

# **The Effect of financial sector development on International trade in South Africa**

By

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## ABSTRACT

Even though improving international trade through financial sector development is one of the preoccupations of countries around the world, the empirical literature on the relationship between finance and trade has not been rigorous in its analysis. The main aim of this study is to explore the effects financial sector development has on international trade in South Africa. The study utilized quarterly data from 2001Q1 to 2018Q4 employing the Johnson cointegration method and Granger causality to analyse the relationship between the variables of interests. Cointegration, the Vector Error Correction Model was also used to capture dynamics of both the short run and the long run effect. The findings show that there is a long-term relationship between the two variables of interest and the causality flows from Financial Development to the international trade. System generalized method of moment's reveals differential effects of finance on trade. In particular, some variables has a negative impact on trade, whereas others increases trade. These effects are robust to macroeconomic measures as well as to trade measures.



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# CHAPTER 1

## INTRODUCTION AND BACKGROUND TO THE STUDY

### 1.1 Introduction

International trade is defined as an interchange of goods and services across countries (World Trade Organisation (WTO) 2009:2010). This is the type of trade that changes with the world fluctuations that occur, which means that prices of supply and demand are affected by what happens around the globe. Molouchie (2009) stated that international trade leads to development of the economy as goods can be imported into the country if it is expensive to produce domestically. This has the potential of reducing costs of producing consumer goods. This may also result in an influx of external investors. Moreover, an increase in international affairs will be stirred and will allow a country to acquire resources that it could not acquire from its own land, which in turn creates opportunity that allows surplus produced in SA to be exported and be profitable not wasted.

Vaubourg (2016), stated that from a global perspective, identified that the percentage at which nations are open to trade has increased from 16% to 73% from 1960-2010. South African trade is moving away from an exceptional ensured internal economy to a universal intensive economy, gaining its hostile and comparative advantages (SARB, 2010). Due to the apartheid regime, South Africa was under sanctions, which has serious implications for the development of trade. Constrained to exchange international by the political sanctions placed on them as a penalty of their involvement is such act. At the end of apartheid in the early 1990s, international trade has increased drastically such that in the 2000 international trade comprised 16 percent of the GDP (SARB, 2010).

The South African economy is heavily dependent on exports of essential and intermediate products to industrialized nations (SARB, 2010). However, merchandise represent roughly 70 percent of export to Africa (A.W Yakubu, A, Q.Q Aboagye, L Mensah & G.A Bokpin, 2018). Net gold exports are responsible for the large part of foreign exchange earnings in the country (SARB, 2010). Income from this source, in any case, fluctuates with the changes to the international gold price. Imports for the most part comprise of capital products, crude materials, semi-fabricated merchandise (roughly 76 percent of aggregate trade imports) and consumer commodities (SARB, 2010).

International trade can be viewed as the differences between factor endowments of countries, technology and scale of economies; which is initiated by the comparative advantage, as stated in the international theories. Financial development has recently emerged to be one of the cause of comparative advantage, which means that traditional factors are not the only factors (Lancheras &

Daminel 2012, Vaubourg 2016, Were 2015, Garter and Grintzilis 2017, Kim, Lin and Suen 2010 & 2012, Kletzer and Badhan 1987; Manova 2013; Baldwin 1989). A number of studies observed that a country with a well-developed financial sector has a comparative advantage, with its firms mainly dependent on external finance (Beck 2002, 2003; Manova, 2008; Hur, 2006; Svaleryd and Vlachos, 2005). These studies suggest that a country with a well-developed financial sector will experience higher volume of international trade. Manova, (2008) postulates that South Africa has a well-developed financial sector which consists of a broad variety of financial institutions and instruments, consisting of a well-developed banking sector and stock market. The stock market is also well developed and efficient and offer extra support in disagreement that South Africa be restricted to a significant level of financial development. Furthermore, development in the number of banks listed in South Africa combined with the progress in South African financial development indicators and the growth of its stock market, provide a sign that South Africa has revelled in significant financial deepening particularly since the 1980s.

Monova (2013) stated that financial development enhances the availability of information about investment and allocating funds; monitoring companies and applying corporate laws; trading; diversification and controlling risks; organizing savings and aiding the exchange of goods and services. As a result, financial functions have an impact on investment choices and on international trade activities. This suggest that financial activities have an effect on trade patterns therefore.

Shahbaz and Rahman (2014) also suggests that there are different channels through which financial development can affect international trade. This manifests through export expansion. A well-developed and functioning financial sector has a positive impact on exports. It has been theoretically proven that factor endowments and financial development help in overcoming liquidity shortages by improving exports of goods and services that depends on external finance and advancing the structure of trade production (Hur and Riyanto 2006; Shahbaz, 2009). Financial development enhances firms to overcome moral hazards and adverse selection to promote export growth through external finance.

Moreover, a well-developed financial sector has a comparative advantage and there are different ways in which financial development may result in a comparative advantage. When firms depend on the liquidity requirements, this occurs when local institution is inefficient and not strong that leads export-oriented sectors to be discouraged by the liquidity constraints that restraint firms to enter the markets, (Zingales, 1989; Channey 2005). Also, if firms face less restrictive constraint such as financial sector reforms, then investment can improve more in reaction to a dropping of variable export costs and all firms with efficiency over a specific level progressed toward becoming exporters (Melitz, 2003). In this

way, the fundamental forecast of hypothetical papers proposes that money related progression ought to advance creation and worldwide exchange.

## 1.2 Problem Statement

As reported by the World Trade Organization (WTO, 2010), the volume of world trade decreased by 12 % in 2009. In Europe and North America, the decline in merchandise exports exceeded the global average (14.4%), while in Asia and Africa, it was below 11% percent and 5.6% respectively, (WTO, 2010). Trade flows decreased more pronouncedly for manufactured goods (especially industrial machinery, -29%, and vehicles, -32%), leading to a deep manufacturing recession and an even deeper decline in overall trade. A key factor contributing to the collapse of trade in 2009 was the financial crisis of 2007-2008, which affected financial systems globally, resulting in liquidity and solvency issues for many bank, (WTO, 2010).

The development of financial markets may be one such policy that improve international trade, according to several studies. For instance, Beck (2003) and Manova (2013) find that industries with higher dependence on external finance export more than industries with lower dependence on external finance. South Africa has a well-development financial sector which has contributed greatly towards growth of international trade, however the increase is lesser than what is expected (Hur, 2006). South Africa has run a "twin deficit" in recent years, with a budget deficit (government spending exceeds its revenue) and a trade deficit (South Africa exports are far less than their imports) (Stats SA., 2018). South Africa's export value is far less than its import value, resulting in a trade deficit. This goes against conventional economic theory and logic.

The South African cumulative trade balance to the rest of the world between January 2010 and January 2018 was -R85, 05billion, despite the strong trade surplus shown by South Africa in 2017 (Stats SA, 2018). According to (Stats SA, 2018) the goods of the value of R3.3trillion entered the borders of South Africa, which equates to about 47.2% of the value of all goods imported into South Africa since January 2010 to June 2017, while about 13% of South Africa's exports leaves South Africa. Given the importance of financial development and the significant evidence that South Africa is lagging behind (Beck et al., 2010; Allen et al., 2012), it is important to understand the factors driving financial development of the country. Previous studies have explored this problem, using traditional viewpoints on mostly heterogeneous samples from industrialized and poor countries. The few studies that focus on the continent (Allen et al. 2012) tend to dwell on the historical determinants of financial development, confirming that South Africa is lagging behind but not explaining why. There is a need to address the trade deficit that has ballooned over R150 billion since January 2010 to January 2017, basically we use R150 billion to import goods that exporting to the rest of the world (Stats SA, 2018).

### 1.3 Objectives of the Study

The main objective of the study is to examine the effect of financial sector development on international trade in South Africa. The specific objectives are:

- (I) to provide an overview of the development of the South African Financial sector trends and trends of South Africa's international trade flows.
- (ii) To econometrically examine the effect of the financial development on international trade in South Africa.
- (iii) Based on the empirical findings, to make policy recommendations on the study of financial development, international trade in South Africa.

### 1.4 Hypothesis

This analysis tries to test if:

H0: There is a no effect of financial development in relation to South African international trade.

H1: There is an effect of financial development in relation to South African international trade.

### 1.5 Justification of the study

This study relates to earlier empirical studies, such as Beck (2003) and Manova (2013), which examine the linkages between financial development and the level of international trade across countries. Particularly, these papers document that well developed financial markets prime to larger trade flows in finance-intensive industries. Recently, it had been shown that trade has not been performing well while financial development continues to increase rapidly, (SARS 2016). This study seeks to bridge the gap that is between financial development and trade as well as examining the nature of the relationship between the two variables. This investigation will be valuable in the formulation of government policies and in other financial policy architects, so as to build-up directions that control banks and other money related foundations. The investigation will also be helpful to the financial institutions in setting up powerful and productive financial measures aimed for improving financial development and economic growth and further upgrade speculations and reserve funds. Additionally, they will be in a position of relating between the cash request and beneficial capital request. Also, different analysts will be in benefit of setting up the effect of financial progression and financial deepening in South Africa and encourage their insight in financial, exchange sector changes and its effect in the financial execution of banks. Given the recent development in international trade, understanding the link between finance and international trade is worth undertaking. This study is aimed to empirically examine possible linkages between financial development and international trade in South Africa which also contributes to the limited literature of this nature of studies in evaluating the degree to which financial developments have



contributed to bilateral international trade. This will be done using Vector Error correction model where granger causality test will be used to predict whether the two variable granger each other.

### **1.6 Structure of the study**

The study will be divided into 6 section, where chapter 1 will be focusing on the introduction and background of the study, chapter 2 will look at the overview of financial development and international trade in South Africa, chapter 3 will look at the theoretical and empirical literature, chapter 4 will focus on the econometric techniques to be used in analysing the link between the variables of interest. Chapter 5 will present and interpret the findings. Chapter 6 will provide the summary and conclusion of the study.



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## CHAPTER 2

### OVERVIEW OF INTERNATIONAL TRADE AND FINANCIAL DEVELOPMENT IN SOUTH AFRICA

#### 2.0 Introduction

This chapter gives a background and general view of South African trends in financial development and international trade. The chapter will be divided into four sections. The first section will be analysing the South African Financial Development in greater detail, firstly by providing an overview the banking sector and then followed by the second section which is an overview of South African stock market. The third section will provide the general overview of International trade, highlighting factors that may affect it such as tariffs and also providing trends on exports and imports in South Africa. The last section of the chapter will be presenting the concluding remarks.

#### 2.1 Financial Development in South Africa

The financial sector includes markets, instrument, and institutions, legal and regulatory that allows transaction to be made by extending credit. Therefore, financial development occurs when financial intermediaries, instruments and markets ease effects of enforcement, information, transaction costs, and also perform a better job at providing financial sector key functions in the economy (World Bank, 2013). Agir (2010) state that a measure of financial development is vital to assess the development of financial sector. Financial development is vast and difficult to measure and has quite a few dimensions. Financial development can for instance be measured by the ratio of financial institutions' assets to GDP, rate of deposits to GDP, and ratio of liquid assets. Financial development in South Africa is divided into the banking sector and stock market. Stock market performance will be measured by stock market capitalization and the bank performance be measured by the bank credit extended to private sector.

##### 2.1.1 Banking sector overview

South Africa is considered to be one of the countries with a well- developed banking systems and with well-regulated banking system which compares favourably with those of industrialised countries (Ndako, 2010). The banking sector in South Africa has been through a process of volatility and changes in the past, and it has attracted a large number of interest from abroad with a number of foreign banking establishing presence in the country and others acquiring stakes in major banks, (SARB., 2010). (SARB., 2012) also stated that banking sector of South Africa has been achieved a ranking of third out of 148 countries in the 2013 to 2014 world Economic Forum Global Competitive Survey. There has been a number of changes regarding offering of products, regulatory environment, and the number of participants resulting in greater competition level from banks that are small, which have targeted the

low-income and previously unbanked market. The banking industry in South Africa is currently made of 17 registered banks, 14 local branches of foreign banks, 2 mutual banks, and 43 foreign banks with approved local representative offices (The Banking Association South Africa (BASA), 2013). This is shown in figure 2.1.1

**Figure 2.1.1: Number of banks registered in South Africa**

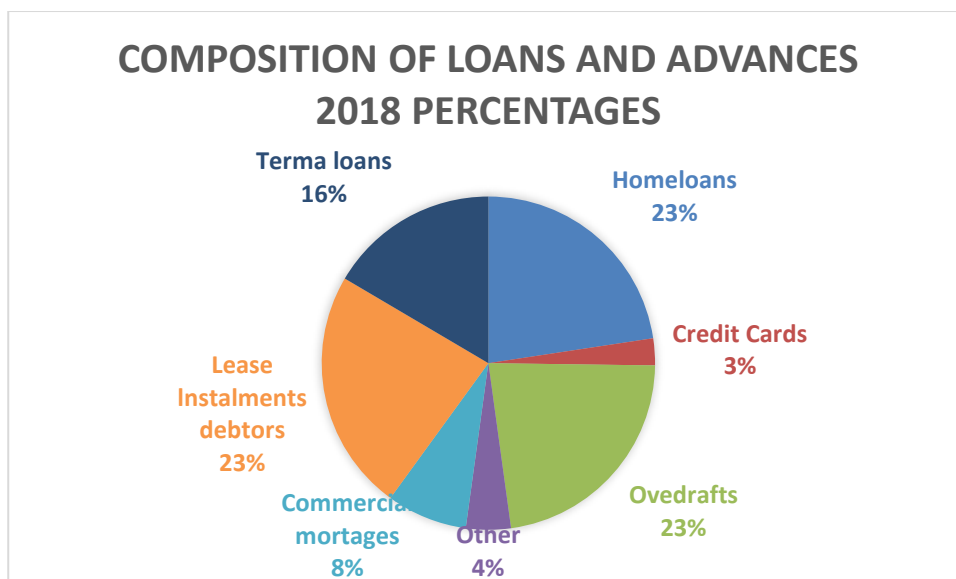


**Source: South African Reserve Bank (2016)**

Figure 2.1.1 above shows the number of banks registered in South Africa and in 2007 representative offices shown a higher increase compared to other registered banks. A number of banks such as corporate banks, mutual banks and also the registered banks has shown a decrease over the years. At the end of December 2016 the number of mutual banks increased from 2 to 3 compared to the previous years, and the number of foreign banks with authorised representative offices in South Africa decreased from 40 in December 2015 to 36 in December 2016. The new African Bank Limited commenced operations in April 2016, and which resulted in no banks being under curatorship at the end of December 2016.

**Figure 2.1.2: Loans and advances:**

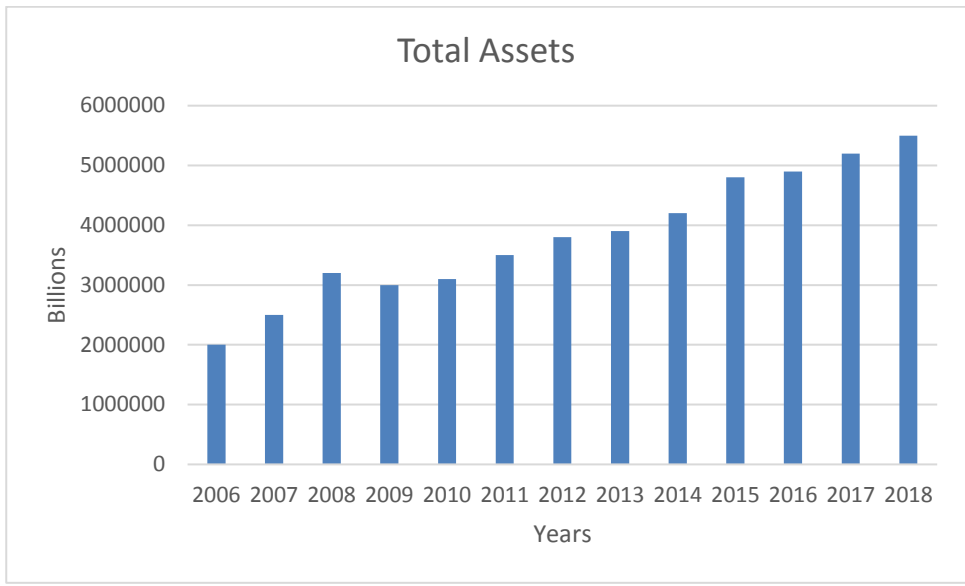
## COMPOSITION OF LOANS AND ADVANCES 2018 PERCENTAGES



**Source: South African Reserve Bank (2018)**

Figure 2.1.2 above shows trends on composition of loans and advances in March 2018. All categories of gross loans as well as advances grew in 2018, with the exception of loans granted and deposits placed under resale agreements. The largest growth in rand was in terms of loans (R108billion), lease and instalment debtors (R22billion), commercial mortgages (almost R33billion) and overdrafts (R19billion). Home loans, lease and instalment debtors, term loans comprised the most significant portion of gross loans and advances, even though both lease and instalment debtors and home loans declined as a percentage of total gross loans and advances during the period of 2014 (SARB, 2014)

According to the (SARB, 2014) other loans and advances comprising of general loan, credit card advances as well as bank overdrafts maintained a dominant role in driving the extension of credit during 2014 and 2015. Growth in the asset-backed credit groups edged higher during the course of 2015, typically dominated by demand on commercial property loans, while residential property loans also started to gain higher control in 2015 as well. Mortgage advances showed an annual rise of R71, 3 billion in 2015 compared to an increase of R48.0 billion in 2014, which is nearly a 50 per cent rise. This was after an extended period in 2012 and 2013 when a year growth in mortgage advances floated around 2%. In addition, growth started improving from early 2014 to reach 6.2 per cent in December 2015 and 6.0 percent in January 2016. The expansion rate in leasing finance and instalment sale credit, which mostly represents the financing of second and net hand vehicles, has been reducing quickly over the two past years with growth moderating into one –digit territory from the second half of 2014 (SARB, 2014).



**Figure 2.1.3: Total assets of the South African banking sector**

**Source: South African Reserve Bank (2018)**

Figure 2.1.3 above shows the trends on South African total assets from 2006 to 2018. It is important to consider that between 2006 to 2008 total assets has been showing an increase, but in 2009 there has been a decrease in total assets. For instance, at the end of 2008, banking sector assets amounted to R3 177 billion, representing an annual growth rate of 24, 5% year on year. The increase in growth rate of 2008 was largely due to a considerable increase in derivative financial instruments to R507, billion at the end of 2008. The increase was reported mainly by some registered branches of international banks and five largest banks, (SARB. 2010). Loans and advances to customers remained the largest portion of banking sector assets, amounting to R2 276 billion at the end of December 2008, compared with R2 077 billion at the end of January 2008. Derivate financial instruments, the second-largest component increased at end of 2008.

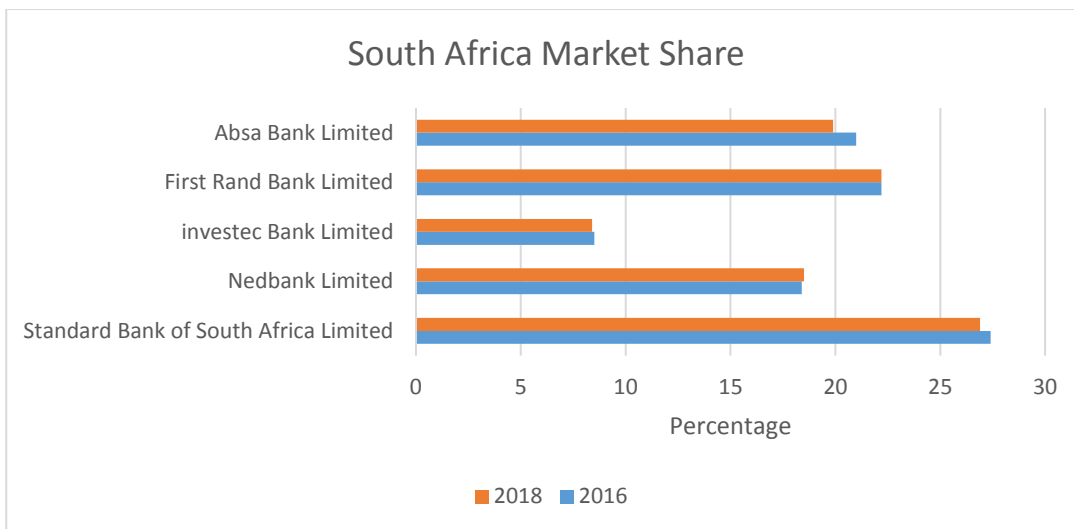
Figure 2.1.3 illustrates that in December 2009 the total assets of the banking sector amounted to R2 967 billion compared with R3 177 billion at the end of December 2008, which is represent a negative year-on-year growth of 6.6% (SARB,2009). Total assets of the four largest banks accounted to 84.6% of total assets of the banking sector in 2009 compared to 84.4% in 2008. The total banking assets increased by 9.0% and amounted to R3 409 billion at the end of December 2011 from R3 126 billion in 2010. The growth rate in total banking- sector assets accelerated during the third and fourth quarters of 2011 mostly due to a year-on-year rise in gross loans and advances which, in turn, was caused by increases in term and other loans, (SARB., 2010).

The total assets of the banking sector increased by 2.0% to R3 843 billion at the end of the fourth quarter of 2013, having declined by 0.5% in the previous quarter. The year-on-year growth rate in banking-sector assets advanced to 5.2% at the end of the fourth quarter of 2013 from 5.0% in the third quarter. The increase in total assets characterizes confidence in which investors have with banking sector of South Africa. For instance, (SARB, 2015) shows that the total assets of the banking sector grew by 15.7% on year on year from R4 176 billion in 2014 to R4 831 billion at the end of 2015. The banking-assets annual growth was attributed mostly by 11.3% annual growth in loans and advances as well as 89.2% in derivative financial instruments. At the end of 2015, gross loans and advances accounted for 74.5% of the assets of the banking sector and amounted to R3 601 billion in 2015 from R3 236 billion in 2014. The rise in loans advances was largely as the result of an increase in other loans to customers, which grew by R126 billion year-on-year (precisely in categories such as foreign currency loans, overnight and other loans) as well as term loans, which recorded a year-on-year growth of R85 billion (SARB,2015). Moreover, the assets of the banking sector were mostly funded by deposits, current accounts and other creditors, which constituted 84.1% of total liabilities of the banking sector at the end of 2015 and 88.2% in 2014.



Figure 2.1.3 also shows that total assets of the banking sector accelerated further in 2018, and amounted to R4 877 billion at the end of 2018 compared to R4 831 billion in the preceding year. The year-on-year rate of growth in assets of the banking sector declined in 2018, reaching a low level of 1.0% in 2018 compared 15.7% in December 2017. The overall lower growth in banking-sector assets was supported by a weakening in the growth rate of gross loans and advances, derivative financial instruments, investment as well as trading of securities (SARB,2016). Current accounts, deposits and other creditors, which constituted 87.6% of banking sector liabilities, mostly funded the banking-sector assets.

#### **Figure 2.1.4: South African Banks' markets share**



**Source: South African Reserve Bank (2018)**

Figure 2.1.4 above shows the market share for the five big banks in South Africa. Here market share has been divided on how much banks make deposits, deposits is when an individual or business goes to a bank and deposit money into his account or the other person's account. Banks charge individuals for keeping their money so deposits form a huge part in banking performance. Market share for deposits has been categorised into household deposits and commercial deposits. Household deposits are deposits made by individuals in order to keep their money into their bank accounts for future spending or to earn an interest. Commercial deposits are those deposits that are made at the end of every business day by companies and firms. Standard bank has got the highest household deposits compared to other banks but there's only a one percent difference between standard bank household deposit and those for FNB.

Overall when looking at all the banks there is not much difference between their household deposits as there are there banks with the same percentage of household deposits. There are also commercial deposits where standard bank has got the highest number of commercial deposits and this means that most businesses bank with them. Investec bank constitute the lowest percentage of commercial deposits in the banking sector with 8.4 percent that is being shared by many banks that fall under other banks. Investec bank is also doing great with respect to commercial deposits of the banking sector in South Africa and the big four banks constitute 88 percent of commercial deposits in the banking sector.

### 2.1.2 Profitability Ratios

The table below shows the profitability ratios of the banking sector, which include the return on assets (ROA) and the return on equity (ROE). According to Heikal, Khaddafi and Ummah (2014) the return on assets (ROA) is utilised to measure the efficiency of the company in making profits by exploiting its assets. This ratio is an indicator of how good or bad the management in implementing cost control or managing property. The return on Equity (ROE) displays the extent to which companies effectively

manage their own capital (net worth), measure the investment profitability that has been made owners of their own capital or shareholders of the company (Heikal et al, 2014).

**Table 2.1.1: Profitability Ratios**

<b>YEARS</b>	<b>ROA (%)</b>	<b>ROE (%)</b>
2012	1.0	14.6
2013	1.2	16.4
2014	1.3	17.7
2015	1.1	14.7
2016	1.1	14.5
2017	1.2	16.3
2018	1.3	17.7

**Source: SARB (2018)**

Above table 2.1.1 shows the trends on ROA and ROE of the banking sector from the year 2012 to 2018. The ROE and ROA ratios increased from 14, 6% and 1.0% in 2012 to 16.4 and 1.2 respectively in 2013. The rise in the profitability ratios in 2013 was due to increased bank profitability ratios such as cumulative increase in net interest income and non-interest revenue, and a decline in credit losses. Credit losses decreased by 11.7% to R24 billion at the end of 2013, mainly due to an improved environment of credit (SARB, 2013). Looking at table 2.2.1 it is of great importance to note that the sector's smoothed ROE ratio weakened slightly from 14.7% in 2013 to 14.5% in December 2016. The SARB, (2015) mention that the decline was due to a decrease in 12-month cumulative profit, largely due to a R4 billion impairment of goodwill reported by African Bank in August 2015, as well as R4, 3 billion of credit losses reported by African Bank in July 2015.

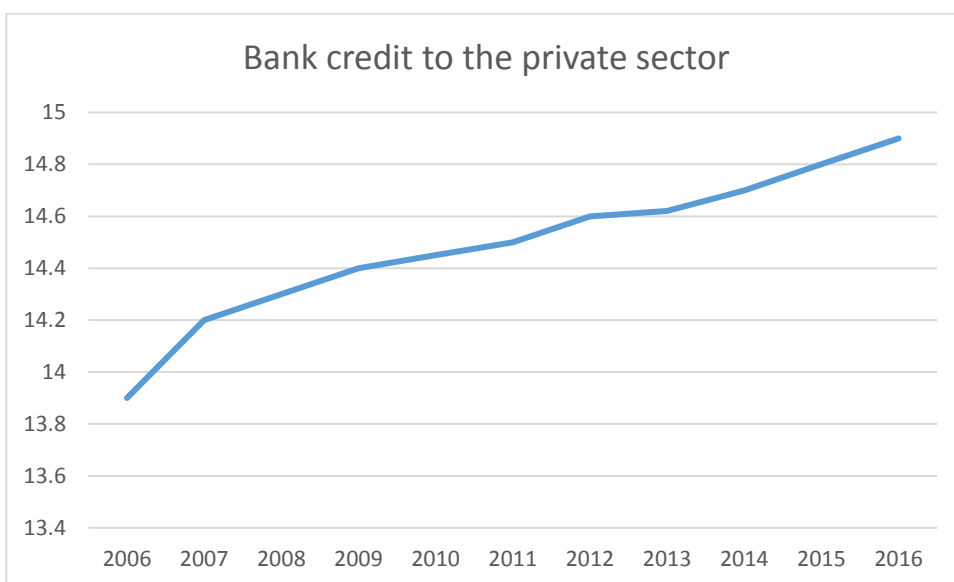
In the table above it is also shown that during 2017 the return on equity and return on assets increased and amounted to 16.3% and 1.2% respectively (December 2016:14.5% and 1.1% respectively). The rise in both the ROA and ROE in 2017 is largely due to the increase in operating profit, which increased by 20, 8% year on year, compared to 7.4% year-on-year growth recorded at the end of 2016 (SARB,2016). An increase in net-interest income and non-interest revenue, as well as decline in credit losses are the main factors that contributed to an increase in operating profit. The total equity of the banking sector increased from R318 billion in 2014 to R342 billion in 2017. The total equity mainly included share capital and retained earning throughout 2017, accounting for 45,1% and 51.6% respectively of total equity at the end of December 2015 (December 2016:40% and 51.1% respectively). Table 2.1.1.1 also depicts that moving average return on equity as well as return on assets increased in 2016, ending the year at 17.7 % and 1.3% respectively compared to 16.3% and 1.2% correspondingly. The rise in ROE



as well as ROA was attributable to an increase in operating profit of 20.7% year on year at the end of 2018 due to a rise in non-interest revenue and net interest income, as well as a reduction in credit losses.

### 2.1.3 Bank credit to private sector

Bank credit to private sector is an important measure of financial development and indicates the role of financial intermediaries in channelling funds to the private sector (Kapingura, 2014). Credit extension is said to contribute to consumer consumption which in turn stimulates the economy. Domestic credit to private sector refers to financial resources provided to the private sector by financial institutions, such as through loans, none equity securities purchase, and trade credit, as well as other receivables, that create a claim for repayment. Figure 2.1.5 below shows the graph below shows bank credit to private sector.



**Figure 2.1.5 South African Bank credit to private sector**

**Source: South African Reserve Bank (2016)**

Figure 2.1.5 above shows trends on bank credit to private sector from 2006 to 2016. Total loans and advances extended to the private sector (households and corporates) has shown a drastic decrease from 2009 to 2010, and from 2010 onwards has been shown an increase over the years. The rise in credit demand was driven by the corporate sector, considering an average increase of 16.5%. Some of the funding borrowed was utilised for the maintenance of capital equipment in production facilities. The year-on-year growth in bank credit extended to the private sector rebounded to around 8 percent in 2012 and during the fourth year up to 2015 floated around that level. The growth therefore remained well below the double-digit rates recorded in the years prior the global financial crisis. In spite of the business environment challenges over the past two years, the demand of credit by the corporate sector has been strong, contributing more than 70% to the growth in loans as well as advances. In contrast, the growth

in bank credit by households has been uninspiring over the same period, as consumers have been experiencing increasing rate of interest and credit conditions being tighter.

According Ndako (2007) factors such as high unemployment levels, weaker domestic growth of the economy and strict credit regulation, amongst others affects the demand for credit. Following a small recovery in consumer confidence in the third quarter of 2015, consumer positivity plunged in the fourth quarter as the result of conditions of drought in the county's large parts, increasing interest rates, exchange rate depreciation of the rand and job creation that is poor. Additionally, business confidence further declined in the fourth quarter of 2015 and now it was considered the lowest level in five years, largely due to the sharp drops in confidence between new building contractors and vehicle dealers. According to the SARB (2016), total loans and advances improved from R192, 2 billion in 2014 to R235, 4 billion in 2015. The growth considered strong occurred in the first quarter of 2015 when it amounted to R97, 6 billion, the highest quarterly increase since 2008. In the second quarter of 2015, the growth drive subsequently slowed somewhat due to a contraction in general loans to the corporate sector. The demand for general loans by the corporate sector, however, recovered in the second half of 2015 and together with continued growth in mortgage advances, which supported the expansion overall in extension of credit (SARB,2016). Therefore, the demand for mortgage finance, which is mostly granted to households, continued to rise in 2015, but leasing finance (typically associated with vehicle purchases) contracted, possibly indicating that households may be using some home equity to consolidate loans and ease cash-flow constraints. Consequently, the quarter-to quarter seasonally adjusted growth annualised in total loans and advances to the private sector enhanced from 5.9% in the third quarter of 2015 to 11.2 in the fourth quarter of 2015. The extension of credit to households increased from R49.7 billion to R63, 2 billion up from a year later. The improving growth was largely related to mortgage advances as well as general loans, while instalment sale credit withdrawn, (SARB. 2016).

After the relatively stable growth around 8% since 2012, the yearly pace of change in bank credit extended to the domestic private sector slowly decelerated in 2016 to reach a low of 5, 9%, and the deceleration was moderately affected by a technical correction in the data (SARB, 2016). The demand of credit by the corporate sector remained fairly strong, with its year-on-year growth averaging about 12.4% in the first three quarters of 2016. Consumers experienced financial strain during 2016 and this remained evident in the continued weak in credit growth. The steady increase in lending rates, comparatively high households' levels of debt as well as debt service costs, fragile real households' incomes and weak job prospects, among other things, continue to weigh deeply on the already vulnerable finances of households. The credit ratio to GDP weakened moderately in the second and the

third quarter of 2016 due to a rebound in nominal GDP growth and moderation in total loans and advances growth. Consumer confidence remained weak amid continued concern about finances of households contributing to the serious demand for credit. The confidence of businesses remained in the stagnations, even though it improved somewhat in the third quarter of 2016. The credit demand by the corporate sector remained relatively healthy, demonstrating the continued existence of pockets vital activity and opportunity (SARB, 2016).

## 2.2 Overview of the Financial markets in South Africa

Financial markets are outlets where funds are channelled from those who have excess funds (savers) to those who are in short supply (borrowers). Such markets can be defined by the manner in which financial instruments are traded (Van der Merwe and Mollentze, 2010). Trade in financial instruments may occur in an exchange-regulated market or in an Over - the-Counter (OTC). The exchange-regulated market is called a structured market and trading can take place on the floor of an exchange or through electronic networks of traders wherever they are seated. An OTC market, on the other hand, is a market in which trading takes place over the telephone and by computer and is called an informal market (Glenn, 1995). Often, each may be divided into two markets, primary and secondary. A primary market is a market where newly issued financial instruments are sold to initial buyers and sellers, a business, government and public entity can be the issuers of such securities. A secondary market is a market in which the already released financial instruments are sold to another purchaser. The financial market in South Africa consists of four markets, i.e. the foreign exchange market, bond market, money market, and capital market.

**Foreign exchange market** – a market where one currency is traded for another, however this market is not a financial market but is referred to as a financial market because investors can borrow or lend offshore (Faure 2010).

**Financial platform**-a market for the sale of derivative instruments. A derivative instrument is a financial instrument whose value is derived from a product or asset that underlies it. Trades are now being produced in this market, but settlement is taking place at a later date (Glenn 1994).<sup>3</sup>

**Money market**- a forum where securities are exchanged in the short term. The lifespan of these instruments is also no greater than 12 months. Along with the bond market, this sector is known as a debt market, where debt instruments are traded.

**Capital market**-a market where long-term financial instruments are traded, it is divided into two segments, bond and equity. Such two markets differ in terms of the maturity of traded securities and their return.

- **Bond market:** a market where long-term debt instruments are exchanged, debt instruments have an expiry of more than one year. In South Africa's case it is called the South African Bond Exchange (BESA).

- **Stock Market:** is a market for trading of shares or securities. Shares in the stock market reflect ownership by investors of the listed companies Mkhize and Msweli-Mbanga's productive assets (2006), and they have no fixed maturity. Johannesburg Stock Exchange (JSE) is South African Stock Market.

For South Africa, the foreign exchange and money market are classified as OTC markets, whereas the capital markets (bond market (BESA) and equity market (JSE)) are a market driven by exchange. The derivative market is classified as formal as well as informal as some of its goods suit on both categories, some on informal and some on formal. All of these markets are classified into two classes, which is primary and secondary sector, depending on the level of exchange. The most competitive secondary market markets are the South African bond and stock markets (Van der Merwe and Mollentze 2010).

### **2.2.1 A brief background of the development of the Johannesburg stock exchange (JSE)**

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In 1886 the gold discovery in the South African mountain range, Witwatersrand, led to the formation of mining companies. To help firms' access primary capital, this necessitated the creation of the stock market; hence, the JSE was established in 1887. The mining industry dominated and its development was reflected by a rapid growth that the JSE experienced in the 1890s in terms of the number of companies listed, market capitalization and liquidity. But as the economy grew, other sectors including manufacturing enterprises joined in. The JSE is the second oldest stock exchange in Africa following the 1883 founded Egyptian stock exchange. Its function is to facilitate fund raising and channel those funds to profitable projects and it also provides a mechanism for price determination and risk management. Mkhize and Msweli-Mbanga (2006) described the JSE as a South African economy engine room because JSE-listed companies have a significant impact on growth. JSE is highly liquid, as new information is priced (Samoulhan 2006), with both its level and volatility constantly changing.

Currently JSE works with four markets.i.e. Stocks market, market for derivatives of stocks, market for derivatives of commodities and goods for interest rates. An equity derivative market is a forum to swap futures and options. Futures and options are classified as financial instruments based on an underlying instrument. In South Africa, a food derivatives market is a platform for price discovery and crop risk

management. Interest-rate market is a market where investors can exchange cash and derivative products. All these markets came as a development feature in the JSE since they allow investors to diversify their portfolios (JSE, 2007).

The JSE became a member of the World Federation of Stock Exchanges in 1963, and became a key player in the African stock exchange organization after its restructuring in 1993. The Stock Exchange Control Act was amended in 1995 to allow non-South Africans to participate in the JSE, this reform was made through the so-called "big bang" restructuring programme. This was due to different factors such as the migration of the largest listed South African firms to London, the 1994 political dispensation in South Africa, and the materialization of derivative financial instruments. As a result of this major change in the JSE, there was a rise in market capitalization and the option of trading on dual capacity was offered to members. Dual listing is whereby a broker conducts business simultaneously on behalf of the client and in his / her own account. His entry to the JSE has helped to solve the problems faced with the single trade and leads to the creation of wealth and employment, which in turn stimulates economic growth (JSE dual listing brochure, 2008).

In 2003 the JSE launched inward dual listings in the JSE as part of the reforms to allow foreign companies to engage in dual listing. In their analysis, Chairman Humphrey (JSE,2009) and CEO Russell Loubser highlighted that JSE's ability to attract international listings through inward dual listings will provide more cost-effective means for local investors to diversify their portfolios and open up opportunities for local JSE brokers, entrepreneurs and vendors. Also established in 1995 was the South African Institute of stock brokers to train stock brokers to ensure efficiency in their trading process. Getting well trained and qualified brokers leads to the growth of the stock market as it creates confidence on the clients they serve.

### **2.2.2. Trading systems**

The JSE Limited closed the outcry trading floor in 1996 and introduced the automated trading system known as the Johannesburg stock trading system (JET). This is a centralized, order-driven trading system; where buyers and sellers send bids and ask for the prices of a specific share to a central location where a broker matches orders (Ingrid 2007). This increased investor rights and affected the valuation of shares traded from US\$ 78,391.8million in 2002 to US\$ 423,384million in 2007 as a result of enhanced transparency, security and audit trials.

A new system is believed to bring in more changes and performance. Consequently, the JSE Limited replaced the JET trading system with the London Stock Exchange Electronic Trading System (LSE 'S SETS), introduced in 2002 from the London stock market. One advantage of using the LSE trading platform is that LSE could disseminate South African share prices to more than 100,000 terminals

worldwide, thereby the South African equity access to global investment markets (Firer and Jordan, 2004). It impacted liquidity in the JSE substantially, as it made the exchange faster and easier. According to WFE (2011) statistics, the pace at which the share trading value increased improved from 13.15 per cent in 2002 to 59.28 per cent in 2004, and this could be due to this transition.

### **2.2.3 Clearing and settlement systems**

In 1999, the JSE in partnership with South Africa's largest commercial banks developed an electronic trading system known as the Totally Electronic Share Transactions (STRATE), which led to the instigation of the process of dematerialization and electronic settlement. The JSE holds 41 percent interest in STRATE, according to the JSE Annual Report (2004), and this proves an improvement on its results. In 2002, it dematerialized all listed shares and switched to the Totally Electronic Share Trading System (STRATE), this electronic settlement system is responsible for the Johannesburg Stock Exchange (JSE) settlement of a variety of securities such as equities and bonds to the Johannesburg Stock Exchange (JSE) and to derivatives. The aim of this development was to increase the number of trades, resulting in the JSE limited trading effectively without loss, which helped them build trust in investors. The JSE Chairman, Humphrey (2009), explained this transformation as a building block in positioning the South African equity market as South African instruments preferred destination.

The STRATE provides listed and unlisted businesses with a number of products and services, such as data and software, and clearing and settlement services, in order to ensure market efficiency. This transition to an effective settlement system has increased market activity and enhanced the South African market's international sensitivity by reducing market settlement and operational risk, increasing efficiency, and decreasing costs (Mkhize and Msweli-mbanga, 2006). It also improved JSE's competitiveness globally. Deal settlement on South African stock market happens within five days of trading (T+5 basis) but it is guaranteed. The JSE has shown initiatives to move the settlement process from T+5 to T+3 and has focused on making these strategic investments to position itself as the world's preferred destination for trading South African investment resources by offering lower transaction costs, stable, effective settlement market and market integrity (JSE, 2003).

### **2.2.4. Information dissemination in the JSE**

We need information about the listed companies before investors determine where to invest. This information is made accessible to them through business announcements, as well as other fiscal and monetary authority's announcements (JSE, 2004). Nonetheless, there is a need for a program to help the investors quickly and easily access the information to make this information delivery more effective. Thus, in 1997, the JSE introduced the Stock Exchange News Service (SENS), a real-time news service



for disseminating company information and sensitive information about price. Before this is completed, listed companies are required to send price-sensitive information to SENS before this is done, to ensure market transparency and efficiency. This enhances communication between listed companies and the investment community (Jorburg City, 2010). In 2002 the JSE launched Info Wiz as a new information exchange method, which is similar to the London Market Information System of the LSqE, to replace the SENS. It offers a world-class information dissemination network and enhances demand distribution-sensitive market information. Bearing in mind that investors are risk-averse, this is a good initiative for the JSE, because if investors do not have access to the information they need to make proper investment decisions, we tend to hold their own assets and that hampers market liquidity. The JSE's ability to employ efficient information systems has been instrumental in attracting investors to the market.

Mbeki (2002) stressed that the JSE would compete for that capital by strengthening ties across the continent and promoting access to world-class systems, making a real and material contribution to the African Renaissance and the New Partnership for African Development (NEPAD) goals. This will boost their exposure to the South African region as it brings improvement to the exchanges in Africa. The Chairman of the JSE (2009) stressed that transformation in the JSE Structure and Operations increases its competitiveness in the world-class exchanges and this means that it is well placed for its many clients and puts the JSE in a better position to attract investment, which in turn facilitates economic development. As demonstrated in the JSE Annual Report (2005), technological innovation is still an ongoing process and the JSE is committed to ensuring it provides the best technologies available to ensure market efficiency.

#### **2.2.5. Listing of Companies at the JSE**

According to City of Joburg (2010), the JSE allows investors to raise capital through its markets, namely Main Board, Altx Board, Africa Board, and BEE section, in highly regulated environments. The main board is the primary board where the top 40 companies feature on the FTSE / JSE list. The JSE central board of directors has 348 listed companies (JSE 2008). The Altx board is a market in which small and medium-sized businesses are listed which do not meet the requirements of the main board listing. The JSE introduced this market in 2003, in partnership with DTI, to foster openness, liquidity and development for small and medium-sized enterprises. Africa board is a major board segment that allows top African firms to list their JSE shares. It was set up to attract foreign investors onto the African market. The shares are listed in the same way they are listed on the main board and are listed on JSE Trade Elect, the LSE trading system. The BEE section is part of the JSE's Main Board of Trade Elect and is used by companies that want to list their BEE share scheme. This segment was initiated by South African companies that want to allow their shares to be traded within their BEE share scheme.

The JSE launched a new segment in 2005 called the Yield-X, in which a range of interest rate items are exchanged. It allows for both spot and derivative interest rate products to be traded across all products on one platform with multi-lateral netting. Also in 2005 the JSE was demutualized as JSE limited on. It permitted unauthorized JSE users to gain ownership interest in the JSE as ownership of the JSE shares is no longer a JSE membership prerequisite. The JSE Russell Loubser CEO (2004) described JSE demutualization as a new phase of South African stock market life.

### **2.2.6. Members of the JSE**

A number of members own the JSE which are referred to as seat owners. Seat owners trade at the JSE without paying the brokerage charge while non-seat owners are only permitted to trade in the JSE through brokerage companies. JSE membership is divided into three groups, namely: Trading Services Provider (TSP), where a seat owner is allowed to trade on dual capacities. Custody service provider (CSP), a seat owner is allowed to trade as a broker on behalf of their customers or members in this group. The last category is Investment Service Provider (ISP), and a seat owner must have applied for trading services. An ISP has the authorisation services such as:

- Exercising discretion on behalf of clients in the management of JSE authorized investments.
- Providing client investment advice on JSE approved investments.
- Safeguarding JSE approved assets (other than uncertified securities) and funds intended for securities purchases.

There are clear minimum requirements for membership for a candidate and a member to provide supervised services in the JSE that he / she must follow. These conditions are as follows:

- A member must ensure that his employees are suitable, properly trained and supervised
- A member must register a shelf company with a domicile in the South African company register.

### **2.2.7. Regulation of the Stock market in South Africa**

The efficacy of the JSE's functioning is correlated with its ability to operate in compliance with financial regulations developed by the authorities to protect the interests of various market participants, and which encourages the willingness of individuals and institutions to invest in the markets (Van der Merwe and Mollentze, 2010). It is privately controlled by the board of directors; its activities are regulated under the 1985 Stock Exchange Control Act 1 (SECA) regulating the equity market and the 1989 Financial Markets Control Act 5 (FMCA) governing the derivatives markets. The JSE is regulated in the Financial Services Board (FSB) by the capital-market department. The (FSB) ensures compliance with international standards as regards capital market regulation and supervision. It controls its listed companies, central securities depositories (CSDs), clearing houses, and brokerage companies based on



Securities Service Act 36 of 2004 to ensure transparency, proper oversight and safety of investors. The JSE allows all issuers to comply with some listing requirements to ensure adequate disclosure of all relevant information to investors.

All JSE operations are subject to the oversight of the Financial Services Board (FSB) which is the primary South African financial markets regulator. The FSB assigns market regulation to the registrar who in turn delegates those things to Self-Regulatory Organizations (SROs), which in our case is the JSE. The JSE carries out its regulatory duties under the oversight of the registrar with the assistance of the Financial Markets Advisory Board (FMAB) and the FSB Market Abuse Directorate (DMA). The registrar also stipulates other requirements according to which the JSE will function. The registrar reports directly to the South African finance minister. The South African stock exchange ranks the first position out of 142 countries for its securities exchange regulation according to the WEF report (2011). That demonstrates the JSE's competitiveness and its good relationship with the FSB. Proper JSE regulation and supervision encourages productivity as it reduces the asymmetric information issue by promoting market transparency. That also increases its ability to mobilize capital and ensure diversification of risks.

### 2.2.8. Trends on Johannesburg Stock Market

This section of the chapter will provide an analysis of trends on JSE, and also explaining broadly the factors that cause changes on performance of the JSE. In the study the stock market performance will be measured by the stock market capitalization, thus, the proxy for stock market performance is the stock market capitalization.

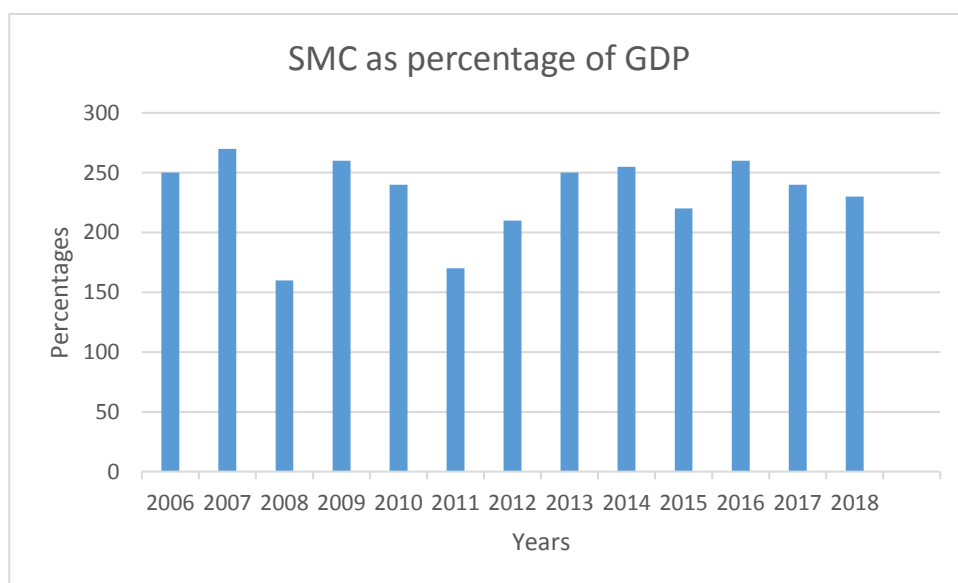


Figure 2.1.6 Stock Market Capitalization

**Source: World Bank (2018)**

Figure 2.1.5.1 shows the stock market capitalisation of the listed companies at the JSE. The figure shows that there was an increase in the stock market capitalization from the year 2012 to 2013. Thus, (SARB, 2014) revealed that apart the fragile domestic economic view, companies continued in attracting strong levels of equity funding in 2013. The primary share market companies listed on the JSE raised an equity capital amounted to R93 billion in 2013, which was higher by 19 per cent compared to the amount raised in 2012. This trend was mainly supported by companies in the financial sector, which resulted to about 58 per cent of the total capital equity raised in 2013. Listing of companies on the main board came to 322 in the first quarter of 2014. In 2013, the clearest technique of raising capital was the issuance of shares for the purchase of assets or emerging with another company (SARB, 2014). Further, in the first quarter of 2014 financing of equity amounted to R20 billion. Rising prices of shares resulted to a 16 per cent rise in daily average turnover in the secondary share market from R14 billion traded per day in 2012 to R16 billion in 2013. In the first quarter of 2014, and average daily turnover remained at R16 billion. Associated with higher prices of shares, the JSE market capitalisation benefited as it increased by 24 per cent from a recent low in the second quarter of 2013 to reach a high value of R10, 6 trillion.



At beginning of 2015-2018 companies listed on the JSE continued to record health levels of equity funding (SARB, 2018). For instance, in 2016 the equity capital has been raised in the domestic and international primary share markets by JSE-listed companies and reached an all-time high of R255 billion. The huge part of the equity capital funding activity contained companies in the industrial sector, which accounted for 54 per cent of the total capital elevated in 2015. However, domestic economic outlook has been depressing towards the end of 2018 and share prices has been lower in fourth quarter of 2018 and the market capitalisation of JSE withdrawn in the same quarter of 2018.

### **2.2.9 Performance of All Share Index (ALSI)**

The All Share Index performance plays a pivotal role to investors as it reflects what they can expect from the stocks they invested in. An index is a unique grouping of shares, selected based on the pre-defined methodology such as largest market capitalisation or highest yield of dividend. An index can be created to present the overall market or a specific sector. An index summarizes share price fluctuations. The primary purpose of an index is to reflect the aggregate movement of the market and a single value of an index makes more sense when it compared to a historical value (Standard Bank, 2010). Figure 2.2.4.2 below provide an analysis of an all-share index performance from the first quarter of 2015 to the fourth quarter of 2016.



**Figure 2.1.7. An analysis of the All-share index for the first quarter of 2015 to the fourth quarter of 2016**

**Source: Quantic (2016)**

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Figure 2.1.7 shows that there has been a drastic increase on the share prices from the first to the second quarter of 2015. However, from the second to the fourth quarter of 2015 all share index prices has been declining. According to SARB (2016) in combination with the sensitive instability in global financial markets, share markets globally recorded losses from the mid-2015. The ALSI has been lower as it declined by 15 per cent from a recent high index of 54 609 index points on the fourth quarter of 2015 to 46 282 index points on the first quarter of 2016 (SARB,2016). The investor negative sentiment spilled over to 2016 as emerging market risk aversion continued to strengthen among weakening economic growth prospects. Consequently, the ALSI improved slightly to 49 45 points in the first quarter of 2016.

SARB (2016) further states that the total earnings of the companies listed on the JSE declined by no less than 40 per cent in 2015 and additional 11 percent the first quarter of 2016, amongst instability in financial markets, commodity prices that are lower, as well as growth of the economy. The decrease in earnings surpassed the fall in prices of shares, therefore increasing the historical price-earnings ratio for all classes of shares to record high levels in the first quarter of 2016.

### 2.3 Overview of International Trade in South Africa

Although South Africa has a history of trade and its openness on the economy of South Africa slight export policy developed over the years. Base (2015) states that the import substitution approach substitutes externally produced goods and services, especially basic necessities such as energy, food and water with locally produced one. By doing so, local communities can put their (hard earned) money to work within their boundaries.

This entails the removal or reduction of tariff difficulties, such as duties and surcharges, and nontariff obstacles, such as licensing rules, quotas and other requirements" (Amity and Western. 2011). South Africa has experienced substantial trade liberalisation ever since the abolishing of the apartheid era. Import protection has declined while trade openness has risen (Chita& Mahugu, 2002).

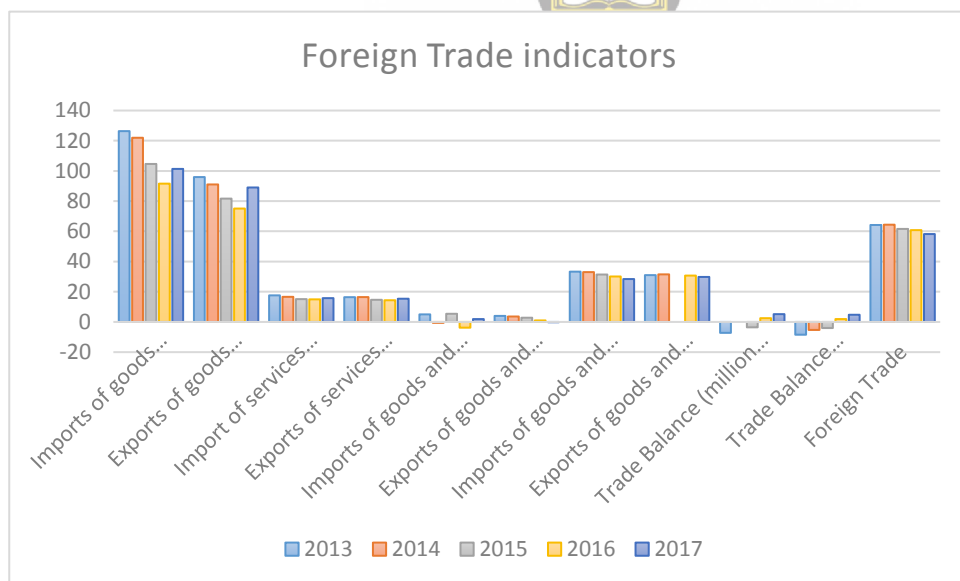
The South African trade policy is mainly determined by the Department of Trade and Industry. Bell (1997) states that South Africa's trade policy was organised to substitution between the years 1925 and 1970s. In the 1960s, growth in the manufacturing industry started to decrease and there was dissatisfaction on the fact that our economy continued to be dependent on gold for foreign exchange reserves. According to Robelis and Thornburg (2002), in the early 1970s the failure of import substitution to increase growth and spread the economy away from gold is what generated transformation in the direction of trade policy. During the 1980s South Africa had the highest tariff rates and the broadest tariff range; hence it ended up being highly protective (Belli et al., 1993). During the year 1990 the General Export Incentive Scheme (GEIS) was introduced in order to try to increase in South Africa. The South African trade policy is mainly determined by the Department of Trade and Industry. Bell (1997) states that South Africa's trade policy was organised towards import substitution between the years 1925 and 1970s. In the 1960s, growth in the manufacturing industry started to decrease and there was dissatisfaction on the fact that our economy continued to be dependent on gold for foreign exchange reserves.

According SARB (2010) since the end of South Africa's apartheid foreign trade has grown, following the lifting of several sanctions and boycotts that were imposed as a way to end apartheid. South Africa is the second-largest gold producer and the world's largest producer of chromium, manganese, platinum, vanadium, and vermiculite, the second-largest ilmenite, palladium, rutile, and zirconium production. It is also the third-largest exporter of coal in the world. While mining represents just 3 percent of GDP, it is down from about 14 percent in the 1980s. South Africa also has a large agricultural industry, and is a net exporter of agricultural products, (SARB, 2015).

Besides other African countries, South Africa's main international trading partners include Germany, the United States, China, Japan, the United Kingdom and Spain. Maize, gems, nuts, gold, metals and minerals, cotton, and wool are big exports. Machinery and machinery for transport make up more than one-third of the value of imports from the world, (SARB, 2015). Certain imports include pesticides, manufactured goods, and plenty more, found mainly in other hot countries, mostly Spanish.

South Africa is very open to international trade, which accounts for 58.2 per cent of GDP in the country. The nation exports primarily platinum (7.5%), steel, and related solid fuels (6.5%), motor vehicles (6.4%), gold (5.6%), and iron ores (5.4%). The key imports are gasoline (13.1%), motor vehicles (4.8%), radiotelephony communication systems (3.5%), electronic data processing machines and equipment (2.2%), and drugs (2.1%), (SARB, 2016).

SARB (2018) states that South Africa exported goods worth USD 89 billion in 2017, a rise of 20.8 per cent from 2016. Overall South Africa achieved a trade surplus of USD 5.15 billion for 2017 (up from 2.48 billion in 2016). South Africa imported products totalling USD 101 billion while its goods exports hit a total value of USD 89 billion in the same year.



**Figure 2.1.8: Foreign Trade Indicators**

Source: World Bank, 2018

Stats SA (2010) demonstrated that the rapid fluctuation in international trade from post- financial crisis is one of the vital issues that South Africa has been experiencing. This was driven by a huge number of external factors, most remarkable increasing food, oil as well as other prices of commodity over a period of strong global demand and economic growth.

Looking at South Africa's trade policies over the past few decades, there is trends of trade policies to be led by three interrelated strategies that are import substituting industrialization, the growth of strategic industries as a result of sanctions imposed and the production of mineral-related exports. Incentives to grow and maintain those industries enabled this.

WTO accession has accelerated the pace of trade policy reform where the key aspects of liberalization have been included in a tariff-reduction measures process bid to the world trade organization, WTO (2010). The WTO (2010) also stated that tariff reform program came into effect early 1995 signalling the new government's commitment to trade reform that resulted in a reduction of the average tariff from around 15 percent in 1995 to below 7 percent. South Africa has recently shifted its strategy towards market-led supply-side support measures that are in line with WTO to promote industrial structuring, technology upgrading, investment and promotion of exports as well as production of SMMEs.

### **2.3.1 International Trade Agreements**

South Africa joined the BRICS coalition of emerging economies comprising Brazil, Russia, India, and China in 2010, and South Africa is a member of the countries ' G20 community. As of 1 January 1995, South Africa has been a member of the WTO and since 13 June 1948 has been a member of the General Tariff and Trade Agreement 1994. South Africa is a party to numerous international, regional, and bilateral trade agreements, including:

- Customs Union of Southern Africa (SACU) Agreement 2002. This is a customs union agreement allowing for duty-free movement of goods within the SACU and a common external tariff on goods imported from any of the non-SACU states.
- Treaty established by the Southern African Development Community (SADC), as read in the Trade Protocol. The SADC Treaty created the SADC, which includes Angola, Botswana, the Democratic Republic of the Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe. The Trade Protocol aims to further liberalize intra-regional trade in goods and services through the establishment of mutually beneficial trade agreements, thereby increasing investment and productivity in the SADC region.
- European Free Trade Partnership (EFTA) and Free Trade Agreement SACU. This is a Free Trade Agreement (FTA) between SACU and EFTA (including Iceland, Liechtenstein, Norway, and Switzerland) for the purpose of reducing tariffs on selected commodities and agricultural manufactured products.
- An Economic Partnership Agreement between SADC and the EU (EPA). This Agreement established an FTA between Member States of the SADC EPA and EU Member States.

- Continental Free Trade Agreement with Africa (AfCFTA). This is a trade agreement between 44 member states of the African Union which aims to create a single market, followed by free movement of people and a single currency union. The AfCFTA was signed, but the African Continental Free Trade Area has still not been created. It will take effect after 14 countries have ratified this. Recent reports suggest that a mechanism for AfCFTA ratification has started by the South African parliament. So far, six countries, namely Chad, Eswatini, Ghana, Kenya, Rwanda and Niger, have ratified the agreement.
- Preferential trade deal between the SACU and the Southern Common Market (Mercosur). This accounts for reduction of the tariff on selected goods.
- Bilateral agreement between Zimbabwe and South Africa; It sets preferential duty, rebate, and allocation rates on certain products traded between the two countries.
  - Agreement for Cooperation in Trade, Investment and Growth 2008 (TIDCA). The TIDCA is a formal agreement on collaboration between the SACU and the US. This provides for the parties to discuss and sign agreements on steps relating to sanitary and phytosanitary (SPS), customs cooperation, and trade barriers. This provides a forum for discussion on all matters of mutual interest, including capacity building and promotion of trade and investment.
  - Framework Agreement on Trade and Investment (FAIT); The TIFA is a bilateral agreement between South Africa and the US providing a bilateral forum for both countries to address issues of concern (including the African Growth and Opportunity Act, TIDCA, trade and investment promotion, nontariff barriers, SPS initiatives, infrastructure, and so on).
  - Memorandum of Understanding between the Government of the Republic of South Africa and the Government of the People's Republic of China on promoting Bilateral Trade and Economic Co-operation.

### 2.3.2 South Africa's international trade

After 1994, South Africa became a new government-run, democratic country. The newly elected government has committed itself to outward-oriented policy according to Weiner, Roxo and Kellman (2008:86). By eliminating tariff barriers and lowering nominal tariffs, the new policy rapidly opened the country's market to foreign goods. Kucera and Roncolato (2011) suggest that when the nation signed the Marrakech Protocol to the General Agreement on Tariffs and Trade (GATT) in 1994 and became a founding member of the WTO in 1995, the government's commitment to trade liberalization manifested itself.

Although trade in South Africa was expected to rise rapidly after its trade liberalization, the country has experienced slow growth in exports in the last few years. As Mosikari and Sikwila (2013) point out,



South Africa's average export growth has fallen from 6.2 per cent to 5.6 per cent since 1994, despite significant reforms. Imports also remained low and this indicates that in the face of domestic trade, trade openness remained resilient. Figure 2.1.9 below shows South African exports and imports growing from 2000 to 2018.



**Figure 2.1.9: The growth of South African's international trade**

Source: World trade organization (WTO) 2017

Figure 2.1.9 above shows that South Africa registered negative growth in both exports and imports in 2008, 2009, 2014 and 2016. In 2017, the country registered positive growth in imports and exports but export increase higher than the value of imports



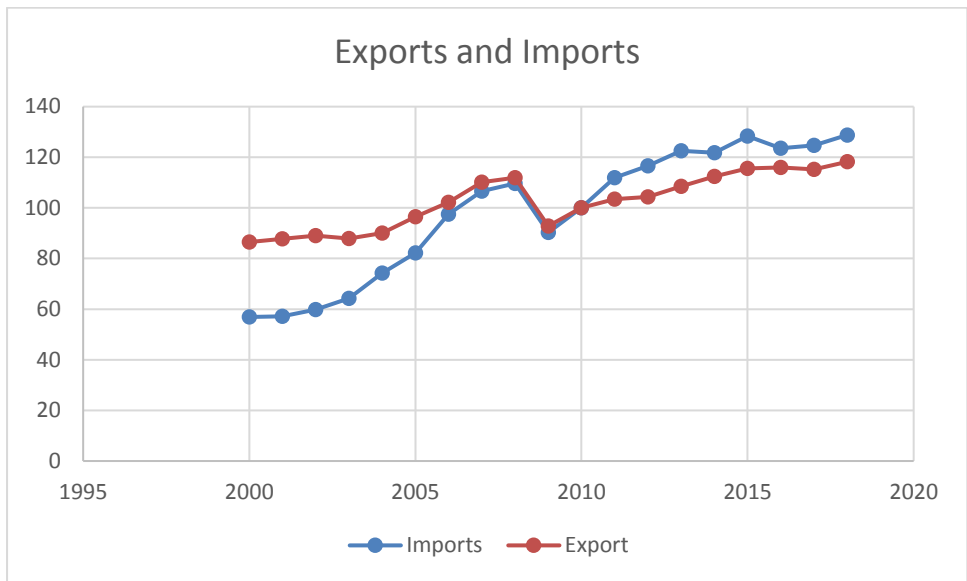
According to the South African Revenue Service (2002), the amounts of goods imported from South Africa decreased in 2001 despite higher domestic spending. Imports were expected to accelerate as domestic activities gained momentum during the year, while spending switching effects due to the rand's depreciation were expected to maintain moderate import growth. The South African Revenue Service (2002:15-16) suggested that the 2002 export growth reinforced expectations of higher export growth throughout the year as a result of the expected global economy recovery.

According to the South African Reserve Bank (2009), the volume of commodity exports in many advanced economies was steadily depressed in the course of 2008 through June 2009 due to deceleration in foreign demand in response to the recession. The recession's influence became more pronounced in the first half of 2009, when South African export volumes shrank by nearly 24 per cent. Due to the lower investment spending in Europe, the volume of manufacturing exports deteriorated while mining exports contracted due to weaker demand. The South African Reserve Bank (2009) indicated that exports had been further contracted by relatively tight and scarce credit financing for the exporters.

Figure 2.3.3 shows a decline in export growth for South Africa in 2012. The decline in exports in 2012 was due both to external factors and domestic ones. According to South Africa's Research and Information Department (2013), the decline in foreign demand was due to the Western world's economic instability and output cessations, especially in the mining sector, which had a detrimental effect on the country's exports. The mining strike resulted in exports dropping by an unprecedented 2 points (IMF 2013). Since mining is the major component of the export sector in South Africa, any negative growth in that sector would affect the overall growth of the export sector in the country.

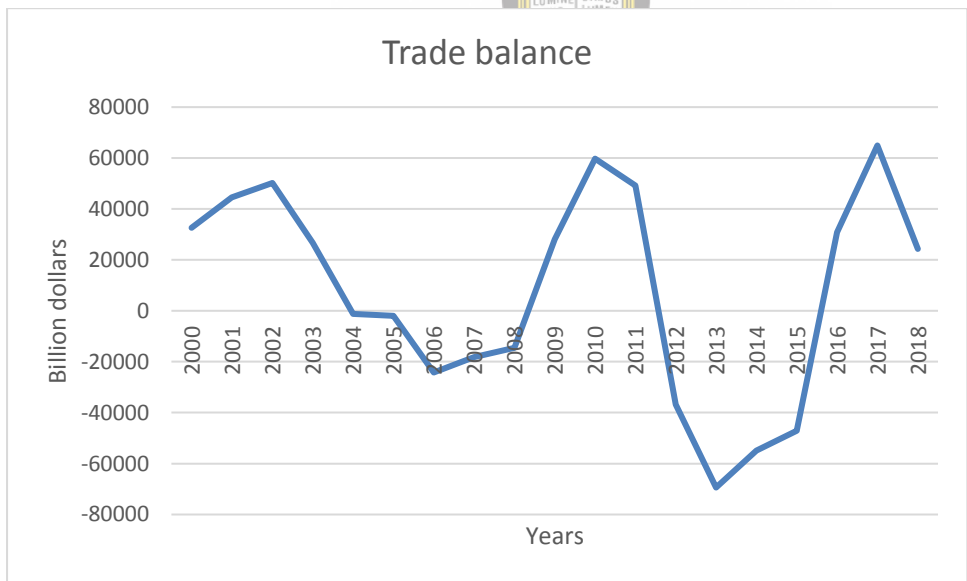
The decline of both imports and exports from South Africa has brought about an unpredictable trade balance. Due to a reduction in export growth and increased demand for imported goods, South Africa was experiencing a fluctuating trade balance. Figure 2.1.9 below displays the production, import and trade balance of South Africa from 2000 through 2017.

### **2.3.3 South Africa's exports, imports and trade balance (2000-2017) in millions of US dollars.**



**Figure 2.1.10: South African imports and exports**

Source: SARB (Year)



**Figure 2.1.11: South African Trade Balance from 2000-2018.**

Source: South African Revenue Services (2018)

Although both exports and imports have risen, as shown in figure 2.1.10 above, the figure also shows a negative trade balance for most of the years under review, with positive growth only

going forward in the periods 2000-2011, 2009-2010 and 2016. The positive growth in the trade balance in 2001 corresponded to the increase in total real exports; exports increased by 4.7 per cent. As the South African Revenue Service (2002) suggests, both exports and imports have risen due to poorer domestic economic conditions, combined with a depreciating rand. According to the South African Reserve Bank (2009), the significant deficit reduction in 2009 was due primarily to the country's reduced domestic demand for international consumer goods and the slower growth in capital expenditure plus lower net revenue, profit, and current transfer payments to the rest of the world.

The trade balance was expected to remain positive after picking up in 2010, but in 2011 it deteriorated back to negative, and deteriorated further in 2012. As reported by the Research and Information Department of South Africa (2013), the deficit was approximately R118 billion in 2012. Failure to export minerals was partly at fault but weak external demand also limited export performance.

Figure 2.1.11 indicates a decline in the 2010 to 2011 trade balance. The worsening trade balance in 2010 and 2011 was also attributed, according to the South African Reserve Bank (2012), to the stronger growth in domestic spending as opposed to domestic production. During the time, trade surplus narrowed due to the faster pace of increase in value of merchandise imports compared to exports. Trade surplus in the second half went from a surplus of 1.1 per cent to virtually zero, according to the South African Reserve Bank (2012). In response to an increase in imports it further deteriorated into deficit in 2012. As the IMF (2013) points out, while the current account strengthened to 5.8 per cent of GDP in the first quarter of 2013 due to the rand depreciation, it was projected to deteriorate due to structural factors such as low household savings and poor external demand.

Gonzalez-Nuñez (2008) argues that increasing growth in exports is seen as an important tool to help South Africa achieve robust economic growth and growth. This is because the export industries tend to be more competitive than non-export industries, according to Brenton and Walkenhorst (2010). South Africa needs to develop a strong export industry based on processing and value-adding of its minerals to increase exports, but this requires machinery imports. If the nation is to continue importing machinery for the moment, its trade balance is still expected to continue to deteriorate, but it will be good at least as analysts hope it will lead to increased exports and more foreign earnings in the future.

South Africa has aligned itself with the emerging economies, notably Brazil, Russia, India and China (the BRIC countries), to extend its economic power and international trade development. South Africa should try to learn from those emerging countries that have successfully undergone economic reforms. Nonetheless, Sandrey and Edinger (2009) found that the sheer size of these countries and their intense desire to gain a position in the "top tier" of the global market make them potential markets and "dangerous" rivals in third markets and they can crowd out South African exports, both internally and outside.

South Africa's growth and development relies on its trade in both raw materials (mostly minerals) and manufactured goods with the outside world. South Africa continues to look for its consumer markets, while retaining its existing markets. With China's economic growth, South African products rising threaten to be overtaken by cheap Chinese goods, both the already occupied markets and new markets. Tull (2006) discovered that this is because both Chinese and South African businesses are economic rivals for investment and markets, especially in the field of labour-intensive and export-oriented manufacturing companies such as textiles and clothing.

Exports in South Africa continued to grow, but not at a rate to equal or be above imports. Its trade balance has continued to deteriorate and this is not good for the growth of the economy, although that depends on the type of goods it imports. If the key valued exports are machinery or any other manufacturing equipment, then one would say the country could experience high exports in the near future due to increased output. However, as was seen in 2017, a decline in exports should be expected to continue due to a decrease in demand and the current high pressure on world markets.

#### **2.3.4. The patterns of South Africa's trade with its major trading partners**

Since 1992 South Africa has changed its destinations for exports. The EU has been the main export destination for South Africa, but also for Eastern Asia and the North American Free Trade Area, according to Gonzalez-Nuñez (2008). Trade between South Africa and its neighbours (the countries of the Southern African Development Community [SADC]) increased from 8 per cent in 1992 to 12 per cent in 2008. The trade deficit between South Africa and the EU has significantly reduced from 44% in 1992 to 32% in 2008 due to a reduction in South Africa's EU imports. Table 1 below displays the pattern of trade between 1995 and 2018 between South Africa and its top major trading partners.

**Table 2.1.2: Changes in South Africa's trade with major exporters (1995-2018) in percentage**

Partners	1995	2000	2005	2010	2015	2018
China	4.57	1.27	2.97	11.38	11.69	9.2
Germany	4.97	7.22	7.09	7.74	4.81	7.5
US	7.6	9.16	10.41	9.88	8.75	6.8
UK	8.32	8.7	10.64	5.18	3.87	5.1
Japan	6.38	5.15	10.96	8.99	6.24	4.7
India	0.67	1.41	2.49	4.17	4.24	4.3
Botswana	0.01	13.58	0.27	1.0	10.4	4.1
Mozambique	2.19	2.69	2.49	2.65	2.77	3.4
Zambia	3.03	3.84	4.98	3.2	3.51	2.6
Zimbabwe	4.44	2.6	2.47	3.02	2.87	2.5

**Source:**



Table 2.1.2 above indicates that from 1995 to 2018 South Africa's exports to China rose by more than 10 per cent. Growth in exports to Japan has gone up and down but Japan remains the country's fifth largest export destination. Zimbabwe and Mozambique's presence among the top export partners in South Africa in 2018 confirms Gonzalez-Nuñez's (2008) finding that trade between South Africa and its neighbors has increased. Since 2005, South African exports to the United States and Britain have continued to decline. Increased exports to India are assurances that South Africa is shifting its exports to its BRIC partners, especially Asian (China and India) countries.

Table 2.1.2 further shows that the export destinations of South Africa shifted during the period from 1995 to 2018, new markets developed and the dominance of traditional markets decreased significantly. This was particularly true with respect to the United Kingdom and Japan, whereas the relative shares of the United States and Germany declined but to a lesser extent. On the other hand, since 2009, China has emerged as the number one export destination for South Africa; the share of its exports of non-gold goods increased from 0.8 per cent in 1994 to 12.9 per cent in 2015. India is now South Africa's sixth biggest export market, having overtaken the UK.

According to the South African Research and Information Department (2013), Africa in general, and SADC countries in particular, have become the most important export destination for South Africa. From 1994 to 2018, Africa's share increased from 10% to 17.6%, while that of the SADC increased from 8.3% to 12.9% during the same period. Exports to Africa are diversified and dominated by manufactured goods (93.2 per cent of the total), consisting mainly of non-electrical goods, machinery, motor vehicles, parts and accessories, food products and basic iron and steel products.

As indicated by the South African Reserve Bank (2012), the volume of US-destined South African exports increased in 2011, primarily due to higher vehicle exports, transportation equipment, and chemical products. In 2011 the overall value of South African exports in Europe increased following a decrease in Germany due to an increase in the volume of exports of precious and semi-precious metals to the UK and Switzerland.

Though South Africa has succeeded in diversifying its export markets to China and Sub-Saharan Africa, Europe remains its main regional trading partner. Any disruption to the economy in either Europe or China will spill over to the rest of the world. The IMF (2012) estimated that while the effect of European economies is greater than that of China, through its effects on commodity prices in the country and other sub-Saharan African countries, China could have a significant, indirect effect on South Africa.

Like exports, South Africa's import destinations have also been changing, with Asian countries, China in particular, being the top import destinations. Table 2.1.3 below illustrates South African import destinations from 1992-2012.

**Table 2.1.3: Changes in South Africa's trade with its major importers (1995-2018) in percentage**

Partners	1995	2000	2005	2010	2015	2018
China	1.9	3.72	8.99	14.75	14.4	19
Germany	16.49	13.16	14.02	11.29	10.08	11.7
US	11.81	11.9	7.9	7.28	7.38	6.3
Saudi Arabia	0.78	7.5	5.54	4.05	7.75	6.2
Japan	10.71	7.96	6.75	5.3	4.55	4.8
India	0.73	0.95	2	3.54	4.52	4.7
UK	10.99	8.41	5.52	3.77	2.76	3.7
Nigeria	0.03	0.68	1.19	2.75	3.67	3.6

Angola	0	0.04	0.54	2.49	2.76	2.85
Thailand	0.71	0.99	1.6	2.28	2.66	2.7

Source:

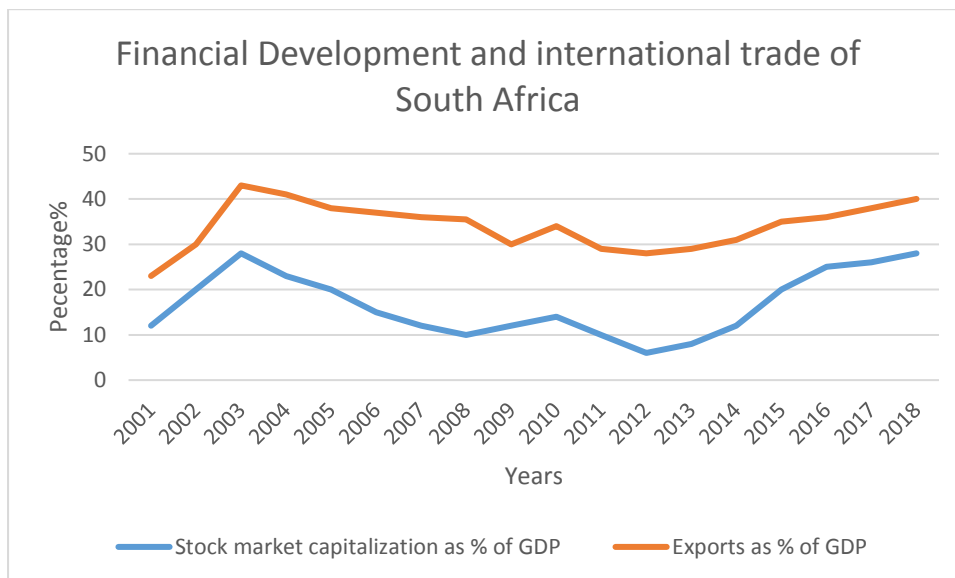
Table 2.1.3 above reveals that while South Africa's imports from China have increased significantly from just 1.42 percent in 1995 to 19 percent in 2018, its imports from major world traders Germany, the United States, Japan and the United Kingdom have significantly decreased. China has outpaced Germany as the number one import partner for South Africa. Nigeria and Angola are the only African countries to appear among the top ten import partners in South Africa. Imports from India also went up.

It can be deduced from the above observation that South Africa has increased its trade with the Asian and African countries. It is moving away from Western export markets as well as from imports. While exports to its SADC neighbours have increased from South Africa, it imports less from the SADC; instead, it imports more from Nigeria and Angola.

As indicated by the Department of Trade and Industry (2010), while Zimbabwe used to be the number one import destination in Africa for South Africa around 1994, Nigeria has taken over that role. In 2006, Nigeria and Angola had become the most important import destination for South Africa, largely because of the oil imports from them from South Africa. Due to their close geographical proximity South Africa has increased imports from African countries. Imports from Nigeria, Angola, Mozambique and Egypt by South Africa consist mainly of fuels, steel, precious stones, metals, etc. (Commerce and Industry Ministry, South Africa 2010).

#### **2.4: Trends of financial development and international trade in South Africa**

According to Figure 2.4, an upward trend characterised stock market development in South Africa from 1994 to 2006 whilst financial market development experienced a negative growth trend between 2006 and 2014. Moreover, an upward trend characterised exports in South Africa from 1994 to 2002 while stock trade openness experienced a downward trend between the period 2002 and 2014 (see Figure 2.4). Stock market capitalisation went up by 5.89%, from 14.32% of GDP in 1994 to 15.16% of GDP in 1998 whilst trade (exports as a ratio of GDP) increased by a massive 28.76%, from 18.13% of GDP in 1994 to 23.35% of GDP in 1998. The subsequent four year period from 1998 to 2002 saw both stock market capitalisation and trade increasing for South Africa with the former going up by 11.82% and the latter surging by a massive 78.81%.



**Figure 2.1.4: Trends of Financial Sector Development and International Trade in South Africa**



Source: World Bank 2018

Stock market capitalisation further went up by 15.04% during the subsequent four year period, from 16.96% of GDP in 2002 to 19.51% of GDP in 2006 whilst export declined by 14.03% to end the year 2006 at 35.89% of GDP for South Africa. Trade further declined by 10.26%, from 35.89% of GDP in 2006 to 32.21% of GDP in 2010 whilst stock market capitalisation also plummeted by 29.03% during the same four year period to end the year 2010 at 13.84% of GDP. Stock market capitalisation for South Africa further declined by 19.20%, from 13.84% of GDP in 2010 to 11.19% of GDP in 2014 whereas exports for South Africa decreased by 9.11% during the same four year time period to close the year 2014 at 29.28% of GDP.

It is evident from Figure 2.4 that there is a link between financial Development as a ratio of GDP and exports as a ratio of GDP, because in the same pattern, both trend lines tend to match one another. In the next section, this provides the basis on which more econometric analysis will be performed.

## 2.5 Conclusion

The chapter presented an overview of financial development which constituted both banking sector overview as well as stock market overview. International Trade in South Africa has been



discussed into greater detail, and also brief discussing financial markets has been provided in the market. The history and the development of the JSE have been outlined and the instruments traded. Stock market capitalization as well as all share index have been illustrated and explained in the chapter and also factors that result to its fluctuations.



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## CHAPTER 3

### LITERATURE REVIEW

#### 3.0 Introduction

This chapter is divided into three parts, namely reviewing theoretical literature, reviewing empirical literature, and evaluating literature. The first section provides a review of theoretical literature on the link between financial development and international trade. The second section discusses previous studies on the relationship between financial development growth and international trade, and the last section offers an overview of both the theoretical and empirical literature. The main thrust of this study is to examine the effect of financial sector development on international trade in South Africa. However, because of the unavailability of theories that are specifically for financial development and international trade, the theoretical literature is presented in the context of international trade theories and growth theories as both international trade and financial development are the main determinants of growth.

#### 3.1 Theoretical literature review

There are a number of theories set forward to analyse and clarify the effect of financial development on international trade by various scholars or schools. Such theories were made from the foundation of understanding the growth of a nation. These theories that have been include McKinnon-Shaw theory, David Ricardo theory, Heckscher-Ohlin etc. The aim of this analysis is to see if these key theories clarify the possible link between financial systems and international trade. The study also address the controversy surrounding the causality between financial development and international trade, as well as bank and market-based finance structures.

##### 3.1.1 David Ricardo Theory

David Ricardo developed the set up speculation of comparative advantage in 1817 to clear up why countries participate in all international trade despite when one country's workers are more successful at making every last incredible than masters in various countries. He demonstrated that if two countries fit for conveying two things take part in the free market, by then every country will extend its general use by conveying the helpful for which it has a close favoured stance while getting the other awesome, gave that there exist differentiates in labour proficiency between the two countries. Extensively saw as a champion among the best yet unreasonable bits of learning in money related issues, Ricardo's theory proposes that

comparative favoured stance instead of aggregate good position is responsible for a considerable amount of general trade.

The principal models in which financial development is a source of comparative advantage was created by Baldwin (1989). This principle demonstrates that countries with well-developed financial sector will have a better potentials outcome of expanding hazard that comes from the demand shocks, firms delivering the unsafe hazard premium and bringing down peripheral expenses. Countries with better developed financial markets and therefore diversification possibilities thus specialize in the risky good.

The connection between this two thoughts appears to perform in a two-side course: various scientists have focused on the key part a nation's financial development is probably going to play in its specialization in international trade, accordingly prompting a near favourable position in the financially intensive goods, close by capital and HR.

### **3.1.2 The Hypothesis of McKinnon Shaw**

The hypothesis of financial development (McKinnon 1973; Shaw 1973) depends on the premise that the higher the real rate of interest, the more noteworthy the level of monetary deepening, the all the more savings there will be, and invested more efficient and contributed more effectively than if savings is put straightforwardly in the part in which it happens, without financial intermediation (Thirlwall 2005:198).

The Mackinnon-Shaw states that suppressed financial system restrict developments in various ways; investments becomes underdeveloped and investments funds becomes negative or unstable; financial intermediaries that pill together investment do not allots them efficiently among rivals users; and firms are discourage from saving because of underdeveloped financial policies that decrease the savings' returns or make them excessively unstable. In other words development of the financial sector from interest ceilings and other constraints accelerates development and trade patterns since the higher the interest rate enhances the increase of investment and more effective allocation of funds.

The main argument is that financial repression-indiscriminate “misrepresentations of financial prices such as interest rates and foreign-exchange rate”, (Fry 1995; 20). This means that financial repression that is a mixture of heavy taxation, interest rate controls and government contribution in the credit-allocation procedures would be the catalyst to both a decline in the depth of financial systems and a loss of efficiency, through which investments is intermediated, (Sean and Vaidya 1997;1). The exponent of financial reform (where McKinnon's thesis is the

pioneer) claim that financial development have a tendency to increase rate of domestic private investments to income, Shaw (1975; 9). Therefore financial development will cause an increase in trade benefits through a more effective investment mobilization, financial deepening and efficiency resource allocation. The main argument of the Mackinnon-Shaw; s study is the assumption that states that investments are to be positively related to the real rate of interest. It also claim that an organizationally determined nominal rate (a characteristic 17 situation in LDCs5 according to Mackinnon and Shaw) maintain the real interest rate is below its equilibrium level, Arietta, (1988; 589).

### **3.1.3 Heckscher-Ohline Hypothesis**

The Heckscher– Ohlin hypothesis is one of the four basic hypotheses of the Heckscher– Ohlin demonstrate, created by Swedish financial analyst Eli Heckscher and Bertil Ohlin (his understudy). It expresses that a nation will send out merchandise that utilization its rich factors seriously, and import products that utilization its rare factors seriously. This approach, using two-country two-sector models, reveals that differences in financial development give rise to comparative advantages and mutual gains from specialization and trade, even when countries have identical endowments, consumer preference and technologies. The crucial aspect of these theoretical contributions is the assumption that the two sectors differ in terms of financial needs and degrees of financial dependence in each country.

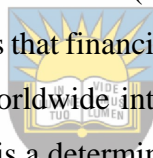
Bardhan and Kletzer's (1987) model focuses on an important function of financial systems that consists of mobilizing assets and allocating funds to investors. The authors believe that one sector produces an intermediate good in each nation whilst the other produces a final good. Producing the final good demands that the intermediate good be used as an input and commit this resource one cycle before the output is available. Consequently, the final good sector requires external funds to finance working capital. However, due to information asymmetries between firms and funders, external funding entails problems of moral hazard.

A weakly developed financial system is incapable of alleviating knowledge asymmetries in this sense, and implies rationing. Conversely, a highly developed financial system allows for more effective cost reduction and funding of working capital. Since the intermediate good sector does not require external funding, financial development is only of interest to the final good sector. Finally, in the final good the comparatively more financially developed country has a comparative advantage whereas the relatively less financially developed country specializes in the intermediate good.

Beck (2002) expands on this hypothesis by showing that, even when both sectors rely on external funding, trade patterns depend on differences in financial development. One of the two sectors (the manufacturing sector) exploits increasing scale returns in his model, while the other (the food sector) is defined by constant scale returns. Additionally, savers are assumed to be facing search costs when trying to channel their funds to investors. A well-developed financial system allows the reduction of quest expenses and the diversion of a greater portion of funds to productive activities.

As the manufacturing sector harnesses increasing returns to scale, it benefits to a greater extent from a large volume of external funding than the food industry. Consequently, exporting manufacturing-goods is associated with a relatively high level of financial development while exporting food-goods is associated with a relatively low level of financial development.

The spearheading work of Rajan and Zingales (1998) sets up that an all well-developed financial market has positively affects ventures or firms intensely subject to external finance. This view is sponsored by resulting research (Cetorelli and Gambera, 2001; Beck, 2002; Svaleryd and Vlachos, 2005) that finds that financial market development can impact examples of generation, exchange, and even worldwide intensity for businesses dependent on external finance. Note, financial development is a determinant of industrial specialization with regards to developing business sector.



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### **3.1.4 The Classical Trade Theory**

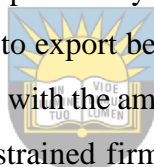
Adam Smith, known as the "Father of Modern Economics," created this theory. This hypothesis was developed in response against mercantilist views on international commerce. Adam Smith believed that a high level of production was the only way to ensure that trade could expand. He believes that a country should only create things in which it has a clear competitive edge. Sufficient productivity, according to Smith, encouraged international division of labour. Producers with differing absolute advantages can always obtain an advantage over producing in distance through specialization and division of labour. He emphasized the need of producing what a country excels at in order to create more at a lower cost than other nations. According to this principle, a country should export a product in the first place.

To achieve the selection effect, this approach depends on whether the level of productivity varies among firms. Only firms that have a high productivity level export. Assuming exporters face specific costs introduces financial frictions. Due to advertising, gathering information on foreign customers, administrative procedures, translation, and organizing foreign distribution

networks, exporting incurs upfront costs on the one hand. As a result, exporting firms are subject to variable transport costs that depend on shipping time and export volume.

Due to the fact that fixed and variable costs must be financed externally, export activities are highly dependent on the intensity of financial constraints. Financing of fixed costs determines firms' export decisions, i.e., large margins of trade, whereas financing of variable costs affects the level of firm exports, (Chaney's, 2005) contribution argues that productivity is an essential factor in firms' export decisions. Firms' productivity does not only affect their competitiveness on foreign markets. It also determines how much profit is earned from domestic activities and whether firms are able to cover upfront export costs.

Thus, three categories of firms are distinguished by this theory. Low-productivity firms do not export because they are not competitive enough to sell abroad. On the other hand, high productivity firms export regardless of the level of external funding available because they are competitive and generate large profits from their domestic operations. Lastly, firms with an intermediate level of productivity are potentially viable in foreign markets. Due to financial constraints, however, they are unable to export because they do not generate enough profit to cover upfront costs. Export flows drop with the amount of liquidity available to restricted firms and increase with the number of constrained firms in the economy at the aggregate level of trade margins, (Harris, 2012).



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### **3.1.5 The causal relationship between financial development and International trade**

#### **3.1.5.1 Early views**

The early views which articulated the nature and direction of the financial development-international trade relationship can be divided into two. In the first view, theorists such as Shaw (1955), Goldsmith (1969), and McKinnon (1973), Schumpeter (1911, 1934), took the view that financial development is an important factor in international trade, suggesting that there is a positive correlation between the two and causality flows from financial development to international trade. On the other hand, however, theorists such as Lucas (1988) expressed financial development as an unimportant determinant of openness, arguing further that the role of financial development towards openness has been overstressed by other economists. This view also describes stock market growth as a limiting factor for economic development because it allows disgruntled investors to sell their shares easily, which weakens investor interest and promotes investor myopia in stock market liquidity (Tachiwou, 2010).

### **3.1.5.2 Challenging Views from the trade theories**

Patrick (1966) identified three potential hypotheses in order to explain the course of the relationship between financial development and international trade, namely: supply leading hypothesis, demand following hypothesis, feedback hypothesis.

#### **3.1.5.2.1 Supply Leading Hypothesis**

The Supply Leading Hypothesis argues that financial development encourages the growth of international trade, because the existence of financial institutions and markets increases the availability of financial services, which enhances trade openness. This theory is based on lower information acquisition costs, since financial intermediaries can minimize information costs by collecting and comparing information about many investment opportunities for the good of all their savers, and ensuring that resources are efficiently allocated to best projects. This is supported by findings among others in Goldsmith (1969), McKinnon, and Shaw (1973), which advocated a positive connection between financial development and international trade that flows from financial development to international trade

#### **3.1.5.2.2 Demand Following Hypothesis**

Demand Following Hypothesis, on the other hand, states that international trade facilitates the development of the financial market, because an increase in international trade growth stimulates the demand for financial instruments which leads to the financial system development. In supporting this view, as cited in (Levine, 2004), Robinson (1952) emphasized that where enterprise lead finances follow.

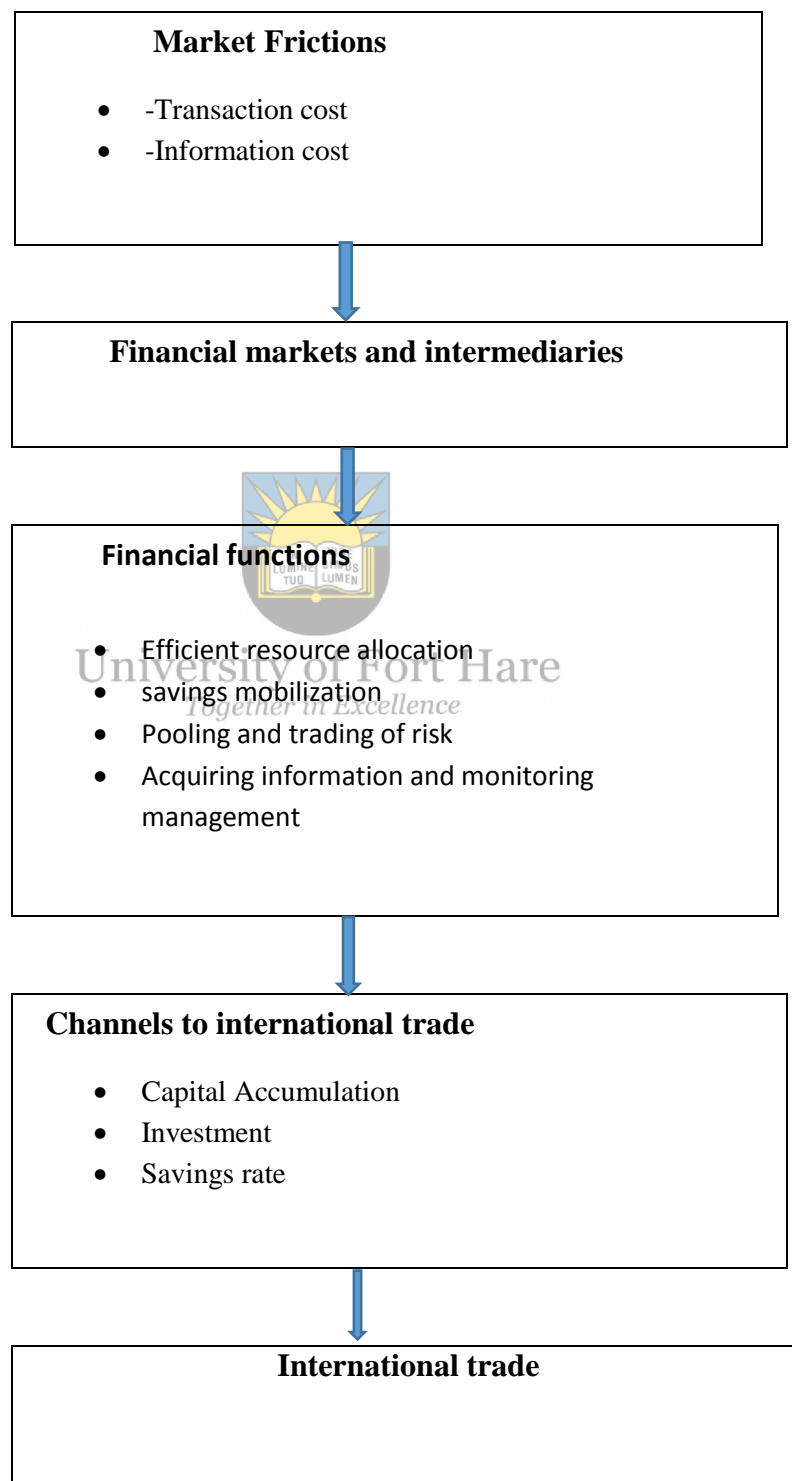
#### **3.1.5.2.3 Feedback Hypothesis**

This view postulates a reciprocal relation between the development of the financial market and the growth of international trade. The proponents of this theory argued that trade openness makes the production of intermediation processes more competitive, and that a well-functioning financial system promotes international commerce. Financial markets are undeveloped at the initial stages of international trade development and are very low in magnitude (Rahman, 2009), which means that sustained trade growth is required for a financial market to work more effectively.

#### **3.1.5.3. The consensus view**

In support of the previous Finance-nexus view Nieuwerburgh, (2005) and Tachiwou, (2009) argued that in principle; a well-developed financial market can mobilize savings and allocate capital efficiently to productive investment. In addition, they argued that financial intermediaries are needed to ensure efficiency in the savings mobilization process, since it is

expensive for individuals to mobilize savings on their own. Levine (1997) referred to technological innovation, savings rates and investment decisions as the main channels that stimulate international trade through financial development. Further, Levine (1997) developed a practical approach to clarify some important functions through which financial market growth promotes these networks.





### **Figure 3.1: Theoretical Framework for Functional Approach**

Source: Author's outline based on the Functional approach developed by Levine (1997)

Figure 3.1 above describes the roles and networks through which International Trade impacts financial development. The evidence available underlines the importance of a well-functioning system as it helps to reduce market frictions such as high information costs and transaction costs and these market frictions emanate from the problem of asymmetric information to which individual lenders are subject. This issue discourages savers from handing over their money because searching for a suitable borrower can be time-consuming and very costly for a person and this allows financial markets and intermediaries to interfere. Financial markets can only succeed in reducing these market frictions by efficiently performing the major functions of financial systems, which are as follows:

**(1). Efficient allocation of resources:**

Financial markets allocate and channel funds on behalf of individual borrowers to successful ventures and this contributes to enhanced investment efficiency, which can have an expansive impact on international trade (Ang, 2007). Therefore, a financial market's ability to identify successful investment projects proves an effective resource allocation within an economy.

**(2). Pooling and trading of risk:**

Through offering opportunities for risk diversification to prevent wasteful liquidation faced through creditors, a well-functioning financial market is able to reduce the risk associated with ventures and businesses. In addition, since savers have limited means of diversifying financial risk, a stock market is helping to ease risk smoothening. Using pooled individual assets, financial markets can diversify across a variety of investments, thus reducing return risk (Djournessi, 2009), because more liquid markets can quickly mobilize and provide funds for successful ventures requiring long-term commitment. In addition, it decreases the amount of investment-related risk, thereby allowing savers to give up control of their funds.

**(3). Acquiring information Ex-ante and Ex-post monitoring of Management:**

Evaluation and monitoring of projects is expensive for savers, as a result they continue to be unwilling to relinquish control of their investments for longer periods, as they may be exposed to the issue of adverse selection and moral hazards. It stops the money from moving towards its full use of interest (Levine2004). Thus the performance of these projects is assessed and monitored by well-functioning financial markets, as this improves capital allocation.

Djournessi (2009) argued that managers could depart from the company's goals without the intervention of financial intermediaries, and that this could lead to a collapse of the company. Therefore, by minimizing the key agent-problem, stock markets facilitate efficient capital allocation, as their involvement enables managers to ensure their firms' growth. As stated in Levine (2004), Greenwood and Jovanovic (1990) stressed that financial intermediaries producing better information about firms will thus finance more promising firms and induce more effective capital allocation.

#### **(4). Mobilize savings:**

It is expected that an efficient stock market would promote international trade, as it serves as an alternative channel for efficient savings mobilization which promotes capital accumulation and investment. This is achieved by rising transaction costs as well as information costs which are industry frictions. Financial markets are critical for savings mobilization and the efficient allocation of financial resources, because they contribute more to the overall economy's production and output leading to a comparative advantage (Mishkin 2004). Companies are more capable of raising aggregate assets than individuals because they provide financial products and services, and this gives households an opportunity to hold diversified portfolios, making trading less costly.

As a result of resource allocation performance, financial market development will account for a larger share of international trade in both developed and developing countries, and at any stage in the growth of an economy, both government and private sectors will require long-term capital (Ohiomu and Enabuli 2011). Therefore, as these two sectors are the main players in the economy, an increase in the financial market development contribution to these sectors may indicate that a country's trade is heavily dependent on the development of the financial market.

### **3.1.6. Bank-based and market based financial system**

Financial systems are classified as either a bank-based or a market-based financial system, and the comparative importance of each of these categories for a sustainable international trade has been debated. These categories are assessed on the basis of how they are performing the major functions of a financial system.

#### **3.1.6.1. The bank based view of the financial system**

The bank-based view highlights the important role banks play towards trade, highlighting their effectiveness in financing development. It argues that banks play a remarkable role in

international trade by mobilizing savings and their ability to tackle the asymmetric information problem by forming a long-term relationship with firms (Arestis et.al (2005). The bank –based view argues that more effectively than the stock market, banks can accumulate capital, allocate resources and resolve market failures. In criticizing the market-based financial system, this view argues that, by disclosing information publicly, it actually reduces the incentive for investors to obtain information, hence, in order to avoid this problem, banks are necessary as they can make investments without immediately disclosing their decisions in public markets, creating incentives for research firms, managers and market conditions with positive ramifications on resource allocation and growth (Luintel, 2008).

This view also considers banks as the best in terms of reducing the problem of free riding for the public good and it perceives them as more efficient in assessing potential borrowers on behalf of savers, thus reducing the cost of acquiring and processing information (Claus, 2004). Banks are also better at providing options for inter-temporary risk diversification (Beck, 2010). A number of researchers affirm this, such as, Stiglitz, 1985; Singh, 1997. As Champonnois (2006) has pointed out; Germany, Italy and France among others are examples of economies in which banks play a leading role.



### **3.1.6.2 The market based view of the financial system**

The market-based view argues, contrary to the bank-based view, that a liquid and well-functioning stock market facilitates international trade through efficient resource allocation, resource mobilization and enhanced corporate control. According to this view, stock markets are more capable of improving corporate control and resource management, as they promote takeovers and pay managers for their success. The advocates of this view also highlighted the drawbacks of the banking-based financial system, such as its negative impact on firms ' opportunities to engage in profitable investments because of the inside knowledge banks are reluctant to reveal (Arestis *et.al*, 2005).

Stock markets can resolve this by publicly releasing the required corporate information that reduces the asymmetric information issue. The above-mentioned contrasting views on banks and markets regard these two financial systems as replacements rather than complements. However, Levine (2000) points out that both systems provide trade growth that enhances financial services, and that the exact composition of the financial system or financial structure is trivial only. In reality, banks and financial markets are mutually complementary. Although South Africa follows a market-based system, this means that banks also play a role in complementing the financial markets in terms enhancing international trade growth.

### 3.2 Empirical Literature Review

The links between trade and financial development can take various forms in the literature. On the one side, trade openness will induce financial-market growth vice-versa. In Rajan and Zingales (2003), trade opening weakens incentives of incumbent industrialized firms or financial intermediaries to block financial development in order to reduce entry and competition, particularly when combined with openness to capital flows.

Many empirical studies have demonstrated the presence of a long-term relationship between financial development, openness to foreign trade and economic growth. The relationship between trade openness and financial growth was analyzed by Polat et al (2015) using a co-integration test method with annual time series data in South Africa from 1971 through 2011. A long-term relationship has been found among trade openness, South Africa's financial growth. On the other hand, Salahuddin and Gow (2016) researched the relationship between international trade transparency, financial development and economic growth using the ARDL bounds testing methodology with annual time series data between 1991 and 2013 investigated the relationship between international trade openness, financial development and economic growth in South Africa. In South Africa, the three variables under review were found to be co-integrated on both the long and short term. Ersoy et al (2011) analyzed the interrelationships between financial development and trade openness in Turkey with time series annual data from 1980 to 2008, using the ARDL method in Turkey. Their study revealed a long-term relationship in Turkey, both in the short and long term, between trade openness and financial development running from the latter to the former.

Asghar and Hussain (2014) analyzed the relationship between trade openness and financial development in developing countries using panel data analysis with data from 1978 to 2012. During the time under review, their study showed the presence of a long-term relationship between commercial openness and financial development in developing countries. Soukhakian (2007) also examined the interrelationships between international trade openness and financial development with time series data from 1960 to 2003 in Japan, using the Granger causality approach. The study found a long-term relationship exists in Japan between those variables. Yucel (2009) analyzed the relationship between financial progress, economic growth, and trade openness, using the Johansen and Juselius approach to co-integration and Granger causality with data from the 1987 to 2007 time series in Turkey. The study showed that a combination of financial development and open trade had a statistically significant impact on Turkey's

economic growth. Khan and Qayyum (2007), Sabandi and Noviani (2015), Lacheheb et al (2013) and Saaed et al (2015) did other empirical studies which found similar results.

### **3.2.1 The effect of Financial Development on International Trade**

Few empirical studies have been carried out which investigated a direct relationship between international trade and financial development. A growing body of empirical work shows that financial development is connected strongly and robustly to international trade. In this empirical literature the seminal work is by Beck (2002). By focusing on savings mobilization and the allocation of these loanable funds, he uses the credit to the private sector as a proxy for financial development through depositing money banks and other financial institutions (percentage of GDP). Using data on 65 countries from 1966 to 1995, Beck (2002) finds that countries with a higher level of financial development experience higher shares of manufactured exports in GDP and total merchandise exports and have a higher balance of trade in manufactured goods. For 36 industries and 56 countries, Beck (2003) uses industry-level data and focuses on the degree to which financial development translates into a comparative advantage in industries that rely heavily on external finance. He follows the technique developed by Rajan & Zingales (1998) and uses data on the industry-wide reliance on external finance, as well as various financial sector development measures. His findings show that countries with better developed financial systems are experiencing higher export shares and trade balances in industries using more external finance.

By focusing symmetrically on the effects of the financial crisis on international trade (see for example Ronci, 2004; Iacovone & Zavacka, 2009; Chor & Manova, 2010), some recent work has extended this issue on the relationship between finance and trade. The findings show that financial crises are having a significant negative effect on international trade flows. This can be explained by three main reasons, but not mutually exclusive, namely the sunken cost of accessing foreign markets, the issue of access to trade credit, and the demand-side "shocks due to the negative impact of the financial crisis on economic growth. No focus has been put in this empirical literature on the role of institutions in the relationship between the firms.

Feeney and Hillman (2004) show that the degree of diversification of portfolios influences protectionist lobbying efforts by owners of sector-specific resources. When risk can be entirely diversified, there is no motivation for special interest groups to lobby for defense. Therefore, the growth of the financial markets as an insurance mechanism will lead to greater openness to trade. Mature financial markets in Kletzer and Bardhan (1987) and Beck (2002) may be a comparative advantage for industrial sectors that rely heavily on external financing.

Accordingly, economies with developed financial systems are expected to feature industrial and trade structures that are connected to economic sectors that rely on finance.

The relationship between financial development and international trade in India was investigated by Katircioglu et al. (2007) they find that exports stimulate financial development while India's money supply stimulates the imports. Bound tests were also used by Jenkins and Katircioglu (2010) to examine the relationship between financial development, foreign trade and economic growth in Cyprus. They suggest that, in Cyprus, there is no evidence of a causality relationship between financial development and trade growth. The authors conducted numerous studies that revealed the inverse relationship between financial development and international trade. Slaveryd and Vlachos (2002) point out that trade openness can entail a higher risk of foreign competition and exposure to external shocks.

Kar and Pentecost (2002) have looked at the causal relationship between financial development and open trade in Turkey. They conclude that financial liberalization has no bearing on Turkey's international trade. Yucel (2009) also looks into the causality relationships in Turkey between financial development, and international trade. He finds financial development has a positive effect on Turkey's international trade. Goldsmith (1969) claims that financial technology has started to run the banking sector in a particularly effective manner. From his study of 35 countries between 1860 and 1963, he also found the positive correlation between financial development and international trade.

King and Levine (1993) have studied the link between the financial indicator and the economic growth of 80 countries, according to recent empirical studies. They find that there is a strong and robust correlation between the link between financial indicators and trade performance for 80 countries. Between the years 1960-1989, Gregorio and Guidotti (1995) researched 100 countries and conclude that financial growth leads to increased exports. Levine and Zervos (1998) discover the positive correlation between stock market growth and banking development and openness to trade. We conclude that the effects of changes in the stock market and the growth of the banking sector lead to greater openness to trade.

Kenourgios and Samitas (2007) have looked at Poland's long-term relationship between finance and international trade. They conclude that the most important impetus of long-run trade in Poland is credit to the private sector. For the period 1995-2005, Hagemayr et al. (2007) studied the relationships between finance and transparency in four emerging economies in South-East Europe. They found that bond markets and the capital stock had a positive and



significant effect on openness. Rousseau and Sylla (2001) find a correlation for 17 economies over 1850-1997 between financial factors and trade growth and indicate that the development of the Atlantic trade could have contributed to finance.

The relationship between financial progress, foreign trade and economic growth in India is explored by Katircioglu et al. (2007) they find feedback in India on the relationship between financial development and international commerce and growth. By contrast, Arestis and Demetriades (1997) Shan et al. (2001) and Shan and Morris (2002) argue that a couple of countries have supported the positive correlation between financial development and international trade, and have not reached a general conclusion. Roubini and Sala-i Martin (1995) point out that trade has a negative correlation with the bank reserve ratio, and that financial development was unlikely to affect this.

Kim et al, (2010) uses a panel data for 87 OECD and non-OECD countries over 1960–2005 to examine the long-and short-term relationships between financial development and international trade. The authors find a positive (negative) long (short) run link between trade and finance, indicating that finance and trade are complements in the long term. Furthermore, these results, after bifurcating the sample into OECD and non-OECD countries, only hold for non-OECD countries where most African countries fall. Financial development has marginal commercial consequences for the OECD countries. While financing's overall effect on international trade is country-specific. Kim et al. (2012) find that the financial development has a positive impact on trade.

Becker and Greenberg (2004) are investigating the connection between exports and financial development in the field of international trade. They believe that exporting firms face substantial upfront fixed costs in product design, manufacturing, marketing, and transportation, and this is influenced by financial development levels. Empirically testing their hypothesis reveals that for industries and country pairs facing heavy upfront investment, the marginal impact of finance on exports is largely driven by either product features or economic distance between importer and exporter. Hur et al, (2006) is closely associated with this research where the authors show that domestic financial growth and tangibility of assets are important drivers of the manufacturing sector's international trade structure across a broad group of economies; According to Becker and Greenberg (2004), the focus of the analysis by Hur et al. (2006) is based on the premise that there is a substitubility between the level of financial development and the tangibility of properties. Using industry-level data on the dependency of firms on

external financing and on the tangibility of assets of firms for 27 industries from 42 countries, Hur et al, (2006) find that countries with relatively well-developed domestic financial sectors have a higher export share, trade balance and a comparative advantage in more intangible asset industries, while countries with lower financial growth have a comparative advantage in tangible asset industries.

Svaleryd & Vlachos (2005) is using data on financial endowment from OECD countries to study the effects of financial factors on the pattern of industrial specialization and comparative advantage. Once again, their results show that countries with well-functioning financial systems tend to specialize in industries heavily dependent on external financing. Interestingly, these results also show that differences in financial systems are more important determinants of the OECD countries' pattern of specialization than differences in human capital. Using data on bilateral exports over the period 1985-1995 from 107 countries and 27 sectors, Manova (2006) provides evidence that credit constraints significantly determine international trade flows.

Enisan and Olufisayo (2009) investigated the case of selected African countries using newly developed ARDL-Bounds testing. The study used data covering the period from 1980 to 2004 and found a positive relationship between development of the financial market and international trade for South Africa and Egypt. A causal relationship has also been established, running from the trade of stock markets to trade openness. Nevertheless, the findings are not clear for Cote d'Ivoire, Kenya, Morocco, Nigeria and Zimbabwe on the course of the relationship between the two variables.

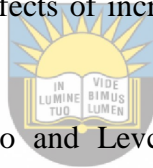
Niroomand et al (2014) examined the relationship between financial development and trade openness in 18 emerging economies using the co-integration and error correction modeling boundary testing approach with annual data ranging from 1980 to 2011. Financial development was found to have had a significant impact on trade openness only in the large emerging economies, both in the short and long term. Kim et al (2010a) investigated whether trade openness and financial development complement one another or are substitutes for 87 countries using Perasan et al' (1999) pooled mean group estimator with panel data from 1960 to 2005. They noted that in the long run, trade openness and financial development complemented each other and replaced each other for all of the 187 countries in the short run. The same study found that financial development in the Organization for Economic Cooperation and Growth (OECD) countries had a marginal effect on trade openness.



### 3.2.2. The Effect of International Trade on Financial Development

Perhaps the most important way through which financial development would be impacted by international trade is through increased market size and demand for financial services. In this sense, increased trade openness stimulates demand for new financial products, including trade finance instruments and risk hedging instruments (Svaleryd and Vlachos, 2002). Therefore, the transparency of the capital account could increase liquidity and rising capital costs, thereby promoting financial development. Levine (2001) offers some evidence that removing restrictions on transfers from foreign portfolios helps to increase liquidity on the stock market.

Factors of the political economy are also considered an important channel. Rajan and Zingales (2003) claim that special interest groups (incumbents) resist financial development because the resulting increased competition erodes their rents, since these groups can fund themselves with retained income while potential competitors require external funding to start operations. Such authors argue that simultaneous opening of trade and capital accounts would weaken the powers of the incumbents to obstruct financial development and could even produce enough new income to offset the negative effects of increased competition on incumbents and thus minimize resistance to change.



From a different point of view, Do and Levchenko (2004, 2007) argue that financial development is determined endogenously in part by the demand for external finance and thus by the comparative advantage of the individual countries. Countries that are specialized in financially dependent commodities will have a high demand for international financing and will therefore have a high level of financial mediation. The financial system, by comparison, will be less advanced in countries specializing in goods that rely less on international financing. On the other hand, it is possible to initiate financial development through trade openness.

Baltagi, Demetriades and Law (2009) test the Rajan and Zingales hypothesis through dynamic panel techniques for a broad sample of countries. They provide evidence that trade and capital account openness are important determinants of banking sector development and conclude that although opening up both the trade and capital accounts is more beneficial; opening one without the other also fosters financial development. Klein and Olivei (2008) also find that capital account liberalization is linked to greater financial sector depth in a sample of advanced and developing economies.

Nonetheless, Chin and Ito (2006) show that higher levels of financial transparency in a panel of 108 countries over the period 1980 to 2000 only lead to the development of the financial

sector if a legal development threshold has been reached. For a sample of 16 African countries using time series techniques, Gries, Kraft and Meierrieks (2009) look at the relations between financial deepening, trade openness and economic development. They find that the ties between financial growth and trade openness are not very reliable, with results varying considerably by country, despite concluding that there is evidence that for some countries, openness causes financial depth.

Ogbonna (2010) analyzed the interrelationship between trade openness, financial progress, and economic growth in Botswana using the co-integration method with yearly time series data from 1980 to 2007. The finding is that during the time under review, trade openness and economic growth were responsible for the sustainable financial development in Botswana.

Kim et al (2010b), using Perasan et al's pooled mean group approach (2009) with cross country data (1960-2005) from 88 countries, analyzed the competitive effect of trade openness on financial development. They found that there is a long-term relationship running from trade openness to financial development and the same study noted that financial development was negatively influenced in the short term by trade openness. It was also found that there was a negative impact of trade openness on financial development in both the high inflation and low-income countries that were part of the study.

Chen and Emile (2013) noted that the trade openness that existed between Latin America and China during the period between 1982 and 2009 had a significant positive influence on the financial development of Latin America. In addition, trade openness in general has positively influenced Latin American countries' financial growth. Baltagi et al (2009) used dynamic panel estimation techniques to study the relationship between openness and financial development in developing and industrialized countries with annual data from 1980 to 1996. During the period under study, both financial openness and financial trade openness were instrumental in leading the development of the banking sector in industrialized as well as developing countries. In addition, the Alajekwu et al study (2013) found that the level of trade openness had a negligible impact on the development of the Nigerian stock exchange. Trade openness has been found to have had a positive, significant impact on developing countries' financial development (Asghar & Hussain, 2014). Zhang et al (2015) analyzed the relationship between financial openness, trade openness and financial growth in China, using dynamic panel estimation technique. Their study revealed a negative impact of trade openness on the size of financial development, and that financial performance in China was positively and significantly influenced by both trade

and financial openness. Law (2007) used the dynamic heterogeneous panel data analysis approach with data ranging from 1980 to 2001 to examine the link between financial development and openness in 68 low, middle, and high income countries. When studying countries together they discovered that trade and financial openness were key determinants of financial development.

When countries were classified separately according to income, their analysis found that financial development in middle-income countries was strongly influenced by trade and financial openness while financial development in high and low-income countries was affected by openness in a very negligible way. Also a feedback effect was observed between financial growth and openness to trade. For example, in SSA, Gries et al (2009) discovered a clear bi-directional causality relation between financial development and international trade. Polat et al (2015) noted the presence in South Africa of a short-and long-term feedback effect between financial international and international trade. In addition, Yucel (2009) observed a feedback effect in Turkey between financial development and international trade. Lawal et al (2016) conducted other prior studies which found similar results.

Other empirical studies found that openness to trade through other networks had an impact on financial development. Chimobi (2010) analyzed the relationship between financial progress, trade openness and economic growth in Nigeria using the Johansen multivariate approach to cointegration and Granger causality with data from the time series from 1979 to 2005. The financial development indicator of money supply was found to have triggered both short and long-term trade openness in Nigeria by Granger. Law and Demetriades (2006) analyzed the relationship between institutions, trade accessibility and financial development in 43 developing nations with data ranging from 1980 to 2001 using dynamic panel data estimation approach. Their study noted that, in developing countries, international trade alongside strong institutions was key positive determinants of financial development. The same study revealed that trade openness and institutions had a very weak impact on developing countries' financial development while they (trade openness and institutions) had a strong influence on middle-income nations' financial development.

Law (2009) analyzed the relationship between trade openness, financial development, and capital flows in developing countries using the dynamic panel GMM estimation method. The study noted that both trade openness and capital flows separately had a positive and significant influence on developing countries' financial development. Furthermore, the study found that

trade openness influenced financial development in developing countries through higher levels of institutional quality and competition while institutional quality had a more positive impact on the influence of trade openness on financial development in developing countries.

### **3.2.3. Studies showing no Relationship between Financial Development and International trade**

Therefore, trade and finance can rely on one another. As stated in Svaleryd and Vlachos (2002), if trade restrictions aim at insuring domestic industries against fluctuations in world market prices, the development of financial markets could lead to trade liberalization which, in effect, could lead to the development of financial markets which help agents diversify the added risks. Trade and finance can also evolve independently of each other, therefore there is no causality between them.

As mentioned in Rajan and Zingales (2003), when a country sees potential, it opens up to trade, yet it's also likely to be a moment when financial markets grow. A link between open trade and financial markets may simply reflect a common driving force (opportunity) instead of a causal relationship. Empirical studies based on single-equation regressions are thus subject to reverse causality and bias in endogeneity.



### **3.2.4. Literature for South Africa**

Marcel Kohler and Adrian (2011) conducted. The findings of the study match the economic predictions. The findings imply that increasing costs of financing trade activities, as assessed by the cost of interbank credit in the importing country, had a significant impact on South African exports during the global financial crises. The findings show that, everything else being equal, a one percentage point increase in the interbank lending rate might lower exports by about ten percent. Furthermore, not only are higher interest rates linked to decreased export volumes, but this pattern has accelerated since the global financial crisis began.

Kwenda and Holden (2014) investigate the significance of trade credit and the factors that influence its adoption as a financing tool in South Africa. To account for unobservable heterogeneity and potential endogeneity issues, the GMM estimation technique is used. The study, like previous studies, found that the availability of internal resources, economic performance, trade credit supply, and investments in current assets all influence the use of trade credit by South African listed companies, with only bank credit being found to be a substitute for trade credit. Even in well-developed financial markets, they conclude, trade credit is an essential source of capital. As a result, it is critical for managers to maintain healthy and positive connections.

### 3.3 Assessment of the literature

Classical international trade models clarify the comparative advantage of the countries with technical or endowment disparities. Nevertheless, both the Ricardian model and the Heckscher-Ohlin model can be easily modified to demonstrate the impact of the growth of the financial sector on international trade flows. Baldwin (1989) developed one of the first models to provide a source of comparative advantage for financial markets. In his model of two-country, two-sector, and one-factor, demand for one of the goods is subject to shocks in demand, while the other is not. He shows that companies generating the risky good face lower risk incentives and therefore lower marginal costs in economies with better developed financial markets and therefore better possibilities to diversify risk resulting from demand shocks. Countries with better developed financial markets and thus better possibilities for diversification therefore specialize in the risky good.

Therefore, countries with better developed financial sectors have higher exports and trade balance in industries which rely more on external financing, keeping other things constant. Therefore we have to use exports at industry level to test this hypothesis. The relationship between the international trade structure and the development of the financial sector can also be derived from the recent literature about the connection between financial development and exports. Financial intermediaries and markets emerge to solve the moral hazard and adverse selection problems that drive a wedge between the external and internal finance rates. Financial intermediaries allow a higher return on capital and thus more investment opportunities realized by lowering the cost of international financing, which in turn boosts exports. Industries that rely more on external finance will benefit more than proportionately from a higher level of financial growth and thus a lower cost of external financing. Rajan and Zingales (1998) find evidence that in countries with a better developed financial system, industries that depend heavier on external financing are growing faster.

There is a limited research focusing on the link for South Africa between financial development and international trade.

## CHAPTER 4

### RESEARCH METHODOLOGY

#### 4.1 Introduction

This chapter details the empirical approach which was followed by analysing the relationship between the variables of interest. The chapter is comprised of the research design, data sources, model specification, and the estimation technique. This study will be based on the model proposed by Kletzer and Bardhan 1987 and further proven by Vaubourg 2016. This is the most significant piece of the study since it helps in accomplishing one of the objectives, which is to empirically test the linkages between the factors of interest.

#### 4.2 Research Design

The study acknowledges the existence of three main types of research methodologies which include; quantitative, qualitative and mixed research. Quantitative research is primarily used for description, explanation and prediction. Basically, this kind of research type is based on quantitative data, particularly on the analysis of variables (Balnaves & Caputi, 2001; Newman & Benz, 1998). Furthermore, quantitative research focuses attention on the measurements and amounts displayed by events or people and uses a number of statistical methods (Thomas, 2003; Wyse, Hayward, & Pandya, 2015). In contrast, qualitative research is exploratory research. This kind of research is used in order to comprehend the underlying reasons, opinions and motivations (Thomas, 2003). Furthermore, in contrast to the quantitative research, qualitative research is used primarily for the purposes of description and exploration and to gain an understanding of how people think and experiences their lives. The mixed research is the combination of the qualitative and quantitative approaches.

Furthermore, the study makes use of secondary data sources in achieving the aim and objectives outlined in the first chapter. In order to achieve the outlined goals and objectives, the most appropriate methodological approach is the quantitative approach because it plays an important role in ensuring that the research aim and objectives of this study are attained. In addition, the fact that the study uses secondary not primary data validates the use of the quantitative approach instead of the qualitative or mixed research approaches.

The Vector Error Correction Model (VECM) approach is utilized to assess the link between trade and financial sector development in South African.

#### 4.2.1 THEORETICAL FRAMEWORK

The literature that has been reviewed on the relationship between financial sector development and international trade states that the financial sector can affect international trade in two ways which is the direct link and the indirect link which is through growth (Mehta and Bhattacharya, 2018). Beck (2002) further postulates that credit finance is the main source of promoting international trade through the development of the financial sector. Heckscher– Ohlin hypothesis and McKinnon’s Shaw theory stress that financial development affects trade through the direct link. Levine further explains how availability of credit can help international trade by investment or credit finance. The Growth models theories argue that finance can affect international trade through economic growth.

#### 4.3 Model Specification

To investigate the relationship between financial development and international trade in South Africa, this study will adopt and modify a model by Bhunumurthy and Singh (2013) and Korhan, Muhammad, and Taspinar (2015). The relationship is said to come from financial development to international trade which means that International trade measured by (export) is made a dependant variable and financial development measured by stock market development and banking sector as independent variables. Stock market capitalisation and stock market value traded as a proxies for stock market development, total credit extended to the private sector and money supply (M3) as proxies for banking sector. There are other independent variables that are included that fall under macroeconomic variables and they are inflation, exchange rate and total factor productivity, this is because international trade is also affected by the economy as a whole. The regression is written below as follows:

Given  $X_t = n \times 1$  and  $7 = \text{number of factors of examination}$ ,  $7$  is an element of  $X_t$  (which is  $n$  in this case), given the seven factors of examination, Dicks and Panchenko (2005). Utilising the matrix algebra econometric model is specified as follows:

$$BX_t = \mu + \Gamma X_{t-1} + \varepsilon_t \dots\dots\dots (4.1)$$

Where: B is the matrix of the variable coefficients.

$X_t = 7 \times 1$  observation known as:

$$EXPt = SMC_t/GDP, SMV_t/GDP, M3_t/GDP, TC_t/GDP, CPI_t/GDP, EX_t/GDP, TFP_t/GDP \dots\dots\dots 4.2$$



Where:

TO= is the total value of international trade (exports) over GDP

SMC= Stock market capitalisation as a percentage of GDP. The GDP per capita is utilized in the study to determine the level of household disposable income.

SMV= stock market value traded as a percentage of GDP

M3= (M3) money supply of the as a percentage of GDP

TC= Total credit extended to the private sector as a percentage of GDP

TFP= total factor productivity

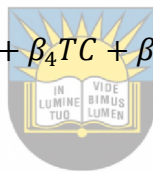
CPI=Inflation

EX= Exchange rate

The empirical form of equation (1) above is represented as:

$$TO = \beta_0 + \beta_1 SMC + \beta_2 SMV + \beta_3 M3 + \beta_4 TC + \beta_5 CPI + \beta_6 EX + \beta_7 TFP + U_t \dots \dots \dots (4.3)$$

Where:



$\beta_0$  = Intercept of the relationship in the model

$\beta_1 - \beta_7$  = Coefficients of each independent or explanatory variable

$\mu_t$  = the Error term

### 4.3 Definition of the factors and Priori Expectations

#### 4.3.1 Dependent Factors: Export.

An export is a product or service manufactured in one country which is purchased by someone else in another country. The seller of such goods and services is an exporter; the importer is a foreign buyer. Exporting goods also requires the participation of customs authorities. David Ricardo (1997) said countries export to achieve comparative advantage over others.

#### 4.3.2 Independent factors

The independent or explanatory variables in this study are stock market capitalisation and stock market value traded that will measure stock market development. Liquid liability (M3), and total credit to the private sector will measure the banking sector development.



#### 4.3.2.1 Stock market value

Measures the activities of a market, giving the value of shares traded in a domestic country on the exchanges of the domestic country to GDP (Huang, 2010). This variable is to cater for the countries that are active in trading such as South Africa. A negative relationship is expected between total value traded and international trade (exports).

#### 4.3.2.2 Stock market capitalisation.

Stock market capitalization is the value of the stock in the market, it is also referred to as the share price multiplied by the number of outstanding shares of listed domestic companies. This variable is utilized to determine the size of the development of the financial market. Seven and Coskun (2015), Rewilak (2013) and Sehrawat and Giri (2014) consider stock market capitalization to be a good measure of the size of the stock market of a domestic country. This variable is expected to have a positive relationship with international trade.

#### 4.3.2.3 Total credit extended to the private sector

This refers to financial resources provided by financial corporations to the private sector, such as through loans, purchases of non-equity securities, and trade credits and other receivable accounts, which establish a repayment claim. These arguments in some nations provide compensation to public enterprises. Financial companies include monetary authorities and deposit money institutions, as well as other financial entities where data is available (including businesses that do not allow transferable deposits but do incur liabilities such as time deposits and savings). The higher the credit extended to the private sector the more exports level will be as trade finance will increase, which means there is direct link between these two variables.

#### 4.3.2.4 Money supply M3

Money Supply is the broadest definition of M3 which includes money market deposits, and various assets that can be easily converted to spendable funds and cash (Welch and Welch:2010). This is all the money that is in an economy, it measures the supply of money in a country and a financial development proxy (Kiedribredeogo and Minea 2013). This indicator is expected to be negative.

### 4.3.2 Macroeconomics Variables

#### 4.3.2.1 Inflation

To capture the macroeconomic stability, consumer price index is used as a proxy variable (CPI) because high rate of inflation is considered to have a disproportionately negative impact on the poor because the poor have relatively limited access to financial instruments that hedge against inflation (Arnold:2010). To capture the degree of microeconomic stability, inflation volatility

is used, Aziakpono (2008) states that a less volatile economy is preferred for the growth of the economy. A negative relationship between inflation and international trade is expected.

#### 4.3.2.2 Exchange rate

This is the value that a country's currency have compared to another currency. This rate has two different types: domestic currency which is a direct value of foreign currency and foreign currency that is indirect quote of domestic currency (Montiel and Serven, 2008). An exchange rate that does not contain domestic currency as one of the currencies is called a cross country. There is a positive relationship between international trade and exchange rate.

#### 4.3.2.3 Total Factor Productivity

Total Factor Productivity (TFP) is the section of yield not clarified by the measure of sources of info utilized as a part of creation. Therefore, its level is dictated by how effectively and strongly the sources of info are used underway (Baldwin, 1989). TFP development is generally measured by the Solow residual. The association between trade and productivity is positive.

### 4.4 Data sources

The research performs a time series analysis of quarterly data from 2001 to 2018 to analyse the linkages between these variables. The selection of the period of study in this case is based on the year in which the new South African government liberalized its financial system. Data for stock market development measures is obtained from the Johannesburg stock exchange (JSE) web site of the World Federation of Exchanges (WFE). It is created for the South African Reserve Bank (SARB), World Bank and International Monetary Fund (IMF) for GDP, money supply, private sector domestic credit, CPI, total productivity factor, and exchange rate data.

### 4.5 Estimation technique

There are several methods which can be employed to assess a relationship between variables. These include simple regression and other cointegration-based methods. The regressions are models based on the assumption that all specified variables are non-stochastic or stationary (Dick and Fuller, 1979). Dick and Fuller (1979) also showed that spurious regressions occur when using non-stationery data. This is therefore important to ensure that all variables are stochastic, in order to avoid spurious regression. This analysis will use the Johansen estimation method, which is a device equation check that offers estimates of all the co-integrating relationships that may exist within the non-stochastic variables vector, plus a mixture of stationery and non-stationery variables and captures the data's fundamental time series qualities (Agir,2010). This test allows the estimation of a specification for dynamic error correction that measures both short and long-run dynamics. Agir, (2010) identified steps involved in the

implementation of the Johansen technique. The first step is to determine the stationery of all the variables in the equation, with performing the co-integration test to identify any long-run relationship among variables.

### 4.5.1 Stationarity Test

Econometric analysis requires time series data to be stationary and of the same order for all variables. This is because non-stationary data leads to spurious regressions that skew the results (Dimitrios, 2006). In addition, a time series ' stationarity status may affect its actions and property. Brook (2008) defined a stationary series as one that is characterized at each given lag by a constant mean, constant variance and a constant auto covariance. If the data is non-stationary at level [I (0)], it is important to separate the data before stationarity is achieved. For robustness, the analysis utilizes both informal and formal techniques to test whether the time series for all variables is stationary. The informal test is performed by examining graphs and auto-correlation correlations while the formal test is performed by Augmented Dickey Fuller (ADF) and re-tested using Phillip-Perron test. The null hypothesis to be checked is that the data series is non-stationary against the alternative hypothesis that it is stationary.

#### 4.5.1.1 The informal test for stationarity

The series explores stationarity by plotting the sequence over time, using graphical analysis. If the graph shows an upward trend, it means that the sequence is non-stationary and separated before stationarity is reached. If the graph repeatedly crosses the mean we can conclude that the data series is stationary.

#### 4.5.1.2 The Augmented Dickey Fuller (ADF) test

The ADF test differs from other unit root test methods in the sense that it incorporates the regressand lagged terms to take care of the potential serial correlation in terms of the error. It is based on the assumption that the terms of error are statistically independent and the variance is constant (Chakraborty, 2007).

This method involves estimating the following equations:

$$\Delta x_{tt} = \alpha + \beta_1 x_{tt-1} + \beta_2 t + \sum_{i=1}^j \beta_i \Delta x_{tt-i} + u_{tt} \dots\dots\dots (4.4)$$

Where:  $\Delta$  is the difference operator  $X_t$  is the evaluated variable and  $u_t$  is the residual white noise,  $t$  is a chronologically determined trend variable. The coefficients to be evaluated and the parameters to be tested correspond to  $(\alpha, \beta_1, \beta_2$  and  $\beta_i)$ . In addition, as Gujarati (2004) has pointed out, the number of lagged differential terms to be included is often

determined empirically, so that sufficient terms are included for the error term. Variable  $X_t$ 's null and alternative null being tested is:

$$H_1: \beta\beta_1 = 0 \quad H_2: \beta\beta_1 \neq 0$$

$H_1$  implies that the time series is non-stationary and rejects null if  $\beta\beta_1$  is less than zero ( $H_1: \beta\beta_1 < 0$ ). Failure to reject the null means the time series of order I (0) is not integrated and leads to further distinction until it is reached stationary.

#### 4.5.1.3 Phillip Perron (PP) test

Phillip and Perron (1988) proposed the Phillip Perron (PP) test, which is no different from the ADF test but more rigorous as it makes the use of non-parametric statistical methods for auto-related residues.

Dimitrios, (2006) suggests three situations where it is possible to base a decision on whether to proceed to the next stage or stop after the stationary test results have been obtained. The second is that if the variables of different orders are combined, then it can be inferred that there is no cointegration. Eventually, if the variables are combined in the same order the analysis will lead to a test of cointegration.



#### 4.5.2 Cointegration Test

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The first scenario is that if all of the variables included at level I (0) are stationary, it can be inferred that the variables are cointegrated. The widely used methods of cointegration are the Engle Granger method of cointegration and the Johansen approach to cointegration.

##### 4.5.2.1 Engle Granger Cointegration Approach

Engle and Granger (1981) developed the Engle Granger cointegration strategy, it is referred to as the Engle Granger-2 stage process and it outlines four stages that are required in order to test for cointegration. The first step is to check the variable's order of integration, the second step is to estimate the long-term relationship if the results from step one allow. The third step is to check the residuals for cointegration and the fourth step is to estimate the model of error correction in order to evaluate the variables' short-term and long-term effects. As explained by Dimitrios (2006), the Engle Granger approach to cointegration is viewed as an easily understandable and implementable process. The author further states, however, that this strategy is marked by quite a number of disadvantages; the first shortcoming of this approach is that it does not clearly explain which variables can be used as regressors, making it unacceptable when more than two variables are used. The second drawback is that if more than

two variables are used it cannot display the number of cointegrating vectors. Finally, since it depends on a two-step estimator, any mistake that happens in step one is converted into step two.

#### 4.5.2.2 Johansen's Cointegration approach

The Engle Granger method's limitations led to the Johansen (1988) approach to cointegration being formed as a solution. If after differentiation the variables are found to be stationary and integrated in the same order, the analysis continues to the cointegration test, which is intended to determine whether a group of non-stationary series is co-integrated or not (Mishra.et.al, 2009). This method is based on VAR and extends to a multivariate one the single error correction model (Dimitrios, 2006). There are six steps to take when performing it, the first is to analyse the order of integration of the variables, the second step is to set the lag duration for the model, the third step is to choose the correct model for the determinist components in the multivariate method. The fourth step is to determine the number of cointegrating vectors, the fifth step is to check for weak erogeneity and the last step is to test the cointegrating vectors for linear constraints. The Johansen approach is regarded as a more desirable strategy because it is more suited for large samples and it views all variables as endogenous, in turn it removes the endogenous problem and thus enables it to capture more than one cointegrating vectors. The analysis therefore adopts this over other cointegration, in order to explore the long-run relationship between variables.

Assuming the above specified set of variables, a VAR model is estimated as follows:

$$Y_t = \beta_1 y_{t-1} + \beta_2 y_{t-2} + \beta_3 y_{t-3} + \dots + \beta_k y_{t-k} \dots \dots \dots (4.5)$$

Where:  $Y_t$  is the vector of variables, range is the operator of disparities, range and range are matrices of coefficients. The matrix of coefficients is known as the matrix of impact and includes the long-term relationship details (Akinlo and Tajudeen, 2010). This can be decomposed  $\Pi = \alpha\beta$  where  $\alpha$  is the equilibrium velocity change and  $\beta$  is the long-term coefficients matrix.

The VAR Model can be re-estimated as follows:

$$\Delta Y_t = \Pi \Delta Y_{t-1} + \sum_{k=1}^k \Gamma_k \Delta Y_{t-k} + u_t \dots \dots \dots (4.6)$$

Where:  $\Pi = \sum_{p=1}^p A_{ii} - 1g$  and  $\Gamma = \sum_{p=1}^p A_{jj} - 1g$

(1988) suggested Maximum eigenvalue and Trace statistics as procedures that can be used to test for cointegration between the variables. The two procedures are formulated as follows:

#### 4.5.2.2.1 Trace statistics

$$\lambda_{\text{trace}}(r) = -T \sum_{i=r+1}^g \ln(1 - \lambda_i)$$

Where:  $r$  is a number of vectors that can co-integrate to 0, 1, 2,  $g-1$ .  $T$  is the number of measurements used for estimation,  $\lambda$  is the maximum estimated value from the calculated matrix. The trace statistical method is based on the probability ratio test for the matrix and it considers whether the trace is increased by adding more uniqueness beyond the greater uniqueness.

#### 4.5.2.2.2 Maximum eigenvalue

$$\lambda_{\text{max}}(r+1) = -T \ln(1 - \lambda_{r+1})$$

This method is based on the characteristic roots of the estimation procedure obtained. The two methods test the null hypothesis that against the mean there are cointegration vectors ( $r+1$ ). If the null hypothesis is dismissed it implies there is one or more vector(s) of the cointegration.

#### 4.5.4 Vector Error Correctional Model (VECM)

If the variables included in the VAR model are co-integrated, a Vector Error Correction Model (VECM) will be built to analyse the relationship between all endogenous variables in both the short and the long term.

While checking for co-integration, a VECM is calculated to evaluate the series' combined behaviour in the dynamic system. This model provides modifications, both short and long term. Dick and Panchenko (2006) suggest that a VECM has a short-term variable, as shown by the error correction model, which will affect the movement of the equilibrium. This model is performed for easy implementation, classical inferences as (OLS) has standard asymptotic properties, granger causality testing and using static testing to choose the lag length.

#### 4.5.4 Variance decomposition

Dickey and Fuller (1979) showed that the degradation of the difference isolates the variation in an endogenous component into the stuns of the pieces at the VECM. Changing disintegrations in the investigation should evolve in this manner. The analysis of fluctuation deterioration thus provides data on the relative importance of any subjective development in affecting the factors in the VECM. Dicks and Panchenko (2006) conveyed that the investigation into difference deterioration shows the extent of changes in the reliant factors toward stuns to different factors due to their own stunts. At the end of the day, the deterioration

investigation determines the sum of the s-venture ahead estimate error shift of a given variable will be discovered by advances to each illustrative variable for s= 1, 2, Dicks and Panchernko (2005; 2006). It agrees with experimental writing that frequently holds that they possess arrangement stuns explain a large part of the arrangement's mistake changes in a VAR Lutkepohl, (2004).

#### 4.5.5 Granger Causality Test

The study acknowledges that the direction of the relationship between the two variables can go either way, as suggested by the supply leading hypothesis, demand following and feedback. Therefore, the Granger causality tests are also performed depending on the stationary and co-integration test results to verify whether it is the supply leading hypothesis, hypothesis-based demand or feedback hypothesis that applies to South Africa.

The causality test is estimated as follows:

$$YY_t = \alpha\alpha_0 + \sum_{ii}^{ll} \alpha\alpha_{11} XX_{t-ii} + \sum_{jj-11}^{mm} \alpha\alpha_{22} YY_{t-} + \mathbf{u}_t \dots\dots\dots (4.7)$$

$$X = \alpha\alpha_{11} + \sum_{ii}^{hh} \alpha\alpha_{33} XX_{t-ii} + \sum_{jj-11}^{ww} \alpha\alpha_{44} YY_{t-jj} + \mathbf{v}_t \dots\dots\dots (4.8)$$

Where:  $y_t$  is the dependent variable, which in this case is the measure of international trade, and  $x_t$  represents all financial growth and  $u_t$  indicators, and  $v_t$  is error words. It is presumed that the error terms are uncorrelated. A causal unidirectional relationship flowing from foreign to financial market creation is verified if the calculated coefficients of lagged X in equation (4.5.1) are not statistically different from zero, which is ( $\sum \alpha\alpha_1 = 0$ ) and the set of lagged coefficients in equation (5.5.2) is statistically different from zero, which is ( $\sum \alpha\alpha_4 \neq 0$ ). It holds up on theory with the Order. By comparison, if the calculated coefficients of lagged X in equation (4.5.1) are statistically different from zero, which is (such as  $\alpha\alpha_1 = 0$ ), and the set of lagged GDP coefficients in equation (4.5.2) is not statistically different from zero, which is ( $\sum \alpha\alpha_4 =$ ), a unidirectional causality (supply leading hypothesis) running from financial market growth to international trade is shown. The hypothesis of feedback is confirmed when in both regressions the range of the predicted coefficients X and Y is statistically different from zero. Still, if the set of coefficients for the two variables does not vary statistically from zero, a causal relationship

#### 4.5.6 Diagnostic Test

This is a stage in which a goodness of fit for the model is tested by examining the model's associated serial correlation, misspecification and heteroskedasticity. Demonstrative test of the VECM based test will be aimed at examining the legitimacy of the fitted model.



#### 4.5.6.1 The Lagrangian Multiplier Test (LM)

One of the CLRM's premises is that the variances and interaction between various disturbances are all equal to zero, implying that the terms of error are distributed independently. If this presumption is violated, it indicates that the terms of error are no longer distributed separately, suggesting the existence of serial correlation. This may be due to the omission of a relevant variable, incorrect functional forms and systematic measurement errors. Both the informal method and the formal method are used to identify serial correlations. The informal approach is carried out by means of graphical analysis while the formal study is carried out by standardized statistical tests such as Durbin-Watson and Glesjer-Godfrey LM test for serial correlation. The Durbin Watson (DW) test assumes a constant is included in the regression, the serial association is only of first order and the equation does not include a lagged dependent variable. According to Dimitrios and Stephen (2006), there are some drawbacks in the DW test which make it unsuitable as it can lead to inconclusive results. This is because when a lagged dependent variable is used it is not appropriate, and it cannot take into account higher serial correlation orders. Breusch and Godfrey (1978) developed a statistical method called the Glesjer-Godfrey LM test to deal with these drawbacks of the DW test which is more accommodating than the DW test. The analysis is therefore using the Glesjer-Godfrey LM method. The Glesjer- Godfrey LM approach checks the null hypothesis against the alternative serial correlation hypothesis



#### 4.5.6.2 The Normality Tests

Model miss-specification involves exclusion of relevant variables, inclusion of irrelevant variables, errors in calculation and incorrect types of operation. Omission of relevant variables is where the model lacks explanatory variables which are the determinants of the dependent variable while the inclusion of irrelevant variables contains variables which are not important to the dependent variable. Model miss-specification also involves incorrect functional form which is usually encountered when a linear equation is assumed while the relationship is non-linear. Finally, when a variable is incorrectly measured, a measurement error is. The normality of residuals is checked to identify miss-specifications and ensure that residuals are normally distributed.

Normality tests will also be performed to examine the normal distribution of residuals. The Jarque-Bera test is used for testing for normality. Uses the property of a random variable usually distributed. The entire distribution is characterized by the mean and the variance of the first two moments.



The null hypothesis for the normality tests will be stated as:

H0: Residuals are normally distributed.

#### 4.5.6.3 The VEC Heteroscedasticity Test

A heteroskedastic model is characterized by unequal variances in terms of error, which violates the assumption of constant variances in terms of error. Heteroskedasticity can be observed in the model in two different ways which are informal and formal methods. The informal method is done by observing various graphs while the formal is done by conducting, among others, formal tests such as the Breusch LM test, the Harvey Godfrey test, the Park LM test, and the White test. As Dimitrios (2006) explains, the White test is more beneficial than other LM tests because it does not presume any prior knowledge of heteroskedasticity, it does not rely on the presumption of normality, and it suggests a particular choice for the variables in the auxiliary regression. It helps it to remove the problems faced with those other LM methods; thus, the analysis favours the LM test of the white. This tests for heteroskedasticity the null hypothesis of no heteroskedasticity, against the alternative hypothesis. If we reject the null hypothesis, it means heteroskedasticity is present and if the presence of heteroskedasticity is detected, the model will be re-estimated in the manner in which this problem is addressed.

The VEC heteroscedasticity test is used to verify whether the residuals are homoscedastic. The null homoscedasticity hypothesis will be described as:

H0: The residual variance is constant.

#### 4.6 Conclusion

This chapter's main purpose is to clarify the model, econometric methodology and the data the analysis uses. For robustness, the analysis conducts both the formal using ADF and PP test and informal testing using stationary test graphs and correlograms, and employs the cointegration method of VAR-based Johansen to investigate the long-term relationship between stock market development and economic growth. The study uses the Johansen's approach to cointegration over the Engle granger method as it considers all variables as endogenous. The research also uses the Granger causality test to analyse the causal relationship between the two variables. Diagnostic tests are conducted to test for heteroskedasticity, serial correlation and model misspecification; moreover, inefficiencies may be experienced if these problems exist on the model

## CHAPTER 5

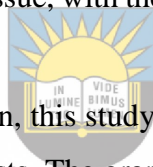
### THE EMPIRICAL Findings and Discussion

#### 5.1 Introduction

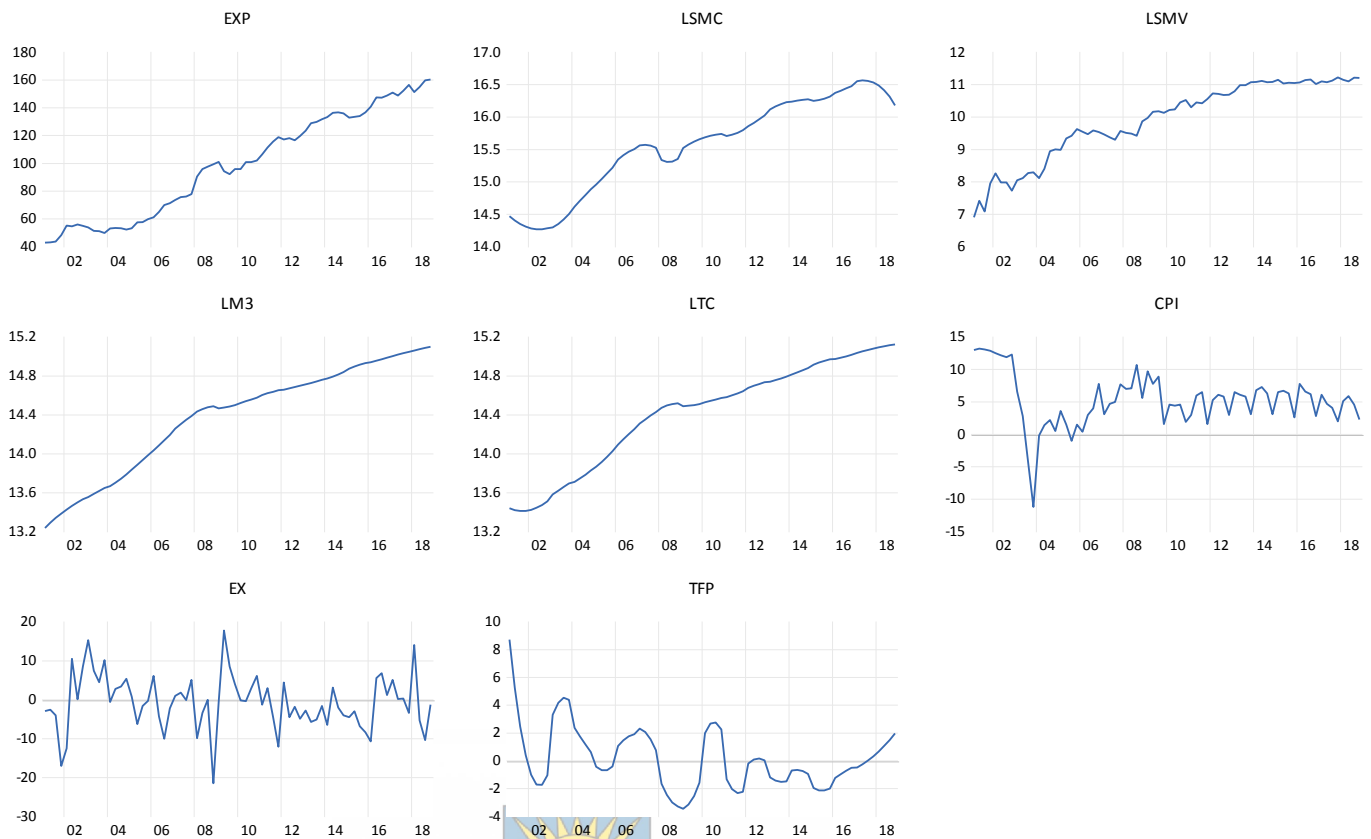
This chapter applies the estimated model and the theoretical framework described in chapter four to look empirically at the relationship between financial development and international trade. It is divided into five sections, namely; the stationary test results from both informal and formal tests; the findings from the cointegration test followed by the results from the Vector Error Correction Model; the study presents results from the diagnostic test after the results from the Vector Error Correction Model; Finally, the results of the Granger Causality test are presented prior to the chapter summary. As indicated by Dimitrios (2007), there is a strong trend in many economic time series, which can lead to issues such as residual non-normality. To avoid these problems; the study used logarithmic data transformation to linearize the relationship between the variables at issue, with the exception of the macroeconomic variables.

#### 5.2. Stationarity Results

To avoid spurious results of regression, this study scrutinized the data's time series properties using both the formal and informal tests. The graphical analysis of the sequence is a common informal stationarity test. A series visual plot is usually a crucial step in analysing any time series before any formal test runs. This initial testing of the data is important as it allows the detection of any data-capture errors and structural breaks, and gives an idea of the data set's patterns and stationarity. Plots of all variables used in the model are shown in Figures 5.1.1 and 5.1.2 below:

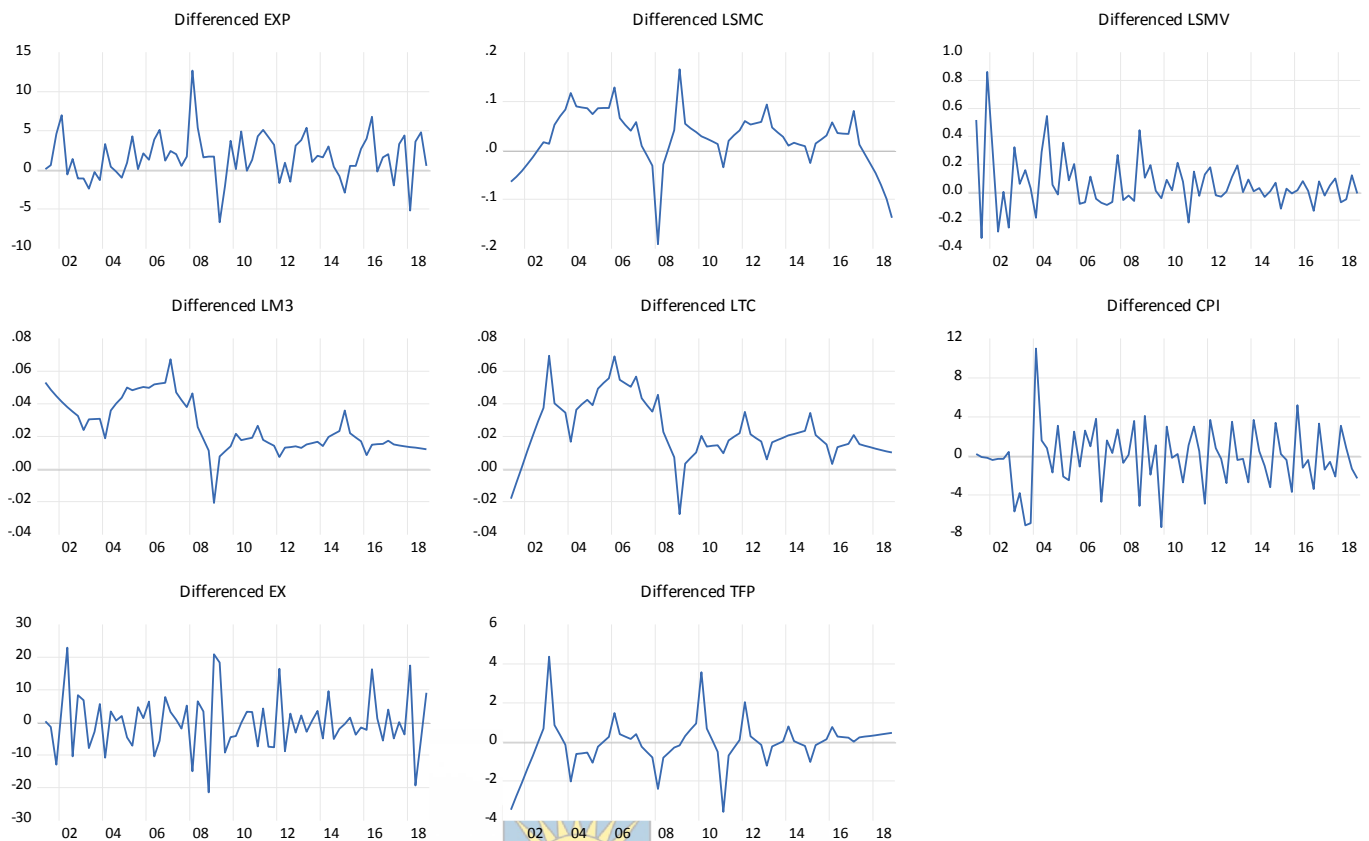


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**Figure 5.1.1 Stationarity Graphs at Levels**  
 (Source: Author's computation using Eviews 11 Econometric Software)

The visual representation of the above data shows the unit root variables present at point. There is evidence that the data is trending. Hence, the variables were separated and plotted again at 1<sup>st</sup> deference. Figure 5.1.2 below shows the results.



**Figure 5.1.2: Stationarity Graphs after first differencing**

(Source: Author's computation using Eviews 11 Econometric Software)

At first difference the graphical tests show that all variables are oscillating around their mean value. So this means the variables are stationary. Nevertheless, formal tests (Augmented Dickey Fuller and Phillips Peron) were also carried out to determine if the results were consistent. See figure5.1.1 and Figure 5.1.2 for the results. The unit root tests considered both a random walk without a drift (untrended) and a random walk with a drift and a trended (trended) hypothesis.

### 5.2.2. Formal unit root test

The Augmented Dickey-Fuller (ADF) test and the Phillips-Perron test were used for formal testing, in order to formally analyse the time series stationary status for all the variables under investigation. With both tests, if the test statistics are higher than the critical values at all meaning levels, the study does not reject the null hypotheses and therefore further differentiation is necessary until the test statistics are lower than the critical values. In addition, for each element, the study includes deterministic components in the test equation while checking for stationarity, i.e. interception, pattern and interception and with no interception to explain how the data used is trended.

As stated in chapter four above, the study conducted two standardized tests for robustness that is check of ADF and of PP. From both experiments, the results suggest that all the variables under review are not stable at levels, meaning that they are implemented by (1), as the critical values are lower than the measured values. As a consequence, for all variables, the analysis does not refute the tested null hypothesis of no unit roots and this allowed further differentiation. Table 5.1.1 below, summarizes the findings of the ADF and PP experiments at stages and after first differentiation.

**Table 5.1.1: ADF and PP at Levels**

Variable	ADF			PP		
	None	Intercept	Intercept and Trend	None	Intercept	Intercept and Trend
EXP	4.375892	0.028360	-2.378137	3.903587	-0.026420	-2.624016
Log(SMV )	2.339213	-2.698347*	-2.911589	2.547680	- 3.180420**	-2.911589
Log(SMC )	0.924822	-2.062209	-1.311529	1.911954	-1.276820	-1.119040
Log(TC)	2.511094	-2.782271*	-1.832577	4.987901	-1.723989	-0.717598
Log(M3)	1.672409	-1.960081	-1.265693	5.709200	- 3.665427**	-1.268901
CPI	- 2.112335**	- 3.439222**	- 3.631677**	- 2.367893**	- 3.613257**	- 3.569082**
EX	- 6.429324** *	- 6.389014** *	- 6.429324** *	- 6.355577** *	- 6.345109** *	- 6.380973** *
TFP	- 3.122268** *	- 3.190733**	-1.779252	- 4.476622** *	- 4.434344** *	- 4.209454** *

\*Statistically significant at 10% level

\*\*Statistically significant at 5% level

\*\*\*Statistically significant at 1% level

(Source: Author's computation using Eviews 11 Econometric Software)

**Table 5.1.2 ADF and P-P at 1<sup>st</sup> difference**

Variable	ADF			PP		
	None	Intercept	Intercept and trend	None	Intercept	Intercept and trend
EXP	-5.592446***	-6.938260***	-6.889514***	-5.645456***	-6.938260***	-6.889514***
Log(SMV)	-9.329345***	-10.18147***	-10.50663***	-9.329345***	-10.35854***	-16.02397***
Log(SMC)	-3.043376	-2.891154**	-2.665205***	-3.114033*	-2.828317**	-2.642208***
Log(TC)	-1.574793*	-3.127030**	-3.842175**	-1.517734	-3.214473**	-3.807358**
Log(M3)	-1.767931*	-2.452063**	-10.33840***	-1.767931*	-2.452063**	-10.33840***
CPI	-4.623210***	-4.648239***	-4.725397***	-11.43626***	-11.47810***	-11.61426***
EX	-10.30829***	-10.23046***	-10.16714***	-19.47941***	-19.27660***	-19.09709***
TFP	-5.367262***	-5.374681***	-5.150460***	-5.295427***	-5.235208***	-5.209224***

\*Statistically significant at 10% level

\*\*Statistically significant at 5% level

\*\*\*Statistically significant at 1% level

(Source: Author’s computation using Eviews 11 Econometric Software)

Tables 5.1.1 and 5.1.2 show that after initial differentiation, all variables stated by both the ADF and the PP are stationary. Because the PP is an improved version, the conclusion precedes the ADF. Therefore it can be inferred that all variables in the first variations are stationary. The variables are therefore built-in of order one  $I(1)$ . It requires the use of the Johansen cointegration test to verify whether there is a long-term relationship between the variables. Recognizing that the variables are stationary and have the same integration order, we continued to check whether they are cointegrated.

### 5.3 Cointegration Tests

When stationarity has been achieved and the order of integration has been defined, the analysis continues to perform a cointegration test to determine whether there are long-term linkages between the growth of the financial market and international trade, taking into account the control variables. The study uses the cointegration method of Johansen, which is used to analyse the number of cointegrating vectors using the Trace statistics and the maximum Eigen value test as procedures. Assuming the variables are co-integrated, a Vector Error Correction Model (VECM) is defined and calculated for short and long-run dynamics to be established.

The cointegration technique of Johansen involves determining the number of lags, choosing the correct model with respect to the deterministic pattern and defining the number of

cointegrating vectors. Therefore the analysis explores the optimum lag period before the cointegration test is conducted.

### 5.3.1 Determining the lag structure

Before conducting cointegration tests, Kapingura (2010) states that in econometric model estimation, especially in a VAR model, the choice of optimal lag length of the interest variables is imperative. This is important if estimated results are not to be spuriously rejected or accepted. For example, if there are  $n$  variables with lag length  $k$ , estimating  $n(nk+1)$  coefficients is important. The length of the lag also influences the power to dismiss the hypothesis. For example, if  $k$  is too large, it may waste degrees of freedom. In addition, if the lag duration is too small, major lag dependencies may be omitted from the VAR and if there is a serial correlation; the estimated coefficients will be inconsistent.

The specific parameters for the information are the Akaike Information Parameters (AIC), the Schwarz Information Criterion (SIC), the Hannan-Quinn Information Criterion (HQI), the Final Prediction Error (FPE) and the Likelihood Ratio (LR). The acceptable lag length indicated by the above knowledge criteria can be selected as these parameters can sometimes give rise to contradictory choices regarding lag duration. However, decisions regarding a VAR model's lag structure could be based on the fact that a given criterion produces a residual white noise and retains degrees of freedom. Table 5.3.1, below shows the results for the optimal lag length;

**Table 5.1.3: The VAR lag selection Criteria: Model (ALLS)**

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-543.9183	NA	0.003277	16.98210	17.24972	17.08769
1	75.43212	1067.188	1.26e-10	-0.105604	2.302948	0.844725
2	187.3402	165.2796	3.14e-11	-1.579697	2.969790	0.215367
3	247.2638	73.75218	4.50e-11	-1.454271	5.236151	1.185530
4	324.5063	76.05412	4.93e-11	-1.861731	6.969626	1.622805
5	443.5306	87.89491	2.37e-11	-3.554789	7.417504	0.774484
6	678.2541	115.5562	7.93e-13	-8.807819	4.305409	-3.633810
7	1076.061	97.92176*	1.69e-15*	19.07881*	3.824645*	13.06006*

\* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

Source: Author's computation using Eviews 11 Econometric Software

The study uses a maximum of 7 lags to select the appropriate lag length for the model, this is because the data is quarterly and thus a maximum of 7 lags allows for the model to be adjusted. The results of the lag length indicate that all information criteria, the Akaike information criterion (AIC), the Final Prediction Error (FPE) and the Hannan-Quinn information criterion (HQ) choose a lag of 7. And we pick a lag duration of 7.

### 5.3.2 Deterministic Trend Component

Johansen (1992) suggested five assumptions that can be considered in the multivariate method when choosing an acceptable model for the deterministic variable. The first assumption is of no interception or trend in cointegration equation or VAR, the second assumes intercept but no trend in cointegration equation and no intercept in VAR, the third model assumes intercept in cointegration equation and VAR but no trend, the fourth assumes intercept in cointegration equation and VAR, linear trends in cointegration equation but no trend in cointegration equation, Eventually, the fifth conclusion is that the cointegration equation and the linear pattern in the VAR are intercept and quadratic. As Dimetrios (2007) pointed out, the first and fifth assumptions are not so likely to occur and are not backed by economic theory, hence the study estimates only assumptions 2, 3 and 4. Of all these three hypotheses, however, only one hypothesis can be considered suitable for the analysis.

Therefore, in order to choose the appropriate hypothesis, the Pantula principle is applied whereby these three hypotheses are applied, starting with the least restrictive hypothesis and at each stage the trace statistics are compared with their critical value. The process of estimating ends when the null hypothesis of no cointegration is not first rejected. The results for the Pantula Principle Test are described in Table 5.1.3, below, as both (Model (Max-Eigen)) and (Trace) interacted values are calculated.



**Table 5.1.4: Pantula principle test results and Determination of the Number of Co-integrating Vectors**

<b>Data Trend:</b>	<b>None</b>	<b>None</b>	<b>Linear</b>	<b>Linear</b>	<b>Quadratic</b>
<b>Test Type</b>	<b>No Intercept No Trend</b>	<b>Intercept No Trend</b>	<b>Intercept No Trend</b>	<b>Intercept Trend</b>	<b>intercept trend</b>
<b>Trace</b>	7	8	6	8	7
<b>Max-Eig</b>	7	8	6	8	7

(Source: Author's computation using Eviews 11 Econometric Software)

As stated in Table 5.1.4, there is an agreement between trace statistics and the maximum individual value for the first model of no intercept and no trend, the second model of intercepts and no trend, the third model of linear intercept and no trend, the fourth model of linear intercept and trend and finally the fifth model of quadratic intercept and trend. Because Models 1 and 5 are severe assumptions that suggest they are not chosen for a quadratic model. The one to be followed will be Model 3 which is linear intercept and trend.

### 5.3.3 Johansen Cointegration Technique Results

The next step is to estimate the cointegrating rank tests of the Johansen, namely the Eigenvalue and Trace Statistics, after the determination of the right deterministic model. The findings from the two procedures are described in Table 5.3.3.1, respectively, for both Model (TR\*MC) and Model (ALLS).



**Table 5.1.5 Johansen Cointegration rank tests**

<b>Unrestricted Cointegration Rank Test (Trace)</b>				
<b>Hypothesized No. of Ce(s)</b>	<b>Eigenvalue</b>	<b>Trace Statistic</b>	<b>0.05 Critical Value</b>	<b>Prob.**</b>
None *	0.934215	522.1489	159.5297	0.0000
At most 1 *	0.838389	342.5389	125.6154	0.0000
At most 2 *	0.674752	222.2496	95.75366	0.0000
At most 3 *	0.646579	148.1206	69.81889	0.0000
At most 4 *	0.427657	79.47445	47.85613	0.0000
At most 5 *	0.358169	42.64537	29.79707	0.0010

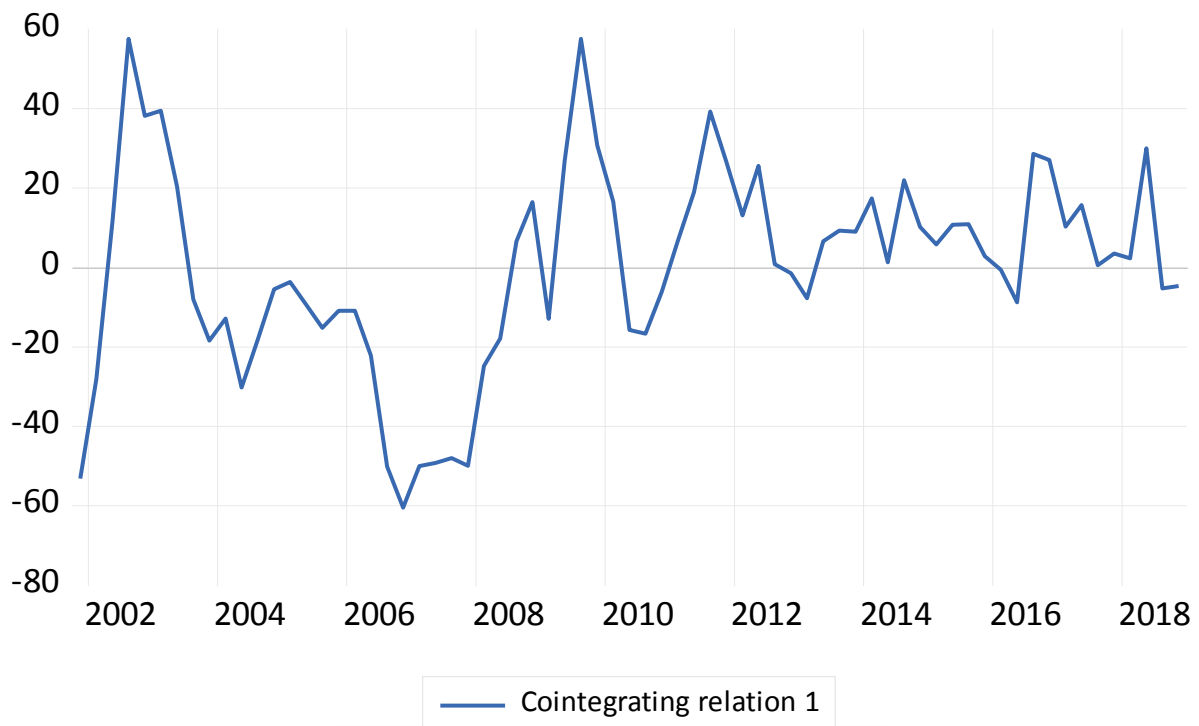
At most 6	0.183424	13.37895	15.49471	0.1016
At most 7	7.61E-05	0.005020	3.841465	0.9426
Trace test indicates 6 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

(Source: Author's computation using Eviews 11 Econometric Software)

<b>Unrestricted Cointegration Rank Test (Maximum EigenValue)</b>				
<b>Hypothesized No. of CE(s)</b>	<b>Eigenvalue</b>	<b>Trace Statistic</b>	<b>0.05 Critical Value</b>	<b>Prob.**</b>
None *	0.934215	179.6100	52.36261	0.0000
At most 1 *	0.838389	120.2893	46.23142	0.0000
At most 2 *	0.674752	74.12896	40.07757	0.0000
At most 3 *	0.646579	68.64620	33.87687	0.0000
At most 4 *	0.427657	36.82908	27.58434	0.0025
At most 5 *	0.358169	29.26642	21.13162	0.0029
At most 6	0.183424	13.37393	14.26460	0.0688
At most 7	7.61E-05	0.005020	3.841465	0.9426
Max-eigenvalue test indicates 6 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: Author's computation using Eviews 11 Econometric Software)

Both the results of the Johansen's Trace test and Max Eigenvalue suggested co-integrating the variables with  $r = 6$ . That suggests a long-term relationship exists between the interest variables.



**Figure 5.1.3 The Cointegration graphs of model (TR\*MC) and Model (ALLS)**

(Source: Author’s computation using Eviews 11 Econometric Software)

Figure 5.1.3 above shows the plot of the Model (TR\*MC) and Model (ALLS) co-integration relations, and the graph shows that the residuals of co-integration are stationary, although the mean fluctuations are less frequent.

#### 5.4 The Vector Error Correction Model

Once cointegration has been confirmed, the analysis further estimates the VECM model that applies the assumption of an intercept in the cointegration equation and VAR but no patterns. The cointegration test by Johansen identifies only the long-run relationship between variables, leaving out the model's short-term dynamics; thus, the study proceeds to the Vector Error Correction Model test, which reveals both the short-run and long-run relationship. The findings for Error correction model for both long-run and short-run equations are presented in Table 5.4.1 below.

Long Run VECM								
Error Correction	EXP01(-1)	LSMC(-1)	LSMV(-1)	LM3(-1)	LTC(-1)	CPI(-1)	EX(-1)	TFP(-1)
CointEq1	1.000000	-57.94424	26.15596	171.5362	-208.8582	-0.071200	1.997406	-6.696696
Standard Error		(25.7988)	(12.2810)	(117.406)	(118.646)	(0.92847)	(0.53618)	(1.60961)
T-Statistic		[-2.24601]	[ 2.12978]	[ 1.46105]	[-1.76034]	[-0.07669]	[ 3.72522]	[-4.16044]
Short-run VECM								
Variables	D(EXP01)	D(LSMC)	D(LSMV)	D(LM3)	D(LTC)	D(CPI)	D(EX)	D(TFP)
CointEq1	-0.038611	0.000344	-0.002097	-2.13E-05	0.000326	-0.058111	0.075825	0.041542
Standard Error	(0.02512)	(0.00035)	(0.00146)	(6.3E-05)	(7.6E-05)	(0.02771)	(0.06832)	(0.00728)
T-statistic	[-1.53734]	[ 0.99566]	[-1.43506]	[-0.33670]	[ 4.30957]	[-2.09691]	[ 1.10984]	[ 5.70287]

(Source: Author's computation using Eviews 11 Econometric Software)

Table 5.4 presents the model's VECM output. Because the analysis models EXP it only focuses on EXP relative to other variables. In the model the error correction term coefficient for EXP is negative and statistically significant with a value of (-0.038611). This shows that only 4% of the disequilibrium in the previous quarter is corrected, implying that the adjustment speed is fine and the significance level is slightly faster as it is at 5%.

The standard approach will be followed when interpreting the long-run results. The long-run coefficients are multiplied by -1 according to (Ntshangase, 2014), and the negative coefficients are recorded as positive and negative coefficients. Thus, the long-term equation shows that Exports (EXP) will rise by 1.00000 in the long run if all variables are held constant. Results show that stock market capitalization (SMC) has a positive and substantial long-term effect on exports (EXP), hence a unit rise in SMC raises EXP by about 57,94424 units, ceteris paribus. It supports the belief beforehand.

SMV has a negative and significant long run impact on Exports. Therefore, a unit increases in SMV reduces EXP by approximately 26.15596 units, ceteris paribus. This confirms to the prior expectation. Looking at the short-run we conclude that a percentage change in EXP is associated with a decrease of 0.000344 SMC, on average ceteris paribus. Money supply (M3) has a negative and significant long run impact on exports. Thus, a unit increase in M3 decreases EXP by approximately 171.5362 units, ceteris paribus. This does confirm to prior expectation. Total credit extended to the private sector has a positive and significant long-run impacts on

exports, which means that a unit increase of TC increases EXP by approximately 208.8582 units. This table also shows that 0.000326 increase in EXP is associated by a percentage increase in TC at the short-run model. There this conform to the prior expectations.

Inflation (CPI) has a positive and significant long run impact on exports. Thus, a unit increase in CPI increase exports by 0.071200 approximately units, *ceteris paribus*. This does confirm to a prior expectation and in the short-run, 0.058111 decrease of CPI will explain the a percentage change in EXP. Exchange rate (Ex) has a negative and insignificant long run impact on exports. Thus, a unit increases in exchange rate decreases exports by approximately 0.041542 units, *ceteris paribus*. This does confirm to prior expectation and in the short-run a change in EXP will be associated by 0.075825 increase in Exchange rate.

Total factor productivity has a positive and significant long run impact on exports. Thus, a unit increases in total factor productivity increases exports by approximately -6.696696, *ceteris paribus*. And this does confirm to prior expectation.in the short-run a percentage change in exports will be associated with 0.041542 increase in TFP.

All these results are consistent with the results found by Mohr et al (2012) in which a study was carried on Malaysia (also a developing country) for the period from 1999-2007 using monthly data applying the VAR model. Empirical results showed that the Islamic share prices (KLSI) have a positive long run relationship with inflation (CPI) but have a negative long run relationship with money supply (M3) and foreign exchange rate (MYR).

### **5.5 The Impulse response and Variance decomposition**

As stated by Brooks (2008), the findings of the F-test and causality do not indicate how long these effects take to occur, so the analysis further explores the impulse response and variance decomposition to obtain details about the model's complex effects.

**Table 5.1.7 Variance Decomposition of EXP**

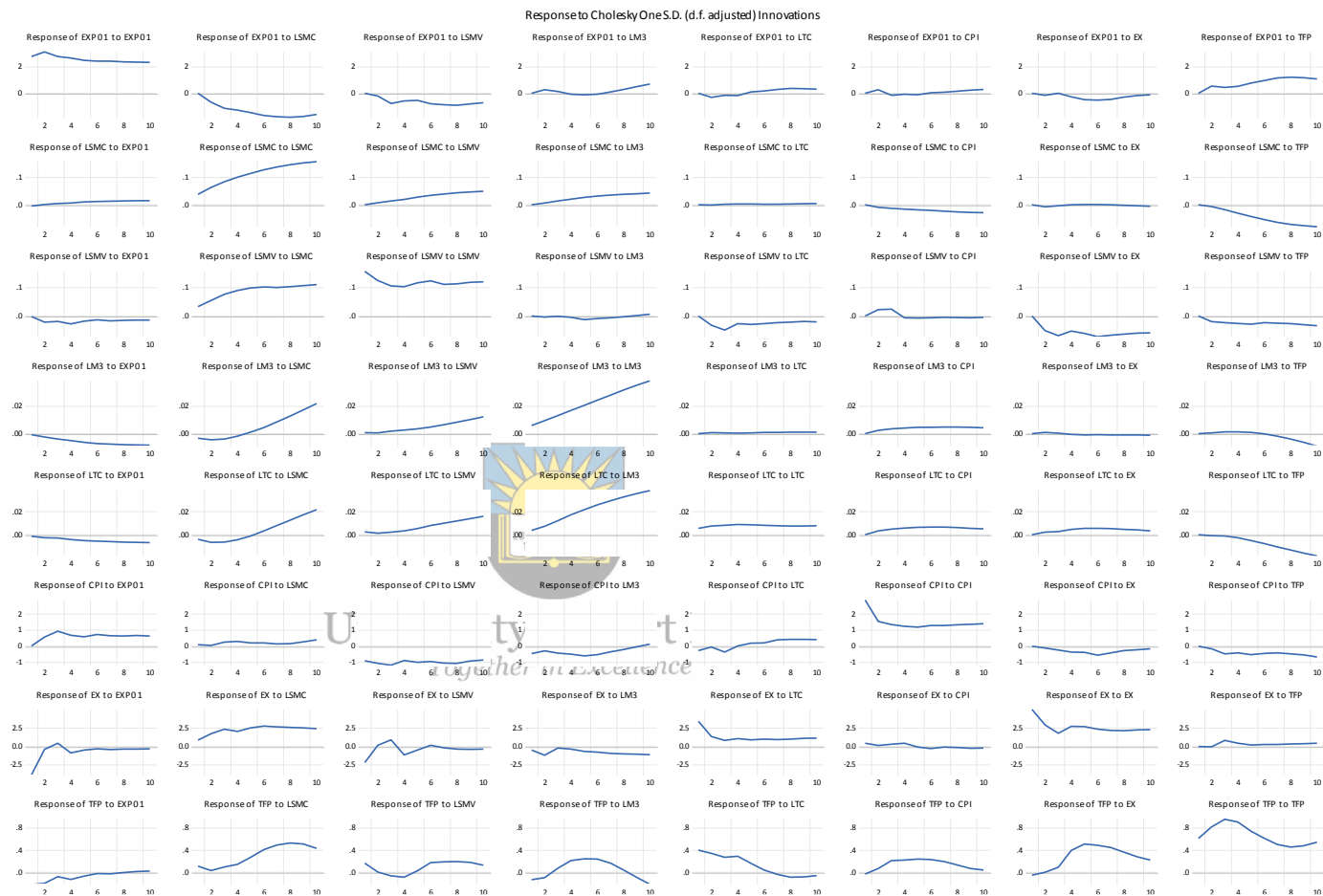
Period	S.E.	EXP	LSMC	LSMV	LM3	LTC	CPI	EX	TFP
1	2.785257	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2	4.312035	94.24830	2.457488	0.234554	0.430637	0.485531	0.435995	0.111226	1.596270
3	5.336584	88.79237	6.115018	2.181158	0.363010	0.384185	0.353361	0.073452	1.737448
4	6.161141	85.45542	8.803561	2.504752	0.285321	0.363906	0.280614	0.242264	2.064158
5	6.893548	81.49073	11.49472	2.593069	0.252811	0.312499	0.252125	0.663064	2.940984
6	7.626617	76.82522	14.19493	3.186880	0.216609	0.306621	0.208669	1.010680	4.050397
7	8.346560	72.62536	16.38212	3.740034	0.194868	0.377187	0.185686	1.139915	5.354834
8	9.012781	69.23689	18.10787	4.184943	0.278139	0.493888	0.188693	1.070674	6.438903
9	9.612868	66.92801	19.20443	4.391626	0.523293	0.567116	0.231566	0.972763	7.181201
10	10.14163	65.48145	19.74522	4.442718	0.956538	0.602345	0.293738	0.883581	7.594412

(Source: Author’s computation using Eviews 11 Econometric Software)

The decomposition of the Variance also determines the dynamics in the VAR system by giving other variables the proportion of movements in the dependent variables which are caused by their own shocks against the shocks. For both Model(TR\*MC) and Model(ALLS), the results of the Variance decomposition are presented in table (5.5.1) above, showing that all variances on the EXP are due to their own shocks for both models in the first quarter, which means that it explains about 100 percent of their variations. From the second quarter onwards the amount of variance on EXP explained by its shocks began to decline until the final quarter and the remaining percentage was attributed to other variables. From the remaining amount of financial market growth (MC\*TR and ALLS) contributed a larger amount compared to the amount from other variables, EXP explained a larger amount of variability for all times in the model.

### 5.5.2. Impulse response of EXP

The impulse responses show the dynamic response of each variable to a typical one-period deviation shock of each variable, according to Ntshangase (2014). The impulse response function interpretation takes into account the use of the first variables differentiation as well as the estimates of vector error correction. So a one-time shock to a variable's first discrepancy is a permanent shock to the point of that variable.



**Figure 5.1.4 Impulse Response**

(Source: Author's computation using Eviews 11 Econometric Software)

This figure shows that exports react either positively or negatively if independent variables such as total credit extended to the private sector, inflation, stock market valuation and capitalization of the stock market are shocked. The results indicate that if there is a shock on M3, the Exports would respond negatively. Exports will respond positively if the productivity and exchange rate of the Total Factor shocks.

## 5.6 Granger Causality

The research also performs a VECM-based Granger Causality / Block Exogeneity Wald Test; using the VAR model lag period to investigate the short-run causality between the growth of financial markets and international trade.

**Table 5.1.8: VEC Granger Causality/Block Exogeneity Wald Tests**

<b>Dependent variable: D(EXP01)</b>			
<b>Excluded</b>	<b>Chi-sq</b>	<b>df</b>	<b>Prob.</b>
D(LSMC)	4.572256	2	0.1017
D(LSMV)	0.882956	2	0.6431
D(LM3)	3.409045	2	0.1819
D(LTC)	1.959908	2	0.3753
D(CPI)	4.128428	2	0.1269
D(EX)	1.433130	2	0.4884
D(TFP)	4.639402	2	0.0983
All	18.23055	14	0.1965

(Source: Author's computation using Eviews 11 Econometric Software)

The findings in table 5.6.1 show that a unidirectional relationship exists between capitalization of the stock market and exports, running from SMC to EXP. It means that SMC makes changes to the EXP and EXP causes no changes to the SMC. The table also reveals that SMV and EXP have a unidirectional relationship running from SMV to EXP. It means that SMV causes changes in EXP and no changes in SMV are caused by EXP. The table also indicates that there is a unidirectional relationship between M3 and EXP running from M3 to EXP and other variables such as EX, TFP, CPI and TC also shows that there is a unidirectional relationship between the independent variables and the dependent Export variable. This concludes that the dependent variable does not granger because the independent variables as we reject the granger variables ' null hypothesis because all the prob value is above 0.05.

## 5.7 Diagnostic Checks

The findings have been subjected to a series of tests to verify whether the assumptions underlying the conventional linear regression model have been tested and the results are listed in Table 5.1.9.



**Table 5.1.9: Diagnostic Tests**

Test	H0	Chi-sq	P-value	Conclusion
Jarque-Bera	Residuals are normally distributed	137.8855	0.0000	We do not reject the null hypothesis as the p-value is less than 0.05, therefore Residuals are not normally distributed
VEC LM Tests	There is no serial correlation in the residuals	58.76756	0.6722	Do not reject the null hypothesis as the prob value is greater than 0.05, There is no serial correlation in the residuals.
Residual Serial Correlation	Variables are homoscedasticity	1195.922	0.7117	Do not reject the null hypothesis as the p-value is greater than 0.05. They are no cross terms hence residuals are homoscedasticity.

(Source: Author's computation using Eviews 11 Econometric Software)

**5.8 Conclusion**

This chapter performed an empirical analysis of the relationship between the growth of the financial markets and international trade. For stationarity, the ADF and PP experiments performed informal tests by graphical analysis and the formal tests. The results revealed from both the informal and formal experiments that all variables are not stationary at their level, and stationarity is only reached after first differentiation. Using the Johansen cointegration method for two estimation models, the study conducted a cointegration test for two estimation models.i.e. Model (TR\*MC) and prototype (ALLS). The findings of cointegration for both model (TR\*MC) and model (ALLS) indicate mixed outcomes but a long-run co-movement between financial market growth and international trade has been verified. The VECM results revealed that for the Model (ALLS) and Model (TR\*MC) the coefficient of error correction term for EXP is negative and statistically significant. Diagnostic control results confirmed that the two models are well-specified and stable.

## CHAPTER 6

# CONCLUSIONS, POLICY IMPLICATIONS AND RECOMMENDATIONS

### 6.1 Introduction

This chapter draws conclusions from the results of the study as presented and discussed in chapter 5. Based on these conclusions the study makes policy recommendations as well as articulate the implications of the study.

### 6.2 Summary of the Study and Conclusions

The main aim of the study was to empirically examine the effect of financial market development on international trade using quarterly data for the period 2001Q1 to 2018Q4 in South Africa. The study reviewed the theory of McKinnon-Shaw, David Ricardo theory, Heckscher-Ohline, neoclassical and endogenous growth theories, and considered the Heckscher-Ohline model as the relevant theory in explaining the long-term effect on international trade of financial market development. The supply leading, demand following, and feedback hypothesis were examined in describing the nature of the relationship between the two variables. Most empirical studies reviewed exhibit a strong long-term link between the development of the financial market and international commerce. This means financial growth is important for international trade. In addition, the majority of reviewed studies have established a causal relationship flowing from financial growth to international trade. Some few research, however, suggested that the value of financial growth was overemphasised.

The study specified an empirical model based on both theoretical and empirical literature which explains the impact of financial development and international trade. The model explains international trade as a function of measured stock market development (stock market capitalization and traded stock market value) and measured banking sector development (M3 money supply and totally credit extended to the private sector) as the main explanatory variable. The research used models to check the relationship between the creation of the stock market and economic growth, i.e. (TR\*MC model) and (Alls model). The research employed Johansen's co-integration approach to empirically analyse the long term impact of financial growth on international trade.

The Vector Error Correction Model (VECM) was also used to capture both the estimated models short-term and long-term dynamics variables and three control variables (inflation, exchange rate, and total productivity factor). Since macroeconomic time series is generally

trended, the variables are non-stationary in most cases and the use of non-stationary data can lead to invalid results and conclusion. For this reason, the study first performed the stationarity test for all variables under review using both the informal and formal methods before performing the co-integration test. Graphical examinations were used for the informal examination, while PP and ADF tests were used to formally test for stationarity.

Having found that after first differentiation the variables are stationary and integrated in the same order, the analysis also performed a co-integration test to check whether there is a long-term relationship between the two variables. The results revealed that the variables under analysis co-integrated. The trace statistics in the model suggested six vectors co-integrating while the Maximum Eigenvalue suggested six co-integrated vectors. The existence of the cointegrating vector allowed the vector correction model (VECM) to be calculated, followed by diagnostic checks via autocorrelation (serial correlation), heteroscedasticity and normality of the residuals, the results from these tests are positive.

In addition, the Impulse response and Variance decomposition were performed to analyse the time taken by the effects of the financial creation to take place. The findings of the Variance decomposition test show that international trade accounts for a larger percentage of its variance, but from the remaining amount, a larger portion of its shocks are clarified in all periods by financial development interventions, except for the first and second quarters. These results are in accordance with most of the studies such as (Ronci, 2004; Iacovone & Zavacka, 2009; Chor & Manova, 2010) reviewed in the literature in the sense that they confirm a long run link between the two variables. However, those studies found a strong link between the two, while this study confirms a weak link between financial growth and international trade.

### **6.3 Policy implications and recommendations**

In general, the findings in both models confirm the existence of a relationship between the development of the financial market and international trade. But the degree to which the effect of financial market growth on South Africa's international trade is found to be rather small. The nature of the relationship is also not in line with the a-priori expectations set out in chapter four. It's surprising to find that as complex as it is, the South African financial market contributes this little to international commerce. This stirs up a question regarding the factors that could drive the relationship between the two. Clearly the predicament could be that this development has not really been integrated into the economic system. This can be attributed to the fact that more emphasis has only been focused on the growth of the banking sector as a part

of the financial sector; thus, it means that much also needs to be done in terms of policy, since these findings have political implications.

Given the results above, the study makes the following policy recommendations:

- The Government of South Africa will adopt policies that encourage the integration of the growth of the financial sector into the economic system, i.e. policies that increase awareness of potential investors and boost their market confidence.
- Policymakers (Fiscal and Monetary) should embark on economic activities that strengthen the connection between the growth of the financial market and international trade, such as; increase external finance and stimulate savings that, in effect, boost investment rates. In view of the fact that literature shows external finance and investment as the main channels through which financial market growth contributes to international trade, this may eventually build a forum for financial development to make a significant contribution to trade. Small and medium-sized enterprises should also be encouraged to take part in international trade, as they play a significant role in South Africa economy in recent time.
- Lastly, an environment that enables financial market development to directly impact on trade should be created.



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#### **6.4 Limitations of the study and Areas for further research**

The use of data from different sources might have affected the findings, so quarterly data was not available for some variables used in this analysis, and hence a frequency conversion was performed from annual to quarterly. This transition may have led to the problems that the research had faced.

In terms of further study, much still needs to be done to understand the nature of the relationship within the South African economy between financial market growth and international trade. There is still a need to explore the mechanisms through which the financial market can better impact international trade (exports), as this study only examined the relation between the two variables without intensively exploring ways in which the growth of the financial market can influence international commerce.

## Reference List

- Aghion, P., Howitt, P., (1996). "Research and development in the growth process," *Journal of Economic Growth*, Vol.1 (1), pp.49-73
- Ağır, H., (2010). *Econometric Analysis of the Relationship between Financial Liberalization and Financial Development*, Banking Supervision and Regulation Agency, No.8. Ankara.
- Akman, (2016). "The facilitating role of visa policies on international trade and foreign direct investment"
- Amity, M., and D. Weinstein (2011): "Exports and Financial Shocks," *The Quarterly Journal of Economics*, 126(4), 1841–1877.
- Arestis, P. Demetriades, P. Fattouh, B. and Mouratidis, K., (2002). *The Impact of Financial Liberalization Policies on Financial Development: Evidence from Developing Economies*. *International Journal of Finance and Economics*, 7(2), pp. 109-121.
- Ang.J.B. (2008). What are the mechanisms linking financial development and economic growth in Malaysia. *Economic Modelling*, 25(1):38-53
- Arestis.P, Demetriades. P.O and K. Luintel. (2001).Financial Development and Economic Growth: The Role of Stock Markets. *Journal of Money, Credit and Banking*, 33(1):16-41
- Arestis.P, Luintel.A.D. And K. Luintel. (2005).Financial Structure and Economic Growth. CEPP working paper No. 06/05.
- Alajekwu, U.B.; Ezeabasili, V.N. & Nzotta, S.M. (2013). Trade openness, stock market development and economic growth of Nigeria: Empirical evidence. *Research Journal of Finance and Accounting*, Vol. 4, No. 3, pp. 120-127.
- Asghar, N. & Hussain, Z. (2014). Financial development, trade openness and economic growth in developing countries: Recent evidence from panel data. *Pakistan Economic and Social Review*, Vol. 52, No. 2, pp. 99-126.
- Awudu Sare Yakubu, Anthony Q. Q. Aboagye, Lord Mensah & Godfred A. Bokpin (2018) Effect of financial development on international trade in Africa: Does measure of finance matter?, *The Journal of International Trade & Economic Development*, 27:8, 917-936, DOI: 10.1080/09638199.2018.1474246

Balassa, B. (1985) Exports, policy choices, and economic growth in developing countries after the 1973 oil shock, *Journal of Development Economics*, 18, 23–35.

Baltagi, B, Demetriades, P. and Law, S. H. (2009) Financial Development and Openness: Evidence from Panel Data. *Journal of Development Economics*, 89, pp. 285 – 296.

Bao, Q. and Yang, J., (2007). Does Financial Development Promote International Trade? *Frontiers of Economics in China*, 2(4), pp. 532-557.

BECK, T. (2002). Financial development and international trade: is there a link? *Journal of International Economics*, 57, pp. 107–33.

BECK, T. (2003). Financial development and international trade. *Review of International*

Beck, T. and Levine, R. (2004) Stock markets, banks, and growth: panel evidence, *Journal of Banking and Finance*, 28, 423–42.

Ben Naceur, S. and Ghazouani, S. (2007) Stock markets, banks, and economic growth: empirical evidence from the MENA region, *Research in International Business and Finance*, 21, 297–315.

BRAUN, M. and RADDATZ, C. (2005). Trade Liberalization and the Politics of Financial Development. Policy Research Working Paper Series No. 3517, the World Bank.

BRAUN, M. and RADDATZ, C. (2008). The politics of financial development: evidence from trade liberalization. *Journal of Finance*, 63, pp. 1469–508.

Brenton, P. & Walkenhorst, P. 2010. The impact of the rise of China on developing countries and their trade: Evidence from North Africa. *African Development Review*, Vol. 22, NO SI, 2010, 577-586. Oxford: Blackwell Publishing Ltd.

Becker, B., & Greenberg, D. (2004). Financial development and international trade. Mimeo, Chicago: University of Chicago. Google Scholar

Caporale, G M, Howells P.G A, and Solima A M. (2004). Stock market development and economic growth: the causal linkage. *Journal of economic development*, 29(1).

Chen, Y.L & Emile, E.S. (2013). Trade openness and finance: Effects of foreign trade with China on Latin American financial development. *Emerging Markets Finance and Trade*, Vol. 49, No. 3, pp.110-122.

Chinn, M. D., and H. Ito, 2006, “What Matters for Financial Development? Capital Controls, Institutions, and Interactions”, *Journal of Development Economics*, Vol. 81, No. 1, pp. 163–92.

Chimobi, O.P. (2010). The causal relationship among financial development, trade openness and economic growth in Nigeria. *International Journal of Economics and Finance*, Vol. 2, No. 2, pp. 137-147.

City of Joburg. (2010). Johannesburg Securities Exchange. *Available Online*.

Das, R.U. and Rishi, M., 2010 Are Trade Openness and Financial Development Complementary? *RIS Discussion Papers*, 165.

Demetriades, P. and Hussein, K. (1996) Does financial development cause economic growth? Time series evidence from 16 countries, *Journal of Development Economics*, 51,387–411

Department of Research and Information. 2013. South African economy: *An overview of key trends since 1994*. Industrial Development Corporation, South Africa.

Department of Trade and Industry. 2010. A South African trade policy and strategy framework. Prepared by the international Trade and Economic Department Division of the Department of Trade and Industry South Africa, Pretoria.

Dickey, D.A. and Fuller, W.A., 1979. Distribution of the Estimators for Autoregressive Time Series with a Unit Root. *Journal of the American Statistical Society*, 75, pp. 427–431.

Diks, C. and Panchenko V., 2006. A New Statistic and Practical Guidelines for Nonparametric Granger Causality Testing. *Journal of Economic Dynamics and Control*, 30, pp. 1647-1669.

Diks, C. and Panchenko, V., 2005. A Note on the Hiemstra-Jones Test for Granger Non-causality. *Studies in Nonlinear Dynamics and Econometrics*, 9, pp. 1-7.

DO, Q. T. and LEVCHENKO, A. A. (2004). Trade and financial development. Policy Research Working Paper Series No. 3347, the World Bank.

DO, Q. T. and LEVCHENKO, A. A. (2007). Comparative advantage, demand for external finance, and financial development. *Journal of Financial Economics*, 86, pp. 796–834. *conomics*, 11, pp. 296–316.

Enisan.A.A and Olufisayo, A.O. (2009).Stock market development and economic growth: evidence from seven from sub-Sahara African countries. *Journal of Economics and Business* 61:162–171.



Ersoy, I. (2011). The impact of financial openness on financial development, growth and volatility in Turkey: Evidence from the ARDL Bounds Test. *Economic Research*, Vol. 24, No. 3, pp. 33-44.

Farai Kwenda and Merle Holden (2014) Trade credit in corporate financing in South Africa: evidence from a dynamic panel data analysis: Investment management and financial innovations, Volume 11 2014, Issue #4 (cont.)

Faure, P (2010). Foreign Exchange Market. *The South African institute of financial markets*.

FEENEY, J. and HILLMAN, A. (2004). Trade liberalization through asset markets. *Journal of International Economics*, 64, pp. 151–67.

Glen.J. Claessens, S. and Dasgupta, S. (1995).Return behavior in Emerging Stock Markets. *World Bank economic review*, 9.

Gonzalez-Nuñez, X. 2008. 15-Year Review: Trade Policy in South Africa. Trade & Industrial Policy Strategies (TIPS) paper commissioned by presidency, 12 March 2008. Hatfield, 0028, Pretoria. South Africa. Available at: [http://www.tips.org.za/files/15\\_yr\\_review\\_full.pdf](http://www.tips.org.za/files/15_yr_review_full.pdf). (Accessed on 18/09/2013).

Gries, T. Kraft, M. and Meierrieks, D., 2009. Linkages Between Financial Deepening, Trade Openness and Economic Development: Causality Evidence from Sub-Saharan Africa, *World Development* (37)12, pp. 1849-1860.

Gursoy.C. T. & Muslumov, A. (1999). Stock Markets and Economic Growth: A Causality Test. MBA. Unpublished.

Gross, T., and S. Verani (2013): “Financing Constraints, Firm Dynamics and International Trade,” Working paper.

HUANG, Y. and TEMPLE, J. (2005). Does external trade promote financial development? CEPR Discussion Papers No. 5150.

HUR, J. and RAJ, M. (2006). Finance and trade: a cross-country empirical analysis on the impact of financial development and asset tangibility on international trade. *World Development*, 34, pp. 1728–41.

Heikal, M., Khaddafi, M. & Ummah, A., 2014. Influence Analysis of Return on Assets (ROA), Return on Equity (ROE), Net Profit Margin (NPM), Debt To Equity ratio (DER), and Current ratio (CR), Against corporate profit Growth In Automotive In Indonesia stock Exchange.



*International Journal of Academic Research in Business and Social Science*, 4(12), pp. 101-114.

Ibrahim, M., & Alagidede, P. (2016). Effect of financial development on economic growth in sub-Saharan Africa: Does sectoral growth matter? 1st African review of economics and finance conference, august 11–12, KNUST, Kumasi, Ghana. Google Scholar

International Monetary Fund (IMF). 2013. Staff Report for the year 2013, Article IV Consultation. May 22-June 4, 2013 Pretoria, Johannesburg and Cape Town, South Africa.

Johannesburg Stock Exchange (2003). About the JSE. Available at [www.jse.co.za](http://www.jse.co.za).

Johannesburg Stock Exchange (2004). About the JSE. Available at [www.jse.co.za](http://www.jse.co.za).

Johannesburg Stock Exchange (2009). Annual report. Available at [www.jse.co.za](http://www.jse.co.za).

Johannesburg Stock Exchange (2011). Annual report. Available at [www.jse.co.za](http://www.jse.co.za).

Johannesburg Stock Exchange, (2008b). Guidelines on the Dissemination of Price Sensitive Information. Available at [www.jse.co.za](http://www.jse.co.za).

Johannesburg Stock Exchange, (2008a). Listing on the JSE. Available at [www.jse.co.za](http://www.jse.co.za).

Kapingura, F. M., 2014. The relationship between Financial sector development and savings mobilation in South Africa: An empirical study. *Masters Thesis*, pp. 01-60.

Khan, M.A. & Qayyum, A. (2007). Trade, financial and growth nexus in Pakistan. *Economic Analysis Working Papers*, Vol. 6, No. 14, pp. 1-25.

Kim, D.H.; Lin, S.C. & Suen, Y.B. (2010a). Are financial development and trade openness complements or substitutes? *Southern Economic Journal*, Vol. 76, No. 3, pp. 827-845.

Kim, D.H.; Lin, S.C. & Suen, Y.B. (2010b). Dynamic effects of trade openness on financial development. *Economic Modelling*, Vol. 27, No. 1, pp. 254-261

Kim, D.-. H., Lin, S.-. C., & Suen, Y.-. B. (2010). Are financial development and trade openness complements or substitutes? *Southern Economic Journal*, 76(3), 827– 845. Wiley Online Library Web of Science Google Scholar

Kim, D.-. H., Lin, S.-. C., & Suen, Y.-. B. (2012). The simultaneous evolution of economic growth, financial development, and trade openness. *The Journal of International Trade and Economic Development*, 21(4), 513– 537. CrossrefWeb of Science Google Scholar

Klein, M., and G. Olivei, 2008, "Capital Account Liberalization, Financial Depth, and Economic Growth", *Journal of International Money and Finance*, Vol. 27(6), pages 861–875, October.

Kucera, D. & Roncolato, L. 2011. Trade liberalisation, employment and inequality in India and South Africa. *International Labour Review*, 150(2), 1-41.

KLETZER, K. and BARDHAN, P. K. (1987). Credit markets and patterns of international trade. *Journal of Development Economics*, 27, pp. 57–70.

Kohn, D., F. Leibovici, and M. Szkup (2016): "Financial frictions and new exporter dynamics," *International Economic Review*, 57(2), 453–486.

LAW, S. H. and DEMETRIADES, P. (2005). Openness, institutions and financial development. University of Leicester, Discussion Papers in Economics No. 05/08.

Levine, R. (1997). "Financial development and economic growth: views and agenda", *Journal of Economic Literature*, 35 (2), pp. 688-726.

Law, S.H. & Demetriades, P. (2006). Openness, institutions and financial development. World Economy and Finance Research Programme Working Paper Series Number WEF 0012.

Law, S.H. (2007). Trade openness and financial development: Panel data evidence from various stages of economic development. *Journal of Emerging Market Finance*, Vol. 6, No. 2, pp. 145-165.

Law, S.H. (2009). Trade openness, capital flows and financial development in developing economies. *International Economic Journal*, Vol. 23, No. 3, pp. 409-426.

Lawal, A.I.; Nwanji, T.I.; Asaleye, A. & Ahmed, V. (2016). Economic growth, financial development and trade openness in Nigeria: An application of the ARDL bound testing approach. *Cogent Economics and Finance*, Vol. 4, No. 1, pp. 1-15.

Levine.R. (1997). Financial Development and Economic Growth: Views and Agenda, *Journal of Economic Literature*.XXXV:688-726.

Levine.R. (2004). Finance and growth: theory and evidence National Bureau of Economic of economic research. Cambridge, MA.

Lucas.R. E. (1988).On the Mechanics of Economic Development, *Journal of Monetary Economics*, 22:3-42.

- Lucas.R. (1988).On Mechanics of Economic Development, *Journal of Monetary Economics*.
- Luintel.B.K. Mosahid.K. (1999). a quantitative reassessment of the finance–growth nexus: evidence from a multivariate VAR. unpublished.
- Levine, R., 2001, “International Financial Liberalization and Economic Growth”, *Review of International Economics*, 9(4), pp 688–701.
- Luintel.K.B, Khan.M. Arestis.P. and Konstantinos (2008). *Financial Structure and Economic Growth*. Cardiff economics working paper.
- Leontief, W. W. (1953). "Domestic Production and Foreign Trade: The American Capital Position Re-examined". *Proceedings American Philosophical Society*. 97: 332–349.
- Lütkepohl, H., (2004). “Vector autoregressive and vector error correction models” in Lütkepohl, H. and Kratzig, M. (eds.) *Applied Time Series Econometrics*, Cambridge University Press: Cambridge.
- Malouche, M. (2009). Trade and trade finance developments in 14 developing countries post September 2008: a World Bank survey. Policy Research Working Paper No. 5138. World Bank: Washington DC.
- Manova, K. (2013): “Credit Constraints, Heterogeneous Firms, and International Trade,” *Review of Economic Studies*, 80, 711–744.
- Marcel Kohler, Adrian Saville (2011) Measuring the impact of trade finance on country trade flows, a South African perspective: *South African Journal of Economic and Management Sciences* | Vol 14, No 4 | a136 | DOI: <https://doi.org/10.4102/sajems.v14i4.136> | © 2011 Marcel Kohler, Adrian Saville |.
- Marrewijk, Charles van (2007). "Absolute advantage" (PDF). Department of Economics, Erasmus University Rotterdam: world economy. Princeton University Press. Retrieved 2009-05-03.
- Minetti, R., and S. Zhu (2011): “Credit Constraints and Firm Export: Microeconomic Evidence from Italy,” *Journal of International Economics*, 83(2), 1695–1725.
- Mbeki.T. (2002).**Address at the Launch of JSE Sets and Infowiz**. Available Online. <http://www.anc.org.za/ancdocs/history/mbeki/2002/tm0517.html>.

Mkhize and Msweli-Mbanga. (2006). Critical review of the restructuring of the South African capital market. *International review of business research paper*. (2)2:80-91

Mosikari, T.J. & Sikwila, M.N. 2013. The relationship between trade openness and GDP growth rate: The case of South Africa (1994Q1-2008Q4). *Journal of Economics and Behavioural Studies*, 5(10), 669-677.

McKinnon.R. I. (1973). *Money and Capital in Economic Development* Washington, DC: Brookings Institution.

Nieuwerburgh.S.V, Buelens, F. Cuyvers, L. (2005). *Stock market development and economic growth in Belgium*. New York University, Stern School of Business.

Niroomand, F.; Hajilee, M. & Al Nasser, O. (2014). Financial market development and trade openness: Evidence from emerging economies. *Applied Economics*, Vol. 46, No. 13, pp. 1490-1498.

Ndako.U.B. (2007). *Stock markets, banks and economic growth: a time –series evidence from South Africa*. Department of economics, university of Leicester- UK.

Ogbonna, B.C. (2010). Financial development, trade openness and economic growth in a small open economy: Evidence from Botswana. *Journal of Banking*, Vol. 4, No, 1, pp. 59-75.

Perasan, M.H.; Shin, Y. & Smith, R.P. (1999). Pooled mean group estimation of dynamic heterogeneous panels. *Journal of the American Statistical Association*, Vol. 94, No. 446, pp. 621-634.

Polat, A.; Shahbaz, M.; Rehman, L.U. & Satti, S.L. (2015). Revisiting linkages between financial development, trade openness and economic growth in South Africa: Fresh evidence from combined co-integration test. *Quality and Quantity*, Vol. 49, No. 785, pp. 785-1-36.

RAJAN, R. G. and ZINGALES, L. (2003). The great reversals: the politics of financial development in the twentieth century. *Journal of Financial Economics*, 69, pp. 5–50.

Rahman.M.M and Salahuddin.M. (2009). *the determinants of economic growth in Pakistan: Does stock market development play a major role?* Unpublished

Romer, P., (1986). “Increasing returns and long-run growth,” *Journal of political Economies*, Vol.94 (5), pp.1002-1037

Romer, P. (1990). "Are nonconvexities important for understanding growth?" *American Economic Review*, Vol.80 (2), pp.97-103

Saaed, A.A. & Hussain, M.A. (2015). The causal relationship among trade openness, financial development and economic growth: Evidence from Kuwait. *Journal of Emerging Issues in Economics, Finance and Banking*, Vol. 4, No. 1, pp. 1385-1413.

Sabandi, M. & Noviani, L. (2015). The effects of trade liberalization, financial development and economic crisis on economic growth in Indonesia. *Journal of Economics and Sustainable Development*, Vol. 6, No. 24, pp. 120-128.

Salahuddin, M. & Gow, J. (2016). The effects of internet usage, financial development and trade openness on economic growth in South Africa: A time series analysis. *Telematics and Informatics*, Vol. 33, No. 4, pp. 1141-1154.

Shaw.E. S. (1973). Financial deepening in economic development, Working Paper. No. 223.

Soukhakian, B. (2007). Financial development, trade openness and economic growth in Japan: Evidence from Granger causality tests. *International Journal of Economic Perspectives*, Vol. 1, No. 3, pp. 118-127.

Singh, A. (1997) financial liberalization, stock markets and economic development, *The Economic Journal*, 107, 771–82.  *Together in Excellence*

SARB, (2010).Quarterly Bulletin: March 2010. Available at: [www.reservebank.co.za/internet/Publication.nsf/LADV/92A620ACD595CF42422576EB00555EF5/\\$File/QBMarch2010.pdf](http://www.reservebank.co.za/internet/Publication.nsf/LADV/92A620ACD595CF42422576EB00555EF5/$File/QBMarch2010.pdf) (accessed: 2010-06-10).

Samouilha.NL. (2006). **The relationship between international equity market behavior and the JSE.** *South African Journal of Economics*.74 (2), 248-260.

Sandrey, R. & Edinger, H. 2009. Examining the South Africa-China agricultural trading relationship. Nordiska Afrikainstitutet Discussion paper 42. South Africa: GML Print on Demand AB.

South Africa. South African Revenue Services. 2002. Annual Report and Financial Statements 2001/2002.

South African Reserve Bank Annual report 2012. Retrieved from <http://www.resbank.co.za/fastsearch/Pages/Results.aspx?k=annual%20report%202012>

Statistics South Africa (2010): retrieved from [http://www.statssa.gov.za/?page\\_id=735](http://www.statssa.gov.za/?page_id=735)

Svaleryd, H. and Ylamos, J. (2002). Markets for risk and openness to trade: how are they related? *Journal of International Economics*, 57, pp. 369–95.

Svaleryd, H. and Ylamos, J. (2005). Financial markets, the pattern of industrial specialization and comparative advantage: evidence from OECD countries. *European Economic Review*, 49, pp. 113–44.

Tachiwou. A. M. (2009). Causality tests between stock market development and economic growth. *World Bank Economic Review*, 12(2):14-27.

Tachiwou.A.M. (2010). Stock Market Development and Economic Growth: The Case of West African Monetary Union *International Journal of Economics and Finance*, 2(3):1916- 9728.

Tull, D.M. 2006. China's engagement in Africa: Scope, significance and consequences. *The Journal of Modern African Studies*, 44(03), 459-479.

Vazakidis, A. and Adamopoulos, A. (2009) financial development and economic growth: an empirical analysis for Greece, *American Journal of Applied Sciences*, 6, 1410–17.

Weiner, R.D., Roxo, T. & Kellman, M. 2008. South Africa's manufactured International trade in the post-sanctions epoch: Patterns and potentials. *American Economists*. Spring 2008 Vol. 52, No. 1. pp 86-95.

Wacziarg, R., Horn Welch, K., 2003. Trade liberalization and growth: New evidence, NBER Working Paper 10152.

WTO, (2009). Overview of the developments in the international trading environment. Annual Report by the Director General. WT/TPR/OV/12. 18 November 2009.

WTO, (2010). World Trade Report 2010. WTO publications: Geneva

Yucel, F. (2009). Causal relationships between financial development, trade openness and economic growth: The case of Turkey. *Journal of Social Sciences*, Vol. 5, No. 1, pp. 33-42.

Zhang, C.; Zhu, Y. & Lu, Z. (2015). Trade openness, financial openness and financial development in China. *Journal of International Money and Finance*, Vol. 59, December, pp. 287-309.

## Appendix.

**Figure 1: VAR Lag Order Selection Criteria.**

VAR Lag Order Selection Criteria  
 Endogenous variables: EXP01 LSMC LSMV LM3 LTC CPI EX  
 TFP  
 Exogenous variables: C  
 Date: 01/03/20 Time: 08:03  
 Sample: 2001Q1 2018Q4  
 Included observations: 65

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-543.9183	NA	0.003277	16.98210	17.24972	17.08769
1	75.43212	1067.188	1.26e-10	-0.105604	2.302948	0.844725
2	187.3402	165.2796	3.14e-11	-1.579697	2.969790	0.215367
3	247.2638	73.75218	4.50e-11	-1.454271	5.236151	1.185530
4	324.5063	76.05412	4.93e-11	-1.861731	6.969626	1.622805
5	443.5306	87.89491	2.37e-11	-3.554789	7.417504	0.774484
6	678.2541	115.5562	7.93e-13	-8.807819	4.305409	-3.633810
7	1076.061	97.92176*	1.69e-15*	-19.07881*	-3.824645*	-13.06006*

\* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion



**Figure 2: Pantula tests**

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**Johansen cointegration: Summary of all assumption.**

Date: 01/03/20 Time: 08:19  
 Sample: 2001Q1 2018Q4  
 Included observations: 66  
 Series: EXP01 LSMC LSMV LM3 LTC CPI EX TFP  
 Lags interval: 1 to 5

Selected  
 (0.05 level\*)  
 Number of  
 Cointegrating  
 Relations by  
 Model

Data Trend:	None	None	Linear	Linear	Quadratic
Test Type	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
Trace	7	8	6	8	7
Max-Eig	7	8	6	8	7

\*Critical values based on MacKinnon-Haug-Michelis (1999)

Information  
 Criteria by



Rank and Model	None		Linear		Quadratic
Data Trend:	None	None	Linear	Linear	Quadratic
Rank or No. of CEs	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
Log Likelihood by Rank (rows) and Model (columns)					
0	380.3811	380.3811	402.5156	402.5156	420.9329
1	474.4747	476.0004	492.3207	505.8812	522.5413
2	539.3487	540.8914	552.4653	571.7572	587.4522
3	575.0231	578.6576	589.5298	615.5940	628.9503
4	605.0112	612.9839	623.8529	652.5189	663.9483
5	620.3348	632.3607	642.2674	686.0034	692.2670
6	631.0487	646.9956	656.9006	704.2298	709.9852
7	638.1791	656.9090	663.5876	718.6753	723.4291
8	639.6555	663.5901	663.5901	725.3415	725.3415
Akaike Information Criteria by Rank (rows) and Model (columns)					
0	-1.829730	-1.829730	-2.258050	-2.258050	-2.573725
1	-4.196202	-4.212132	-4.494565	-4.875187	-5.167917
2	-5.677235	-5.663376	-5.832282	-6.356279	-6.650067
3	-6.273428	-6.292655	-6.470599	-7.169514	-7.422737
4	-6.697309	-6.817693	-7.025845	-7.773301	-7.998433
5	-6.676814	-6.889718	-7.099013	-8.272831	-8.371728
6	-6.516627	-6.818048	-7.057595	-8.309993	-8.423795*
7	-6.247852	-6.603304	-6.775381	-8.232586	-8.346335
8	-5.807743	-6.290609	-6.290609	-7.919439	-7.919439
Schwarz Criteria by Rank (rows) and Model (columns)					
0	8.786777	8.786777	8.623871	8.623871	8.573609
1	6.951132	6.968378	6.918181	6.570735	6.510241
2	6.000924	6.081136	6.111290	5.653645	5.558917
3	5.935556	6.015859	6.003797	5.404412	5.317073
4	6.042500	6.054823	5.979377	5.364627	5.272202*
5	6.593821	6.546800	6.437035	5.429099	5.429732
6	7.284833	7.182472	7.009278	5.955940	5.908491
7	8.084434	7.961218	7.822317	6.597348	6.516776
8	9.055368	8.837915	8.837915	7.474498	7.474498

**Figure 3 Johansen Cointegration Technique Results.**

Date: 01/03/20 Time: 08:25  
Sample (adjusted): 2002Q3 2018Q4  
Included observations: 66 after adjustments  
Trend assumption: Linear deterministic trend  
Series: EXP01 LSMC LSMV LM3 LTC CPI EX TFP  
Lags interval (in first differences): 1 to 5



Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.934215	522.1489	159.5297	0.0000
At most 1 *	0.838389	342.5389	125.6154	0.0000
At most 2 *	0.674752	222.2496	95.75366	0.0000
At most 3 *	0.646579	148.1206	69.81889	0.0000
At most 4 *	0.427657	79.47445	47.85613	0.0000
At most 5 *	0.358169	42.64537	29.79707	0.0010
At most 6	0.183424	13.37895	15.49471	0.1016
At most 7	7.61E-05	0.005020	3.841465	0.9426

Trace test indicates 6 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 *	0.934215	179.6100	52.36261	0.0000
At most 1 *	0.838389	120.2893	46.23142	0.0000
At most 2 *	0.674752	74.12896	40.07757	0.0000
At most 3 *	0.646579	68.64620	33.87687	0.0000
At most 4 *	0.427657	36.82908	27.58434	0.0025
At most 5 *	0.358169	29.26642	21.13162	0.0029
At most 6	0.183424	13.37393	14.26460	0.0688
At most 7	7.61E-05	0.005020	3.841465	0.9426

Max-eigenvalue test indicates 6 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 Cointegrating Coefficients (normalized by b\*S11\*b=I):

EXP01	LSMC	LSMV	LM3	LTC	CPI	EX	TFP
0.008711	-35.35181	13.37146	-133.6335	165.0042	1.498417	1.030989	3.036868
-0.311803	34.52613	-5.202987	-23.50236	-3.706313	-1.427957	-0.288170	-0.576486
-0.275714	36.43373	-9.996522	-46.96481	33.17087	-0.120329	-0.413863	0.633004
-0.181957	37.49755	-6.880950	160.6564	-183.5743	0.112039	-0.263942	0.470837
-0.191462	28.15637	-20.57596	120.8589	-105.8370	-0.605802	-0.985500	-0.717689
-0.116756	55.85889	-21.41450	161.3031	-194.1368	-0.426663	-0.491309	-1.746418
0.117830	-32.09022	9.956586	-39.14792	58.19007	0.788156	-0.088616	2.075781
0.452966	-72.69737	15.05407	-86.77802	137.5460	0.130264	0.249914	2.027415

Unrestricted Adjustment Coefficients (alpha):

D(EXP01)	0.204691	0.206643	0.012066	0.547256	0.416197	-0.433009	0.055519
D(LSMC)	-0.005258	-0.005345	-0.009588	-0.013221	0.003239	-0.003113	0.001632
D(LSMV)	0.033653	0.028731	-0.008281	-0.037379	-0.004259	0.027486	0.010463
D(LM3)	-0.000661	0.000988	0.000631	0.000239	-0.001702	1.15E-05	-0.000146
D(LTC)	-0.001847	0.001155	-0.001783	0.001137	-0.001747	0.001675	-0.000345
D(CPI)	-0.573135	0.853121	0.503367	0.111907	0.454967	-0.286688	-0.300002
D(EX)	-2.816808	-0.276987	-0.085601	-0.596580	-0.270108	1.168532	0.452617
D(TFP)	-0.052917	-0.127047	-0.227492	-0.049095	-0.074081	0.075369	-0.093551

1 Cointegrating Equation(s):      Log likelihood      492.3207

Normalized cointegrating coefficients (standard error in parentheses)

EXP01	LSMC	LSMV	LM3	LTC	CPI	EX	TFP
1.000000	-4058.178 (345.179)	1534.963 (165.101)	-15340.33 (1722.51)	18941.50 (1892.78)	172.0094 (12.7294)	118.3513 (8.54457)	348.6143 (26.1904)

Adjustment coefficients (standard error in parentheses)

D(EXP01)	0.001783 (0.00270)
D(LSMC)	-4.58E-05 (4.1E-05)
D(LSMV)	0.000293 (0.00014)
D(LM3)	-5.76E-06 (5.4E-06)
D(LTC)	-1.61E-05 (8.8E-06)
D(CPI)	-0.004993 (0.00283)
D(EX)	-0.024538 (0.00447)
D(TFP)	-0.000461 (0.00077)

2 Cointegrating Equation(s):      Log likelihood      552.4653

Normalized cointegrating coefficients (standard error in parentheses)

EXP01	LSMC	LSMV	LM3	LTC	CPI	EX	TFP
1.000000	0.000000	-25.90272 (5.14289)	507.8050 (53.1180)	-519.1120 (48.4785)	-0.116925 (0.62719)	-2.369769 (0.38622)	-7.878312 (0.88448)
0.000000	1.000000	-0.384622 (0.02363)	3.905234 (0.24411)	-4.795407 (0.22279)	-0.042415 (0.00288)	-0.029748 (0.00177)	-0.087845 (0.00406)

Adjustment coefficients (standard error in parentheses)

D(EXP01)	-0.062649 (0.09581)	-0.101636 (15.1787)
D(LSMC)	0.001621 (0.00144)	0.001337 (0.22734)
D(LSMV)	-0.008665 (0.00462)	-0.197706 (0.73131)
D(LM3)	-0.000314 (0.00018)	0.057491 (0.02884)
D(LTC)	-0.000376 (0.00031)	0.105189 (0.04880)
D(CPI)	-0.270998 (0.08564)	49.71633 (13.5668)
D(EX)	0.061827 (0.15906)	90.01601 (25.1981)
D(TFP)	0.039152 (0.02627)	-2.515701 (4.16137)

3 Cointegrating Equation(s):      Log likelihood      589.5298

Normalized cointegrating coefficients (standard error in parentheses)

EXP01	LSMC	LSMV	LM3	LTC	CPI	EX	TFP
1.000000	0.000000	0.000000	915.9308 (181.184)	-1055.887 (174.798)	-11.66122 (2.24191)	-2.507164 (1.01012)	-21.64919 (3.22208)
0.000000	1.000000	0.000000	9.965383 (2.90656)	-12.76584 (2.80412)	-0.213833 (0.03596)	-0.031788 (0.01620)	-0.292326 (0.05169)

0.000000	0.000000	1.000000	15.75610 (7.51306)	-20.72274 (7.24826)	-0.445679 (0.09296)	-0.005304 (0.04189)	-0.531638 (0.13361)
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Adjustment coefficients (standard error in parentheses)

D(EXP01)	-0.065976 (0.12787)	0.337985 (18.8578)	1.541241 (5.37134)
D(LSMC)	0.004265 (0.00173)	-0.348004 (0.25562)	0.053350 (0.07281)
D(LSMV)	-0.006382 (0.00612)	-0.499425 (0.90265)	0.383282 (0.25711)
D(LM3)	-0.000488 (0.00024)	0.080484 (0.03494)	-0.020293 (0.00995)
D(LTC)	0.000115 (0.00038)	0.040236 (0.05636)	-0.012891 (0.01605)
D(CPI)	-0.409783 (0.10599)	68.05588 (15.6308)	-17.13435 (4.45219)
D(EX)	0.085429 (0.21217)	86.89725 (31.2883)	-35.36796 (8.91197)
D(TFP)	0.101875 (0.02925)	-10.80410 (4.31313)	2.227572 (1.22852)

4 Cointegrating Equation(s):      Log likelihood      623.8529

Normalized cointegrating coefficients (standard error in parentheses)

EXP01	LSMC	LSMV	LM3	LTC	CPI	EX	TFP
1.000000	0.000000	0.000000	0.000000	-471.3249 (47.7907)	-55.07984 (7.67921)	-8.932424 (3.50396)	-78.25138 (11.0068)
0.000000	1.000000	0.000000	0.000000	-6.405763 (0.58668)	-0.686230 (0.09427)	-0.101695 (0.04301)	-0.908161 (0.13512)
0.000000	0.000000	1.000000	0.000000	-10.66693 (1.12279)	-1.192578 (0.18041)	-0.115833 (0.08232)	-1.505325 (0.25859)
0.000000	0.000000	0.000000	1.000000	-0.638217 (0.04091)	0.047404 (0.00657)	0.007015 (0.00300)	0.061797 (0.00942)



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Adjustment coefficients (standard error in parentheses)

D(EXP01)	-0.165553 (0.13000)	20.85875 (20.5839)	-2.224401 (5.37695)	55.14329 (61.6514)
D(LSMC)	0.006670 (0.00144)	-0.843775 (0.22808)	0.144326 (0.05958)	-0.845455 (0.68313)
D(LSMV)	0.000419 (0.00571)	-1.901062 (0.90412)	0.640488 (0.23618)	-10.78871 (2.70796)
D(LM3)	-0.000531 (0.00026)	0.089446 (0.04080)	-0.021938 (0.01066)	0.073935 (0.12219)
D(LTC)	-9.16E-05 (0.00040)	0.082867 (0.06389)	-0.020714 (0.01669)	0.486119 (0.19137)
D(CPI)	-0.430146 (0.11521)	72.25214 (18.2418)	-17.90438 (4.76517)	50.87775 (54.6367)
D(EX)	0.193981 (0.22484)	64.52695 (35.6006)	-31.26292 (9.29965)	291.1055 (106.628)
D(TFP)	0.110809 (0.03159)	-12.64505 (5.00230)	2.565395 (1.30671)	12.85408 (14.9825)

5 Cointegrating Equation(s):      Log likelihood      642.2674

Normalized cointegrating coefficients (standard error in parentheses)

EXP01	LSMC	LSMV	LM3	LTC	CPI	EX	TFP
1.000000	0.000000	0.000000	0.000000	0.000000	10.81186 (1.78612)	0.202769 (1.00327)	6.945783 (2.55114)
0.000000	1.000000	0.000000	0.000000	0.000000	0.209302 (0.02944)	0.022461 (0.01654)	0.249751 (0.04206)

0.000000	0.000000	1.000000	0.000000	0.000000	0.298670 (0.03586)	0.090913 (0.02014)	0.422841 (0.05122)
0.000000	0.000000	0.000000	1.000000	0.000000	0.136627 (0.01372)	0.019385 (0.00771)	0.177162 (0.01959)
0.000000	0.000000	0.000000	0.000000	1.000000	0.139801 (0.01454)	0.019382 (0.00817)	0.180761 (0.02077)

Adjustment coefficients (standard error in parentheses)

D(EXP01)	-0.245239 (0.13471)	32.57734 (21.1075)	-10.78805 (7.61368)	105.4443 (67.4999)	-111.1019 (73.9431)
D(LSMC)	0.006050 (0.00153)	-0.752575 (0.23954)	0.077679 (0.08641)	-0.453985 (0.76604)	0.918393 (0.83916)
D(LSMV)	0.001235 (0.00618)	-2.020985 (0.96858)	0.728125 (0.34938)	-11.30347 (3.09742)	12.48435 (3.39309)
D(LM3)	-0.000205 (0.00022)	0.041530 (0.03463)	0.013078 (0.01249)	-0.131742 (0.11074)	0.044366 (0.12131)
D(LTC)	0.000243 (0.00040)	0.033680 (0.06284)	0.015230 (0.02267)	0.274988 (0.20096)	-0.392077 (0.22014)
D(CPI)	-0.517255 (0.11633)	85.06236 (18.2282)	-27.26577 (6.57508)	105.8646 (58.2921)	-149.7302 (63.8565)
D(EX)	0.245696 (0.24247)	56.92169 (37.9922)	-25.70519 (13.7042)	258.4605 (121.496)	-328.4938 (133.093)
D(TFP)	0.124992 (0.03346)	-14.73091 (5.24323)	4.089688 (1.89128)	3.900701 (16.7674)	1.046348 (18.3679)

6 Cointegrating Equation(s):      Log likelihood      656.9006

Normalized cointegrating coefficients (standard error in parentheses)

EXP01	LSMC	LSMV	LM3	LTC	CPI	EX	TFP
1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	-14.28165 (3.55364)	-4.571056 (9.45565)
0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	-0.257936 (0.06763)	0.026802 (0.17995)
0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	-0.309209 (0.09351)	0.104696 (0.24880)
0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	-0.163652 (0.04296)	0.031626 (0.11431)
0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	-0.167907 (0.04412)	0.031844 (0.11739)
0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	1.339679 (0.29517)	1.065205 (0.78540)

Adjustment coefficients (standard error in parentheses)

D(EXP01)	-0.194682 (0.13099)	8.389925 (24.6466)	-1.515372 (9.08586)	35.59860 (76.2790)	-27.03886 (86.1075)	0.004114 (0.56997)
D(LSMC)	0.006414 (0.00154)	-0.926480 (0.28933)	0.144349 (0.10666)	-0.956168 (0.89545)	1.522797 (1.01082)	-0.001208 (0.00669)
D(LSMV)	-0.001974 (0.00568)	-0.485637 (1.06889)	0.139522 (0.39404)	-6.869859 (3.30813)	7.148270 (3.73438)	-0.002940 (0.02472)
D(LM3)	-0.000207 (0.00023)	0.042171 (0.04273)	0.012832 (0.01575)	-0.129889 (0.13225)	0.042136 (0.14929)	-0.001425 (0.00099)
D(LTC)	4.74E-05 (0.00037)	0.127222 (0.07037)	-0.020631 (0.02594)	0.545110 (0.21778)	-0.717183 (0.24584)	-0.003732 (0.00163)
D(CPI)	-0.483782 (0.11582)	69.04831 (21.7912)	-21.12650 (8.03325)	59.62097 (67.4420)	-94.07357 (76.1319)	-2.278349 (0.50394)
D(EX)	0.109263 (0.21790)	122.1946 (40.9997)	-50.72872 (15.1144)	446.9485 (126.891)	-555.3489 (143.240)	-4.216707 (0.94815)
D(TFP)	0.116193 (0.03349)	-10.52088 (6.30186)	2.475696 (2.32315)	16.05798 (19.5037)	-13.58557 (22.0167)	0.136719 (0.14573)

7 Cointegrating Equation(s):      Log likelihood      663.5876

Normalized cointegrating coefficients (standard error in parentheses)

EXP01	LSMC	LSMV	LM3	LTC	CPI	EX	TFP
1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	-15.34059 (8.09540)
0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	-0.167703 (0.15037)
0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	-0.128473 (0.19859)
0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	-0.091780 (0.09606)
0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	-0.094771 (0.09844)
0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	2.075432 (0.73646)
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	-0.754082 (0.57820)

Adjustment coefficients (standard error in parentheses)

D(EXP01)	-0.188141 (0.13436)	6.608317 (25.9805)	-0.962596 (9.43438)	33.42516 (76.8736)	-23.80822 (87.3278)	0.047872 (0.60472)	-0.200292 (0.41706)
D(LSMC)	0.006606 (0.00157)	-0.978837 (0.30344)	0.160593 (0.11019)	-1.020040 (0.89784)	1.617738 (1.01994)	7.82E-05 (0.00706)	0.001770 (0.00487)
D(LSMV)	-0.000741 (0.00573)	-0.821396 (1.10717)	0.243698 (0.40205)	-7.279463 (3.27602)	7.757112 (3.72154)	0.005307 (0.02577)	0.029475 (0.01777)
D(LM3)	-0.000224 (0.00023)	0.046847 (0.04499)	0.011381 (0.01634)	-0.124185 (0.13312)	0.033657 (0.15122)	-0.001540 (0.00105)	0.000393 (0.00072)
D(LTC)	6.75E-06 (0.00038)	0.138293 (0.07391)	-0.024066 (0.02684)	0.558616 (0.21869)	-0.737258 (0.24843)	-0.004004 (0.00172)	-0.000870 (0.00119)
D(CPI)	-0.519132 (0.11456)	78.67544 (22.1522)	-24.11349 (8.04421)	71.36543 (65.5462)	-111.5307 (74.4600)	-2.514797 (0.51561)	-1.355535 (0.35561)
D(EX)	0.162595 (0.21849)	107.6700 (42.2502)	-46.22219 (15.3425)	429.2294 (125.014)	-529.0110 (142.015)	-3.859974 (0.98341)	-2.979417 (0.67824)
D(TFP)	0.105169 (0.03292)	-7.518798 (6.36582)	1.544245 (2.31164)	19.72031 (18.8358)	-19.02932 (21.3974)	0.062986 (0.14817)	0.133430 (0.10219)

**Figure 4; Vector Error Correction Model.**

Vector Error Correction Estimates

Date: 01/03/20 Time: 10:13

Sample (adjusted): 2001Q4 2018Q4

Included observations: 69 after adjustments

Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CoIntEq1
EXP01(-1)	1.000000
LSMC(-1)	-57.94424 (25.7988) [-2.24601]
LSMV(-1)	26.15596 (12.2810) [ 2.12978]
LM3(-1)	171.5362 (117.406) [ 1.46105]

LTC(-1)	-208.8582 (118.646) [-1.76034]
CPI(-1)	-0.071200 (0.92847) [-0.07669]
EX(-1)	1.997406 (0.53618) [ 3.72522]
TFP(-1)	-6.696696 (1.60961) [-4.16044]
C	1087.644

Error Correction:	D(EXP01)	D(LSMC)	D(LSMV)	D(LM3)	D(LTC)	D(CPI)	D(EX)
CointEq1	-0.038611 (0.02512) [-1.53734]	0.000344 (0.00035) [ 0.99566]	-0.002097 (0.00146) [-1.43506]	-2.13E-05 (6.3E-05) [-0.33670]	0.000326 (7.6E-05) [ 4.30957]	-0.058111 (0.02771) [-2.09691]	0.075825 (0.06832) [ 1.10984]
D(EXP01(-1))	0.163279 (0.15919) [ 1.02570]	0.000175 (0.00219) [ 0.07966]	-0.019776 (0.00926) [-2.13484]	3.98E-05 (0.00040) [ 0.09940]	-9.26E-05 (0.00048) [-0.19321]	0.225510 (0.17565) [ 1.28388]	0.521030 (0.43303) [ 1.20322]
D(EXP01(-2))	-0.129915 (0.14772) [-0.87949]	0.003351 (0.00203) [ 1.64732]	-0.000558 (0.00860) [-0.06486]	-0.000634 (0.00037) [-1.70713]	-0.000365 (0.00044) [-0.82123]	0.079462 (0.16299) [ 0.48753]	0.564855 (0.40182) [ 1.40573]
D(LSMC(-1))	-20.50346 (12.6201) [-1.62467]	0.873521 (0.17380) [ 5.02603]	1.071660 (0.73439) [ 1.45925]	0.012756 (0.03173) [ 0.40206]	0.008351 (0.03798) [ 0.21986]	2.678581 (13.9249) [ 0.19236]	8.038121 (34.3296) [ 0.23415]
D(LSMC(-2))	6.095069 (14.3072) [ 0.42601]	0.015195 (0.19703) [ 0.07712]	-0.430981 (0.83257) [-0.51765]	0.033806 (0.03597) [ 0.93987]	0.091903 (0.04306) [ 2.13439]	7.737597 (15.7865) [ 0.49014]	28.79186 (38.9191) [ 0.73979]
D(LSMV(-1))	-0.085754 (2.09479) [-0.04094]	-0.010432 (0.02885) [-0.36161]	-0.248743 (0.12190) [-2.04053]	0.002743 (0.00527) [ 0.52084]	-0.007373 (0.00630) [-1.16957]	-2.666175 (2.31138) [-1.15350]	9.128504 (5.69832) [ 1.60196]
D(LSMV(-2))	-1.930441 (2.05846) [-0.93781]	0.025415 (0.02835) [ 0.89652]	-0.074202 (0.11979) [-0.61945]	0.005513 (0.00518) [ 1.06528]	-0.006007 (0.00620) [-0.96957]	-2.153229 (2.27130) [-0.94802]	7.373357 (5.59950) [ 1.31679]
D(LM3(-1))	139.3632 (84.8135) [ 1.64317]	-0.593461 (1.16802) [-0.50809]	-3.175848 (4.93550) [-0.64347]	0.684896 (0.21322) [ 3.21209]	0.482013 (0.25525) [ 1.88840]	-35.03884 (93.5829) [-0.37442]	-93.22667 (230.713) [-0.40408]
D(LM3(-2))	-138.4379 (78.0380) [-1.77398]	0.082676 (1.07471) [ 0.07693]	4.744393 (4.54122) [ 1.04474]	0.234888 (0.19619) [ 1.19724]	0.362933 (0.23486) [ 1.54532]	-70.44182 (86.1068) [-0.81807]	240.8035 (212.282) [ 1.13436]
D(LTC(-1))	-106.1584 (83.3064) [-1.27431]	1.562219 (1.14727) [ 1.36168]	2.918579 (4.84780) [ 0.60204]	-0.017214 (0.20944) [-0.08219]	0.280484 (0.25071) [ 1.11874]	36.52560 (91.9200) [ 0.39736]	-95.21160 (226.613) [-0.42015]
D(LTC(-2))	100.7852	-0.676647	-7.451149	-0.016690	0.113096	4.574956	-48.19890

	(72.5152) [ 1.38985]	(0.99866) [-0.67756]	(4.21984) [-1.76574]	(0.18231) [-0.09155]	(0.21824) [ 0.51823]	(80.0131) [ 0.05718]	(197.259) [-0.24434]
D(CPI(-1))	0.108321 (0.12600) [ 0.85969]	-0.003081 (0.00174) [-1.77545]	0.008811 (0.00733) [ 1.20175]	0.000859 (0.00032) [ 2.71094]	0.001133 (0.00038) [ 2.98896]	-0.470315 (0.13903) [-3.38288]	-0.030711 (0.34275) [-0.08960]
D(CPI(-2))	-0.203501 (0.13243) [-1.53665]	-0.001390 (0.00182) [-0.76232]	0.014304 (0.00771) [ 1.85611]	0.000199 (0.00033) [ 0.59734]	0.000315 (0.00040) [ 0.78957]	-0.256214 (0.14612) [-1.75340]	0.111558 (0.36024) [ 0.30967]
D(EX(-1))	0.057278 (0.06638) [ 0.86291]	-0.002416 (0.00091) [-2.64247]	-0.006332 (0.00386) [-1.63927]	0.000264 (0.00017) [ 1.58028]	-0.000214 (0.00020) [-1.07177]	0.092798 (0.07324) [ 1.26704]	-0.567468 (0.18056) [-3.14279]
D(EX(-2))	0.062647 (0.05498) [ 1.13951]	0.000214 (0.00076) [ 0.28251]	-0.005567 (0.00320) [-1.73995]	-7.99E-05 (0.00014) [-0.57839]	-0.000539 (0.00017) [-3.25763]	0.025115 (0.06066) [ 0.41402]	-0.338008 (0.14955) [-2.26017]
D(TFP(-1))	0.626723 (0.61496) [ 1.01914]	-0.009317 (0.00847) [-1.10015]	-0.046622 (0.03579) [-1.30282]	0.000867 (0.00155) [ 0.56059]	0.000861 (0.00185) [ 0.46520]	-0.644282 (0.67854) [-0.94951]	0.465884 (1.67283) [ 0.27850]
D(TFP(-2))	-1.318573 (0.61927) [-2.12922]	-0.000896 (0.00853) [-0.10501]	0.025646 (0.03604) [ 0.71164]	0.000415 (0.00156) [ 0.26639]	0.001839 (0.00186) [ 0.98646]	-1.025320 (0.68331) [-1.50053]	1.694585 (1.68457) [ 1.00594]
C	2.262915 (1.07688) [ 2.10136]	-0.015039 (0.01483) [-1.01404]	0.161280 (0.06267) [ 2.57363]	0.001665 (0.00271) [ 0.61484]	-0.007912 (0.00324) [-2.44113]	0.875472 (1.18823) [ 0.73679]	-4.078230 (2.92938) [-1.39218]
R-squared	0.336933	0.662275	0.377767	0.850497	0.828666	0.297639	0.427656
Adj. R-squared	0.115911	0.549700	0.170356	0.800663	0.771554	0.063519	0.236875
Sum sq. resid	395.6405	0.075037	1.339781	0.002501	0.003583	481.6859	2927.622
S.E. equation	2.785257	0.038358	0.162081	0.007002	0.008382	3.073243	7.576566
F-statistic	1.524432	5.882974	1.821347	17.06652	14.50964	1.271308	2.241603
Log likelihood	-158.1575	137.5172	38.07844	254.8672	242.4542	-164.9467	-227.2072
Akaike AIC	5.106016	-3.464265	-0.581984	-6.865715	-6.505920	5.302802	7.107455
Schwarz SC	5.688826	-2.881455	0.000826	-6.282905	-5.923109	5.885612	7.690266
Mean dependent	1.689855	0.026461	0.059669	0.025504	0.024842	-0.156522	0.039130
S.D. dependent	2.962220	0.057161	0.177945	0.015684	0.017538	3.175757	8.673103
Determinant resid covariance (dof adj.)		2.71E-11					
Determinant resid covariance		2.41E-12					
Log likelihood		139.6386					
Akaike information criterion		0.358301					
Schwarz criterion		5.279811					
Number of coefficients		152					

**Figure 5 Variance Decomposition.**

Variance Decomposition of EXP01:	Period	S.E.	EXP01	LSMC	LSMV	LM3	LTC	CPI	EX	TFP
	1	2.785257	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	2	4.312035	94.24830	2.457488	0.234554	0.430637	0.485531	0.435995	0.111226	1.59627
	3	5.336584	88.79237	6.115018	2.181158	0.363010	0.384185	0.353361	0.073452	1.73744



4	6.161141	85.45542	8.803561	2.504752	0.285321	0.363906	0.280614	0.242264	2.06415
5	6.893548	81.49073	11.49472	2.593069	0.252811	0.312499	0.252125	0.663064	2.94098
6	7.626617	76.82522	14.19493	3.186880	0.216609	0.306621	0.208669	1.010680	4.05039
7	8.346560	72.62536	16.38212	3.740034	0.194868	0.377187	0.185686	1.139915	5.35483
8	9.012781	69.23689	18.10787	4.184943	0.278139	0.493888	0.188693	1.070674	6.43890
9	9.612868	66.92801	19.20443	4.391626	0.523293	0.567116	0.231566	0.972763	7.18120
10	10.14163	65.48145	19.74522	4.442718	0.956538	0.602345	0.293738	0.883581	7.59441

Variance  
Decomposition  
of LSMC:

Period	S.E.	EXP01	LSMC	LSMV	LM3	LTC	CPI	EX	TFP
1	0.038358	1.435617	98.56438	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.075909	0.371881	94.40075	1.012896	0.657799	0.027605	1.517746	1.123403	0.88791
3	0.117525	0.293879	90.90844	1.734875	1.664974	0.024904	1.964384	0.592263	2.81628
4	0.161371	0.318832	87.23580	2.421845	2.503561	0.046826	2.003170	0.314647	5.15531
5	0.207954	0.441221	83.32133	3.293338	3.154629	0.042841	2.032070	0.191850	7.52272
6	0.255793	0.525291	80.04893	4.006271	3.626239	0.033369	2.017520	0.127649	9.61473
7	0.303709	0.560958	77.46250	4.523863	3.924701	0.027086	2.033275	0.090584	11.3770
8	0.351023	0.579479	75.44754	4.931742	4.105048	0.024167	2.079104	0.071270	12.7616
9	0.397056	0.586912	73.90147	5.250801	4.240022	0.025547	2.132227	0.066972	13.7960
10	0.441456	0.585655	72.70857	5.483178	4.377091	0.032060	2.178537	0.071579	14.5633

Variance  
Decomposition  
of LSMV:

Period	S.E.	EXP01	LSMC	LSMV	LM3	LTC	CPI	EX	TFP
1	0.162081	0.012161	4.279276	95.70856	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.223565	0.930857	8.280979	81.67441	0.022129	2.098077	1.000930	5.188535	0.80408
3	0.275762	1.079468	13.21372	68.59667	0.015263	4.650549	1.454327	9.770862	1.21914
4	0.316285	1.591968	18.21369	62.86494	0.029307	4.239710	1.149657	10.28592	1.62481
5	0.360189	1.466537	21.65663	59.11489	0.146431	3.941878	0.924303	10.85737	1.89196
6	0.403335	1.273796	23.81425	56.65747	0.168542	3.579948	0.758592	11.89524	1.85215
7	0.437869	1.232710	25.57692	54.65773	0.161369	3.320165	0.652174	12.49720	1.90173
8	0.470133	1.175508	27.11148	53.23578	0.142362	3.086383	0.579264	12.68240	1.98682
9	0.502036	1.116079	28.38921	52.30012	0.126827	2.854187	0.522870	12.58522	2.10548
10	0.533516	1.063131	29.50217	51.48571	0.125652	2.672832	0.468759	12.40004	2.28171

Variance  
Decomposition  
of LM3:

Period	S.E.	EXP01	LSMC	LSMV	LM3	LTC	CPI	EX	TFP
1	0.007002	1.197645	21.35971	1.516423	75.92622	0.000000	0.000000	0.000000	0.000000
2	0.013214	3.462522	17.00057	0.684551	73.84985	0.424433	3.720357	0.636880	0.22084
3	0.020004	5.312322	11.24256	1.247807	76.26144	0.302250	4.777626	0.313931	0.54206
4	0.027282	6.221888	6.495543	1.622727	79.87823	0.192011	4.847335	0.205802	0.53646
5	0.035412	6.872603	3.948099	1.959814	81.86362	0.147258	4.642092	0.176045	0.39046
6	0.044451	6.970257	3.590542	2.449697	82.37467	0.144604	4.079334	0.141366	0.24952
7	0.054602	6.539221	4.916595	3.125084	81.39361	0.132465	3.496260	0.119464	0.27730
8	0.065971	5.933640	7.255982	3.814039	79.30275	0.120659	2.931819	0.100698	0.54041
9	0.078499	5.300720	10.08057	4.445033	76.51539	0.107610	2.422119	0.084390	1.04416
10	0.092133	4.689691	13.04004	5.049245	73.35515	0.095476	1.977535	0.074615	1.71824

Variance  
Decomposition  
of LTC:

Period	S.E.	EXP01	LSMC	LSMV	LM3	LTC	CPI	EX	TFP
1	0.008382	2.242843	22.61562	8.730006	20.01014	46.40139	0.000000	0.000000	0.000000
2	0.015832	3.316885	23.63063	3.299179	26.79839	35.96625	4.709668	2.015573	0.26342



3	0.023579	2.921047	17.83905	2.485386	39.40633	28.30454	6.395984	2.292245	0.35541
4	0.032346	3.135402	11.40955	2.417030	49.80145	22.51484	6.549083	3.272228	0.90041
5	0.041866	3.274827	6.876113	3.095105	56.92211	17.71534	6.353406	3.740004	2.02309
6	0.052337	3.181371	4.800476	4.307688	61.10262	13.82154	5.732925	3.562641	3.49073
7	0.063787	3.018685	4.809715	5.402226	62.77318	10.81690	4.961676	3.108335	5.10927
8	0.076170	2.807253	6.196111	6.329047	62.68541	8.588987	4.157351	2.581226	6.65461
9	0.089424	2.578365	8.292652	7.094241	61.55645	6.972891	3.416230	2.090356	7.99881
10	0.103452	2.354140	10.62564	7.687138	59.95583	5.798101	2.795588	1.676211	9.10734

Variance  
Decompositi  
on of CPI:

Period	S.E.	EXP01	LSMC	LSMV	LM3	LTC	CPI	EX	TFP
1	3.073243	0.006330	0.123305	8.639839	2.133443	0.760081	88.33700	0.000000	0.00000
2	3.658806	2.494404	0.105562	14.43099	2.114893	0.553308	80.03683	0.079885	0.18413
3	4.260950	6.778001	0.468543	18.29310	2.554218	1.129892	69.07899	0.374968	1.32228
4	4.646598	7.918801	0.847922	19.02706	3.226061	0.953681	65.23319	0.910630	1.88265
5	5.021889	8.188322	0.897265	20.17957	4.153044	0.974664	61.59699	1.325939	2.68420
6	5.401710	8.931355	0.926524	20.56461	4.496563	0.996762	58.93194	2.161813	2.99043
7	5.741947	9.210902	0.890504	21.48574	4.336454	1.358365	57.16002	2.415499	3.14251
8	6.069698	9.364821	0.874508	22.23840	3.992404	1.725221	56.03370	2.358196	3.41274
9	6.372652	9.588922	0.979437	22.22174	3.622957	2.037371	55.47941	2.255097	3.81506
10	6.673945	9.648764	1.249039	21.87405	3.346249	2.258281	55.04840	2.112502	4.46271

Variance  
Decompositi  
on of EX:

Period	S.E.	EXP01	LSMC	LSMV	LM3	LTC	CPI	EX	TFP
1	7.576566	25.58748	1.337204	8.429803	0.441188	20.39483	0.322958	43.48654	0.00000
2	8.503878	20.53615	5.136430	6.726359	2.268770	18.73531	0.286838	46.30922	0.00091
3	9.136629	18.00799	10.99514	6.819028	2.027253	17.06697	0.354887	43.90491	0.82382
4	9.939336	16.01046	13.50760	7.061607	1.831637	15.55802	0.494027	44.63682	0.89983
5	10.68156	14.06152	17.21630	6.339609	1.992938	14.15421	0.433536	44.98942	0.81247
6	11.36380	12.50183	21.08461	5.619290	2.235736	13.28986	0.445926	44.05219	0.77055
7	11.95598	11.41097	23.96224	5.098289	2.630625	12.62182	0.406006	43.12651	0.74353
8	12.51520	10.49520	26.16103	4.730061	3.037049	12.13268	0.385347	42.30852	0.75011
9	13.06919	9.696046	27.68668	4.424210	3.436193	11.82985	0.388723	41.76214	0.77615
10	13.59381	9.017391	28.79025	4.159216	3.827716	11.61641	0.382697	41.38703	0.81929

Variance  
Decompositi  
on of TFP:

Period	S.E.	EXP01	LSMC	LSMV	LM3	LTC	CPI	EX	TFP
1	0.807822	7.316698	1.967212	4.403314	2.780353	24.96237	0.148466	0.389888	58.0317
2	1.227758	5.700832	0.925089	1.908986	1.814977	18.67006	0.390285	0.168821	70.4209
3	1.610571	3.533181	0.910810	1.262479	1.272591	13.70828	1.975697	0.444589	76.8923
4	1.951069	2.848467	1.163014	1.064564	2.049539	11.56820	2.679052	4.451652	74.1755
5	2.203417	2.331686	2.466721	0.852758	2.841501	9.613731	3.301532	8.958339	69.6337
6	2.407352	1.960223	5.036343	1.262918	3.398051	8.084270	3.713088	11.63826	64.9068
7	2.569467	1.730808	8.124851	1.654910	3.399906	7.117000	3.847307	13.28016	60.8450
8	2.701795	1.565598	11.25797	2.018510	3.098321	6.540762	3.728716	13.86813	57.9219
9	2.816292	1.443311	13.68213	2.284606	2.955954	6.108106	3.496047	13.78921	56.2406
10	2.922109	1.347636	14.92510	2.319165	3.282727	5.717351	3.268084	13.39198	55.7479

Cholesky Ordering: EXP01 LSMC LSMV LM3 LTC CPI EX TFP

**Figure 6: Granger causality test.**

VEC Granger Causality/Block Exogeneity Wald Tests

Date: 01/03/20 Time: 12:05

Sample: 2001Q1 2018Q4

Included observations: 69

Dependent variable: D(EXP01)

Excluded	Chi-sq	df	Prob.
D(LSMC)	4.572256	2	0.1017
D(LSMV)	0.882956	2	0.6431
D(LM3)	3.409045	2	0.1819
D(LTC)	1.959908	2	0.3753
D(CPI)	4.128428	2	0.1269
D(EX)	1.433130	2	0.4884
D(TFP)	4.639402	2	0.0983
All	18.23055	14	0.1965

Dependent variable: D(LSMC)

Excluded	Chi-sq	df	Prob.
D(EXP01)	2.990851	2	0.2242
D(LSMV)	1.014744	2	0.6021
D(LM3)	0.441511	2	0.8019
D(LTC)	2.724043	2	0.2561
D(CPI)	3.235698	2	0.1983
D(EX)	10.01712	2	0.0067
D(TFP)	2.128341	2	0.3450
All	22.64463	14	0.0663

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Dependent variable: D(LSMV)

Excluded	Chi-sq	df	Prob.
D(EXP01)	4.970418	2	0.0833
D(LSMC)	3.188539	2	0.2031
D(LM3)	1.121040	2	0.5709
D(LTC)	6.148749	2	0.0462
D(CPI)	3.967589	2	0.1375
D(EX)	3.884040	2	0.1434
D(TFP)	1.705241	2	0.4263
All	25.36381	14	0.0311

Dependent variable: D(LM3)

Excluded	Chi-sq	df	Prob.
D(EXP01)	3.041846	2	0.2185
D(LSMC)	4.337934	2	0.1143
D(LSMV)	1.303010	2	0.5213
D(LTC)	0.103386	2	0.9496
D(CPI)	7.371053	2	0.0251
D(EX)	4.767319	2	0.0922
D(TFP)	0.883555	2	0.6429

All	32.95516	14	0.0029
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Dependent variable: D(LTC)

Excluded	Chi-sq	df	Prob.
D(EXP01)	0.852039	2	0.6531
D(LSMC)	14.12734	2	0.0009
D(LSMV)	2.090834	2	0.3515
D(LM3)	21.75781	2	0.0000
D(CPI)	8.934585	2	0.0115
D(EX)	10.89849	2	0.0043
D(TFP)	2.724115	2	0.2561
All	50.44256	14	0.0000

Dependent variable: D(CPI)

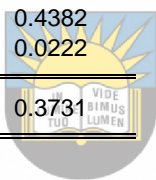
Excluded	Chi-sq	df	Prob.
D(EXP01)	2.372487	2	0.3054
D(LSMC)	1.125964	2	0.5695
D(LSMV)	2.019952	2	0.3642
D(LM3)	2.677007	2	0.2622
D(LTC)	0.738629	2	0.6912
D(EX)	1.650058	2	0.4382
D(TFP)	7.612727	2	0.0222
All	15.07405	14	0.3731

Dependent variable: D(EX)

Excluded	Chi-sq	df	Prob.
D(EXP01)	4.616813	2	0.0994
D(LSMC)	2.313874	2	0.3144
D(LSMV)	3.896387	2	0.1425
D(LM3)	1.667189	2	0.4345
D(LTC)	1.520199	2	0.4676
D(CPI)	0.128639	2	0.9377
D(TFP)	2.231515	2	0.3277
All	14.19996	14	0.4349

Dependent variable: D(TFP)

Excluded	Chi-sq	df	Prob.
D(EXP01)	0.127647	2	0.9382
D(LSMC)	8.236904	2	0.0163
D(LSMV)	9.138485	2	0.0104
D(LM3)	12.84168	2	0.0016
D(LTC)	5.162341	2	0.0757
D(CPI)	2.558177	2	0.2783
D(EX)	19.56115	2	0.0001
All	36.08487	14	0.0010



## Figure 7: Diagnostic test.

### 7.1 Jarque-Bera Test.

VEC Residual Normality Tests

Orthogonalization: Cholesky (Lutkepohl)

Null Hypothesis: Residuals are multivariate normal

Date: 01/03/20 Time: 13:00

Sample: 2001Q1 2018Q4

Included observations: 69

Component	Skewness	Chi-sq	df	Prob.*
1	0.096736	0.107616	1	0.7429
2	-0.469851	2.538738	1	0.1111
3	0.435395	2.180037	1	0.1398
4	-0.081637	0.076643	1	0.7819
5	1.286758	19.04109	1	0.0000
6	-0.839128	8.097559	1	0.0044
7	0.268426	0.828602	1	0.3627
8	0.378120	1.644206	1	0.1997
Joint		34.51449	8	0.0000

Component	Kurtosis	Chi-sq	df	Prob.
1	4.733780	8.642229	1	0.0033
2	4.646692	7.795835	1	0.0052
3	3.274475	0.216593	1	0.6416
4	5.157529	13.38293	1	0.0003
5	6.669254	38.70735	1	0.0000
6	4.147650	3.786665	1	0.0517
7	3.169486	0.082586	1	0.7738
8	6.270783	30.75681	1	0.0000
Joint		103.3710	8	0.0000

Component	Jarque-Bera	df	Prob.
1	8.749845	2	0.0126
2	10.33457	2	0.0057
3	2.396630	2	0.3017
4	13.45958	2	0.0012
5	57.74844	2	0.0000
6	11.88422	2	0.0026
7	0.911188	2	0.6341
8	32.40102	2	0.0000
Joint	137.8855	16	0.0000

\*Approximate p-values do not account for coefficient estimation

### 7.2 VEC Residual Serial Correlation Lm test

VEC Residual Serial Correlation LM Tests

Date: 01/03/20 Time: 13:13

Sample: 2001Q1 2018Q4

Included observations: 69

Null hypothesis: No serial correlation at lag h

Lag	LRE* stat	df	Prob.	Rao F-stat	df	Prob.
1	76.56141	64	0.1350	1.226581	(64, 214.1)	0.1432
2	65.50241	64	0.4244	1.024884	(64, 214.1)	0.4371
3	63.32370	64	0.5004	0.986210	(64, 214.1)	0.5129
4	91.53981	64	0.0136	1.514682	(64, 214.1)	0.0151
5	71.33144	64	0.2472	1.130061	(64, 214.1)	0.2583
6	48.36342	64	0.9270	0.729735	(64, 214.1)	0.9305
7	58.76756	64	0.6614	0.906437	(64, 214.1)	0.6722

Null hypothesis: No serial correlation at lags 1 to h

Lag	LRE* stat	df	Prob.	Rao F-stat	df	Prob.
1	76.56141	64	0.1350	1.226581	(64, 214.1)	0.1432
2	158.2403	128	0.0360	1.288134	(128, 214.6)	0.0516
3	284.1764	192	0.0000	1.702999	(192, 167.9)	0.0002
4	332.5427	256	0.0009	1.318663	(256, 110.3)	0.0484
5	514.2780	320	0.0000	1.664063	(320, 49.2)	0.0157
6	4507.221	384	0.0000	NA	(384, NA)	NA
7	NA	448	NA	NA	(448, NA)	NA

\*Edgeworth expansion corrected likelihood ratio statistic.

### 7.3 VEC Residual Heteroscedasticity Test

VEC Residual Heteroskedasticity Tests (Levels and Squares)

Date: 01/03/20 Time: 13:17

Sample: 2001Q1 2018Q4

Included observations: 69

Joint test:

Chi-sq	df	Prob.
1195.922	1224	0.7117

Individual components:

Dependent	R-squared	F(34,34)	Prob.	Chi-sq(34)	Prob.

---

res1*res1	0.279210	0.387366	0.9965	19.26546	0.9801
res2*res2	0.435041	0.770039	0.7749	30.01780	0.6633
res3*res3	0.528893	1.122659	0.3689	36.49360	0.3535
res4*res4	0.553023	1.237254	0.2691	38.15862	0.2859
res5*res5	0.546023	1.202753	0.2967	37.67557	0.3047
res6*res6	0.496226	0.985015	0.5174	34.23956	0.4562
res7*res7	0.480182	0.923751	0.5908	33.13257	0.5100
res8*res8	0.225753	0.291578	0.9997	15.57698	0.9971
res2*res1	0.369035	0.584873	0.9386	25.46339	0.8542
res3*res1	0.573696	1.345745	0.1955	39.58504	0.2347
res3*res2	0.473691	0.900023	0.6197	32.68465	0.5320
res4*res1	0.395558	0.654418	0.8893	27.29348	0.7857
res4*res2	0.641864	1.792233	0.0468	44.28860	0.1114
res4*res3	0.544357	1.194701	0.3034	37.56064	0.3093
res5*res1	0.396464	0.656902	0.8872	27.35603	0.7831
res5*res2	0.571222	1.332207	0.2036	39.41429	0.2405
res5*res3	0.550849	1.226423	0.2775	38.00859	0.2917
res5*res4	0.644471	1.812708	0.0437	44.46848	0.1079
res6*res1	0.456004	0.838249	0.6951	31.46429	0.5925
res6*res2	0.486095	0.945884	0.5640	33.54054	0.4900
res6*res3	0.543220	1.189237	0.3081	37.48217	0.3124
res6*res4	0.535308	1.151961	0.3412	36.93622	0.3348
res6*res5	0.490095	0.961148	0.5457	33.81653	0.4766
res7*res1	0.242939	0.320898	0.9993	16.76280	0.9942
res7*res2	0.341370	0.518304	0.9703	23.55456	0.9104
res7*res3	0.440315	0.786720	0.7560	30.38175	0.6457
res7*res4	0.455089	0.835163	0.6988	31.40116	0.5956
res7*res5	0.434756	0.769146	0.7759	29.99813	0.6642
res7*res6	0.664286	1.978724	0.0252	45.83572	0.0846
res8*res1	0.329821	0.492139	0.9789	22.75766	0.9290
res8*res2	0.405465	0.681986	0.8653	27.97706	0.7569
res8*res3	0.391783	0.644151	0.8976	27.03305	0.7962
res8*res4	0.337542	0.509530	0.9734	23.29040	0.9168
res8*res5	0.287722	0.403945	0.9951	19.85279	0.9745
res8*res6	0.464346	0.866878	0.6603	32.03990	0.5640
res8*res7	0.271591	0.372854	0.9975	18.73974	0.9842

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14 February 2020

This is to certify that I have edited the dissertation

**The Effect of financial sector development on International trade in South Africa**

For **Ntando T. Moyo**

Note that I have been through the dissertation only once: there were a number of points that need to be addressed before it is suitable for submission. I have detailed those in an email as well as text.



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