institution has existed. Furthermore, the JSE is one of the leading participants in Africa and in the South African economy.

3.4 Data collection and sources

For this research, information was accumulated mainly from World Development Indicators (WDI) of the World Bank and the JSE. While the macroeconomic variables were collected from the WDI, the financial development data were collected from the JSE.

3.5 Measurement of variables

The researcher utilises 3 indicators of the stock markets as a representative for the development of the stock market. These are stock market capitalization (MC), aggregated number of stocks traded ratio (SVT) and turnover of stock traded ratio (ST).

3.5.1 Stock market capitalization (MC)

Stock market capitalization (MC) is measured as the aggregated value of listed shares (stock price multiplied by the total number of outstanding shares) divided by the GDP. Stock market capitalization is a metric used for the magnitude of the equities market relative to the magnitude of the economy.

Stock market capitalization of at least fifty percent of GDP provides evidence of a well-established stock market. It is also imperative to consider that a high stock market capitalization does not necessarily indicate that the stock market is operational. One example is when there are a few large companies within the stock market and the shares of those companies are seldomly traded. (theglobaleconomy, 2019).

3.5.2 Aggregated number of stocks traded ratio (SVT)

The formula for aggregated number of stocks traded ratio is represented as the collective number of stocks traded on the stock market divided by GDP. The number of stocks traded calculates the level of trading activities of company stocks as a percentage of GDP, therefore, it reflects the liquidity of the stock market from an economy perspective. The ratio compliments the market capitalisation ratio. The magnitude of a market may be great, however, there may be limited trading activities taking place on the market.

3.5.3 Turnover of stock traded ratio (ST)

The turnover of stock traded ratio is defined as the number of entire shares traded divided by the market capitalisation. The ratio is not theoretically considered a direct metric of liquidity, because a large turnover usually signifies little transaction costs. The stock turnover ratio complements the market capitalisation ratio and the aggregated number of stocks traded ratio. A big but in-active market will be represented by a large market capitalization ratio but a low turnover ratio. Moreover, stock turnover calculates the extent of trading with reference to the magnitude of the stock market, unlike the aggregated number of stocks traded that calculates the extent of trading with reference to the magnitude of the economy. (El-Wassal, 2005)

3.5.4 Macroeconomic variable

For this study, the GDP growth is selected as the favoured macro-economic metric because it is commonly applied by academics, economic experts, and policy formulators to measure the state of the economy. (Imf, 2020)

3.6 Data analysis

This research report is based on the null hypothesis that there is a lack of a significant connection between the development of the stock market and the economic growth in South Africa. This hypothesis is written as follows:

H_0 : Economic Growth Rate ≠ Stock Market Development

Therefore, the equation for this study is:

Therefpre, the model for this research report is depicted as:

$$GDP = f(MC, SVT, ST) \quad (1)$$

A comprehensive form of equation (1) is reflected as follows:

$$GDPt = \beta 0 + \beta 1\ MCt + \beta 2SVT\ t + \beta 3ST\ t + \varepsilon t \quad (2)$$

The equation is made linear by including the logarithms of the inputs in the model to allow for the approximation of the parameters of the model. The linear depiction of the calculation articulated as logarithms is as follows:

$$LGDPt = \beta 0 + \beta 1\ LMCt + \beta 2LSVT\ t + \beta 3LST\ t + \varepsilon t \quad (3)$$

Whereby:

L – Logarithm

GDP – growth rate in real GDP

MC – Stock Market Capitalisation

SVT – Aggregated number of stocks traded ratio

ST – Turnover of stock traded ratio

ε – Error term (white noise)

Some of the tests conducted to establish a causal association between the development of the stock market development and the growth of the South African economy include descriptive statistics, the unit root test for stationarity; test for cointegration and testing for causality.

3.6.1 Unit Root – Test for stationarity

The fundamental starting point in an econometric model is a stationarity examination to assess the order of integration. The hypothesis of a time series data is to assume that the data is non-stationary. Therefore, it is highly imperative for a pre-test to be carried out, to ascertain that a stationary co-integrating relationship exist. The pre-test is conducted to avoid the issue of detecting that two inputs are connected but not causally related, because of the existence of a third and unseen factor (white noise). This phenomenon is known as a spurious regression. Patterson (2001) noted that spurious regression occurs where the outcomes of the test falsely indicate that a substantial connection between the inputs within the regression model exists. Therefore, an analysis is employed to resolve the problem of lack of stationarity and eliminates the challenge of spurious regression. Dickey and Fuller (1981) established the Augmented Dickey- Fuller (ADF) model, which is carried out in this research to evaluate the stationarity of the variables of interest. The ADF varies from the original DF test because ADF adopts a parametric auto regression. The ADF test utilised a model depicted as follows:

$$\Delta Yrt = a0 + \beta Yrt_{-1} + \mu 1 Yrt_{-1} + \mu 2 Yrt_{-2} + \cdots \mu x Yrt_{-1} + \varepsilon t \qquad (4)$$

whereby,

Yrt represents the time series in question.

$a0$ represents the constant value.

β represents the coefficient in the unit root test,

μ represents the parameter of the augmented lagged first difference of Yrt to denote the xth-order autoregressive process.

εt represents the white noise error term.

For the completion of the test of the unit root, the following hypothesis is examined:

H0: α=0 denoting non-stationarity

H1: α≠0 denoting stationarity

This interprets that if the null hypothesis is not rejected, this indicates non -stationary in the time series. If the null hypothesis is rejected, this signifies that there is stationarity in the time series.

3.6.2 Test for Cointegration

After the unit root test for the data series and results have been confirmed, it needs to be determined whether there is a presence of a connection between the different variables in question. Granger (1969) asserted that a cointegration test can be applied as a prior test to steer clear of spurious regression circumstances. To perform the cointegration test, Johansen cointegration test is deployed adopted in this study.

The Johansen cointegration test utilises the maximum likelihood estimation, it is built on the VAR model. The choice of the lag is critical, due to the sensitivity in the choice of lag and optimal lag length of the co-integration tests. To establish the number of lags to be applied in the cointegration test, the Akaike information criteria (AIC) as well as the Schwartz information criteria (SIC) is utilised. By applying individual significance, a lag length of k = 1 is recommended.

3.6.3 Testing of the Causality

Granger (1969) observed that variables can be used to forecast each other if there is presence of a causal connection between them. For determining whether a one directional or feedback directional relation is prevalent between the growth in the economy and advancement of the equity market, a causality test is conducted using the granger-causality statistics. The granger procedure is more preferred to use because it comprises of more effective and easier method of testing the association. Additionally, the granger-causality test is adopted to detect the existence of predictability of the fluctuation of one variable due to the movement of another. To perform the Granger causality test, the model is estimated as follows:

$$rGDP_t = \beta 0 + \sum \beta p \, rGDP_{t-p} + \sum \delta s MC_{t-1} + xt \quad (5)$$

$$p = 1 \qquad s = 1$$

$$MC_t = \alpha 0 + \sum \gamma p \, MC_{t-p} + \sum \omega s MGDP_{t-1} + zt \quad (6)$$

$$p = 1 \qquad s = 1$$

whereby:

rGDPt = represents the real GDP growth rate.

MCt = represents stock market capitalisation*.

xt and zt = represents mutually uncorrelated error terms.

'p' and 's' = the number of lags.

*Replaced with the other proxies of stock market performance that are investigated (turnover of stock traded ratio; aggregated value of stock traded ratio)

The null hypothesis is δs = 0 for all s's and γp = 0 for all p's versus the other hypothesis that δs ≠ 0 and $\gamma p \neq 0$ for some of the s's as well as p's. When the results reveal the coefficients δs's are statistically significant, but γp's are not statistically significant, this denotes that the advancement of the equities market granger results in advancement in the economy. In the opposite case, growth in economy granger causes the development of the equities market. When the results reveal that both δs and γp are significant, this denotes that there is a bilateral causality.

3.7 Validity and reliability

To guarantee validity and reliability of the findings of this research, data collected is effectively captured and edited to avoid errors. The data is crosschecked to ensure correctness. With such effective data handling, the results of the study are relatively reliable to make an informed decision with. Also, the preliminary analysis conducted and corrected for (stationarity and cointegration tests) grant a level of reliability of the research results.

3.8 Ethical Considerations

This study is based on quantitative design and did not involve contact with humans and animals during data collection process. Therefore, ethical requirements on human and animal contacts is not required. However, the ethical requirement of Wits University regarding quantitative data analysis is strictly complied with.

3.9 Conclusion

Chapter 3 provides details of the data gathering methods and the statistical procedures adopted in this research report. The hypothesis, data analysis an ethical consideration was also detailed. The validity and reliability process carried out to ensure reliable result were also provided. The

next chapter provides findings from the empirical analysis, leads to the conclusion of the research, and guide the policy recommendations.

Chapter 4

Analysis of the results

4.1 Introduction

Chapter 4 begins by providing the data set deployed for the empirical investigation. The outcomes of the econometric models utilised, such as descriptive statistics, the unit root test for stationarity, test for cointegration and test for causality used to deduce results of this research study.

4.2 Data Set

The data set applied in this research paper comprises of South African yearly data focusing on the period from 2000 to 2019.

Table 1. Stock Market Development and Economic Growth Indicators for South Africa from 2000 to 2019

Year	Rate of growth in GDP (%)	Turnover of stocks traded ratio (% of market capitalisation)	Market capitalization of listed domestic companies (% of GDP)	Aggregate number of stocks traded ratio (% of GDP)
2000	4.2	34.5	149.8	51.7
2001	2.7	24.0	121.4	29.1
2002	3.7	26.2	157.6	41.3
2003	2.9	18.8	148.8	28.0
2004	4.6	18.9	193.6	36.6
2005	5.3	20.3	213.1	43.2
2006	5.6	24.4	261.8	64.0
2007	5.4	31.1	276.6	86.1
2008	3.2	42.0	168.3	70.7
2009	-1.5	27.2	270.0	73.5
2010	3.0	30.0	246.4	73.9
2011	3.3	28.6	189.5	54.2
2012	2.2	25.0	229.0	57.2
2013	2.5	24.6	257.0	63.3
2014	1.8	26.3	266.1	70.0
2015	1.2	31.8	231.7	73.7
2016	0.4	38.4	321.0	135.8
2017	1.4	25.7	352.2	117.2
2018	0.8	34.1	235.0	80.1
2019	0.2	33.1	300.6	81.0

Source: data sourced fromworldbank.com

4.3 Descriptive Statistics

Table 2. Descriptive Statistics

Variable	Mean	Standard Deviation	Skewness	Kurtosis
Rate of growth in GDP	2.65	1.89	(0.25)	2.52
Turnover of stocks traded ratio (% of market capitalisation)	28.25	6.18	0.43	2.68
Market capitalization of listed domestic companies (% of GDP)	229.48	61.74	0.06	2.28
Aggregate number of stocks traded ratio (% of GDP)	66.53	26.92	0.85	3.76

Source: Author's computation

Table 2 provides the descriptive statistics of the variables of interest, displaying the average value, standard deviation, kurtosis and skewness of the distribution on the data sets.

Mean: The mean is the average and is a metric used to indicate central tendency.

Standard Deviation: Standard deviation is a metric used to detect the dispersion of the data. The metric indicates how the data in a sequence is located from the average number. A standard deviation that is considered as low signifies that the data point lies closer to the average. A standard deviation that is described as high signifies that the data points are more dispersed out from the average.

The dispersion about the mean for the rate of growth in GDP and stocks traded turnover ratio tends to be low. For other stock market development proxies, market capitalization and aggregate number of stocks traded, the dispersion of the data, is greater than all the other variables. This indicates that the data diverges excessively from the expected values.

Skewness: Skewness is a metric that denotes of the level of unevenness of the dispersal of the series. The metric provides an indication of the degree to which the dispersal is not symmetric about its average value. A skewness of 0 indicates normality, meaning that the distribution is symmetrical around its average value. A positive skewness means that the average value is greater than the median. A negative skewness means that the average value is less than the median. On observation of the results above, stock market capitalisation, turnover of stock

traded ratio and aggregated number of stocks traded is almost symmetrical with a low skewness to the right. The rate of growth in GDP is also almost symmetrical with a low skewness to the left.

Kurtosis: Kurtosis calculates how high or horizontal the dispersal of the data in in the series is. A positive outcome indicates a peaked curve and represent higher values in the data set. A negative outcome indicates a flat curve and represent lower values in the data set. Looking at the data, we can observe that all variables, rate of growth in GDP, turnover of stock traded ratio, stock market capitalisation and aggregated number of stocks traded have a peaked curve and contains higher value in the data set.

Through observation of the results obtained from the descriptive data, the series cannot be described as one that is normally distributed. Therefore, an assumption-based estimation method, such as ordinary least squares (OLS), cannot be adopted for purposes of this study. VAR model is thus considered more appropriate for the information at disposal. For estimation of the model, unit root tests are employed, and outcomes are reflected as follows.

4.4 Unit Root Tests

As the study employs a time series data, before making utilization of the regression, it is imperative to first inspect the stationarity or non-stationarity of the time series. A unit root test is utilised to detect stationarity in the time series to steer clear of spurious results. The results of the stationarity test are depicted in table 3

Table 3: Augmented Dickey- Fuller Unit Root Assessment Outcomes

Variable	At level	At first difference
Rate of growth in GDP	0.1339	0.0047
Turnover of stocks traded ratio (% of market capitalisation)	0.0492	0.001
Market capitalization of listed domestic companies (% of GDP)	0.0202	0.001
Aggregate number of stocks traded ratio (% of GDP)	0.0325	0.0144

Source: Computation (2021) by means of E-views 11.0

The outcomes of the detection of the unit root in table 3 reveal that the null hypothesis for turnover of stocks traded ratio, market capitalisation and aggregate number of stocks traded

ratio can be rejected because their respective probabilities at level are lower than 5%. This indicates that the data for the variables is stationary. For the rate of growth in GDP, the unit root test null hypothesis cannot be rejected because it has a probability greater than 5% at level. Therefore, the data set is non-stationary.

To attain efficiency and a precision of the level of accuracy, further testing of the variables is performed to reflect unit roots at first difference. The outcomes of the unit root at first difference reveal that the variables are stationary and this is accepted as integrated of order one I(1), the information will therefore be used in that format.

4.5 Johansen-Juselius Co-integration Test

From the previous section, it is recognized that the variables being investigated are integrated of order 1 (1). We therefore proceed to employ a cointegration test by applying the Johansen (1990) and the Johnsen and Juselius (1992) cointegration framework.

The Johansen cointegration uses two types of statistics. 1. Trace and 2. Max Eigenvalue statistics. The hypothesis of Johansen test is: H0: Cointegration does not exist. If the trace value exceeds its critical value, it means reject H0, which will indicate that there is cointegration. If the Max Eigenvalue does not exceed its critical value, it means we do not reject H0, which will indicate that there is a lack of cointegration.

The outcomes of the Johansen-Juselius cointegration assessment are tabulated in table 4.

Table 4: Johansen Cointegration Assessment Outcome

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.920069	79.73851	54.07904	0.0001
At most 1	0.612654	34.25979	35.19275	0.0628
At most 2	0.501226	17.18794	20.26184	0.1256
At most 3	0.228397	4.667121	9.164546	0.3219

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.920069	45.47871	28.58808	0.0002
At most 1	0.612654	17.07185	22.29962	0.2288
At most 2	0.501226	12.52082	15.89210	0.1577
At most 3	0.228397	4.667121	9.164546	0.3219

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: Computation (2021) by means of E-views 11.0

An analysis of the co-integration assessment outcomes in table 4 depicts that the trace and maximum Eigenvalue statistics specify one cointegrating equation at a 5% significance level. At none, the trace statistic is larger than the critical value, therefore, we do not accept the null hypothesis. This indicates there is one cointegration equation. This is attributable to having the trace statistic and maximum-Eigenvalue statistics at this level being greater than the 5% critical value respectively. However, the null hypothesis cannot be abandoned for the other levels because the trace statistic and maximum Eigenvalue statistic are lower than their respective critical values.

To obtain robust results, the variables are tested individually for cointegration. Therefore, the study tests the three stock market development proxies (MCAP, SVT, ST) against the economic growth proxy (rate in Growth in GDP).

The outcomes are as depicted as follows:

Table 5: Johansen Cointegration Test Result

Model	Hypothesized No. of CE (s)	Trace Statistic	Critical Value	Probability	Maximum Eigen Statistic	Critical Value	Probability
Model A | GDP =f(GDP,MCAP)	None	14.013	15.495	0.0826	11.224	19.387	0.0826
	At most 1	2.789	3.841	0.0949	2.789	3.841	0.0949
Model A | GDP =f(GDP,ST)	None	22.569	25.872	0.1221	14.542	19.387	0.2198
	At most 1	8.027	12.518	0.2494	8.027	12.518	0.2494
Model A | GDP =f(GDP, SVT)	None	16.743	15.494	0.0323	13.162	14.265	0.0741
	At most 1	3.581	3.841	0.0584	3.581	3.841	0.0584

Source: Computation (2021) by means of E-views 11.0

From table 5, it can be deduced that a cointegrating connection between the GDP growth rate and the number of stocks traded is present. This is represented by the trace statistic of 16.743 which is larger compared to the critical value of 15.494.

4.6 Granger Causality Test

The Granger causality test is conducted to observe the direction of causality between the GDP and independent inputs (stock market capitalization, turnover of stock traded ratio and aggregate number of stocks traded). The methodology of the granger causality has a hypothesis which states the following:

Ho: X does not granger cause Y.

If the probability value is higher than 0.05, the hypothesis is accepted. This denotes that there is no causality in the two variables.

If the probability value is lower than 0.05, the hypothesis is rejected. This denotes that causality exists in the two variables.

The outcomes from the Granger Causality Test are depicted as follows:

Table 6: Granger Causality Test Results

Null Hypothesis:	Obs	F-Statistic	Prob.
MCAP does not Granger Cause RGDP	19	0.02033	0.8884
RGDP does not Granger Cause MCAP		1.71199	0.2092
ST does not Granger Cause RGDP	19	20.4295	0.0003
RGDP does not Granger Cause ST		0.09832	0.7579
SVT does not Granger Cause RGDP	19	2.75407	0.1165
RGDP does not Granger Cause SVT		0.49398	0.4923

Source: Computation (2021) by means of E-views 11.0

From table 6, it is observed that MCAP does not result in an expansion of the economy. Furthermore, the expansion in the economy does not Granger cause the stock market capitalization. Given that the probabilities of the two variables are greater than 0.05, the hypothesis is not rejected. Therefore, there is no causality between the two variables.

The second observation from table 6 is that the stock turnover does not result in the growth in the economy. The growth in the economy does not result in an increase in stock turnover. Given that the probability is less than 0.05 for "ST does not Granger cause RGDP", there is unidirectional causality that runs from stock turnover to rate of growth of GDP.

The final observation from table 6 is that the number of stocks traded does not Granger cause the expansion in the economy. Furthermore, the expansion in the economy does not result in a rise in the number of stocks traded. Given that the probabilities of the two variables exceed 0.05, the hypothesis is accepted. Therefore, there is no causality between the two variables.

As a result of the observations above, it is noted that liquidity of the stock market has a substantial and positive impact on the growth in the economy, but the same is not noted for the size of the stock market. This is because the size of the stock market does not mean that the stock market is active. A stock market can be large and be inactive, which does not result in

economic growth. As described by Ogunmuyiwa (2010), investor sentiments are represented by liquidity in the stock market which drive activities in a stock market and results in an increase in the Gross Domestic Product

4.7 Conclusion

The focal point of this thesis is to provide insight on the argument related to the presence or non-presence of a substantial, constructive, and beneficial connection between the expansion of the equity market development and progress in the economy of South Africa. This was performed by applying the following null hypothesis:

H_{01}: A causal relationship between the development of the stock market and growth in the economy does not exist.

H_{02}: The direction of the casual relationship does not exist between the development of the stock market and growth in the economy.

To accomplish the goal of this research, the Johansen-Juselius Co-integration Test and the Granger Causality Test were carried out. The outcomes from the analysis confirm that a cointegrating connection is present between the number of stocks traded and the growth rate in the GDP. A cointegrating connection between the rate of growth in the GDP and the other two variables, namely, stock market capitalisation and the stock turnover does not exist.

The results also confirmed that there is no causality between GDP and market capitalisation and between GDP and the number of stocks traded. However, a one directional causality exists that begins from stock turnover to the rate of growth of GDP.

Chapter 5

Conclusion, Policy Recommendations and Recommendation for Future Research

5.1 Introduction

This chapter presents a summary of the outcomes of this thesis. From the research findings, this section also provides some policy recommendations for the investors, economist, government, and some other regulators of the stock exchange. Recommendations for future research is also provided as there are some limitations and boundaries experienced in this research study.

5.2 Conclusion

In this study, the empirical association between the expansion of the equity market and advancement in the economy is investigated. Three representatives of stock market expansion; turnover of stocks traded ratio, market capitalisation and aggregate number of stocks traded ratio are employed in the analysis. This paper concentrates on the development of the JSE and not the other stock exchanges (A2X Markets, 4 Africa Exchange and ZAR X) that exist in South Africa. This research study discovered a unidirectional connection from stock turnover to rate of growth of GDP. It was also established that the proxies for stock market development have no effect economic growth except for the number of stocks traded.

5.3 Policy Recommendations

From the conclusions of this research, the following recommendations are made, which is believed will be viable to the policy makers, economists, and some investors in the Johannesburg Stock exchange:

- Policy makers, economists, the government, and those charged with governance at the Johannesburg Stock exchange should consider establishing strategies that would promote information of the JSE as an investment mechanism.
- Equity trading platforms must be enhanced because this positively impacts the operations of equity markets. This provides and efficient and effective platform for investors as it allows equities to be traded regularly and as well accelerates the buying and selling process. This will consequently have a boosting effect on the stock market liquidity which will improve the rate of growth in the GDP of the country.

- The tax authorities, South African Revenue Services (SARS), should provide incentives such as tax deductions for companies that have intentions to be listed in the stock exchange. The current tax legislation does not allow for deductions for listing costs (legal, underwriting and consulting fees) as the fees are considered capital in nature. These costs should also be revisited by the regulators to promote entry into the stock exchange.

5.3 Recommendation for future research

The research that has been carried has highlighted several topics on which further research would be valuable. The research into the connection between the expansion of the financial system and the economic growth of South Africa would include the additional capital markets that are excluded from the research report. The other stock exchanges include A2X Markets, 4 Africa Exchange, and ZAR X. The topic can be explored further by extending the years of study beyond 2019 to demonstrate the significant contribution by the financial systems in boosting the economic growth during the years plagued by the Covid-19 pandemic. The expansion of other financial systems, such as banking institutions, can also be incorporated in the study.

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