



University of Fort Hare

Together in Excellence

**THE IMPACT OF FOREIGN CAPITAL INFLOW ON
DOMESTIC SAVINGS IN SOUTH AFRICA**

BY

Nonkuthalo Mhloluvele

200600294

**A dissertation submitted in fulfilment of requirements for the
University of Fort Hare
degree**

Master of Commerce in Economics

Faculty of Management and Commerce

University of Fort Hare

East London

Supervisor: Dr FM Kapingura

DECLARATION

I, the undersigned, Nonkuthalo Mhlolulele student number 200600294, hereby declare that the dissertation is my own original work, with the exception of quotations and references with their sources being acknowledged and that it has not been submitted and it will not be presented at any other university for a similar or any other degree award.

SIGNATURE *Nmhlolulele*.....

DATE *30/08/17*.....



University of Fort Hare
Together in Excellence

DECLARATION ON COPY RIGHT

I, the undersigned, Nonkuthalo Mhloluvele, student number, 200600294, hereby declare that the dissertation is my own original work, and that it has not been submitted, and will not be presented at any other University for a similar or any other degree award.

Date: 30/08/17

Signature: NMhloluvele



University of Fort Hare
Together in Excellence

DECLARATION ON PLAGIARISM

I, Nonkuthalo Mhlolubele, student number 200600294, hereby declare that I am fully aware of the University of Fort Hare's policy on plagiarism and I have taken every precaution to comply with the regulations.

Signature: NMhlolubele



University of Fort Hare
Together in Excellence

DECLARATION ON RESEARCH ETHICS

I, Nonkuthalo Mhloluvele student number, 200600294, hereby declare that I am fully aware of the University of Fort Hare's policy on research ethics and I have taken every precaution to comply with the regulations. I have obtained an ethical clearance certificate from the University of Fort Hare's Research Ethics Committee and my reference number is the following:.....N/A.....

Signature:



University of Fort Hare
Together in Excellence

ACKNOWLEDGMENT

I would like to thank God for the wisdom, grace, guidance and the strength that He gave to me during this time. I also want to thank my family and my friends for their support. Many thanks go to my supervisor Dr F. M. Kapingura for being patient with me, the support that I got from you was amazing, and I thank you for your guidance and assistance.



University of Fort Hare
Together in Excellence

ABSTRACT

This study examined the impact of foreign capital inflow on domestic savings in South Africa. Data was extracted from the World Bank from 1990-2014. The study employed the Johansen co-integration technique to analyse the long run relationship between the variables of interest. Having established the presence of co-integration, the vector error correction model was also estimated to analyse the short run interaction between the variables. The long run results illustrated that there is a positive relationship between domestic savings and foreign direct investment, remittances and GDP per capita, while on the other hand there is a negative relationship between domestic savings, interest rate and ODA. Granger causality tests were also conducted and the results indicate that the different forms of external financial flows Granger cause savings in South Africa. What is interesting from the empirical results is the negative relationship between interest rate and domestic savings which implies that South Africans are net borrowers as the income effect surpasses the substitution effect. This in part explains the low levels of domestic savings being experienced by South Africa since an increase in interest rate results in people paying more debt and this will reduce domestic savings. In addition, the results also suggest that foreign capital flows complement savings in South Africa.

TABLE OF CONTENT

DECLARATION	2
ACKNOWLEDGMENT.....	3
ABSTRACT.....	7
LIST OF ACRONOMYS AND ABBREVIATIONS.....	9
CHAPTER 1	11
INTRODUCTION AND BACKGROUND OF THE STUDY.....	11
1.2 RESEARCH PROBLEM.....	12
1.3 RESEARCH OBJECTIVES	13
1.4 HYPOTHESIS	13
1.5 SIGNIFICANCE OF THE STUDY.....	13
5. CHAPTER OUTLINE	14
CHAPTER 2	15
OVERVIEW OF FOREIGN CAPITAL INFLOW AND DOMESTIC SAVINGS SOUTH AFRICA.....	15
2.1. INTRODUCTION.....	15
2.2 MACRO ECONOMICS PERFORMANCE INDICATORS IN SOUTH AFRICA	15
2.3 HISTORICAL TRENDS ON FOREIGN CAPITAL.....	218
2.4 OVERVIEW OF FOREIGN DIRECT INVESTMENT IN SOUTH AFRICA.....	20
2.4.1 TRENDS IN FOREIGN DIRECT INVESTMENT SOUTH AFRICA IN COMPARISON WITH OTHER BRICS COUNTRIES	21
2.4.2 OVERVIEW OF ODA IN SOUTH AFRICA.....	22
2.4.3 TRENDS IN ODA SOUTH AFRICA IN COMPARISON WITH OTHER BRICS COUNTRIES.....	23
2.4.4 OVERVIEW OF REMMITANCES IN SOUTH AFRICA.....	24
2.4.5 TRENDS IN SOUTH AFRICA REMITTANCES IN COMPARISION WITH OTHER BRICS COUNTRIES	25

2.5 OVERVIEW OF DOMESTIC SAVINGS IN SOUTH AFRICA	26
2.5.1 TRENDS IN GROSS DOMESTIC SAVINGS SOUTH AFRICA IN COMPARISON WITH OTHER BRICS COUNTRIES	27
2.6 CONCLUSION	28
CHAPTER 3	29
LITERATURE REVIEW AND THEORETICAL FRAMEWORK	29
3.1 INTRODUCTION.....	29
3.2 THEORETICAL LITERATURE.....	29
3.2.1 HAROLD-DOMAR GROWTH.....	29
3.2.2 THE TWO GAP MODEL	31
3.2.1 THE AK MODEL	33
3.2.1 THE AID AND CONSUMPTION MODEL.....	34
3.3 EMPIRICAL LITERATURE REVIEW.....	37
3.4 ANALYSIS OF LITERATURE ON THE IMPACT OF THE FOREIGN CAPITAL INFLOWS ON DOMESTIC SAVINGS	40
3.5 CONCLUSION	41
CHAPTER 4	42
RESEARCH METHODOLOGY.....	42
4.1 INTRODUCTION.....	42
4.2. MODEL SPECIFICATION	42
4.3. Definition of variables.....	43
4.4 DATA SOURCES.....	45
4.5 ESTIMATION TECHNIQUES	45
4.5.1 UNIT ROOT TESTS.....	46
4.5.1.1 Augmented Dickey Fuller	46
4.5.1.2 Phillips Perron tests	47
4.5.2 CO-INTEGRATION TESTS	47
4.5.3 VECTOR ERROR CORRECTION MODEL (VECM).....	51
4.5.4 VARIANCE DECOMPOSITION.....	52
4.5.5 GRANGER CAUSUALITY TESTS.....	52
4.6 DIAGNOSTIC TESTS.....	53
4.6.1 LAGRAGIAN MULTIPLIER (LM) TEST	53
4.6.2 NORMALITY TESTS	53

4.6.3 THE VECTOR ERROR CORRECTION (VEC) HETEROSCEDASTICITY TEST	53
4.6.4 THE AUTO-REGRESSION (AR) ROOTS GRAPH	54
4.7 CONCLUSION	54
CHAPTER 5	55
ESTIMATION AND INTEPRETATION OF EMPIRICAL RESULTS	55
5.1 INTRODUCTION.....	55
5.2 DESCRIPTIVE STATISTICS	55
5.3 CORRELATION MATRIX.....	56
5.4 FORMAL UNIT ROOT AND STATIONARITY TESTS	59
5.5 LAG LENGTH CRITERIA	61
5.6 JOHANSEN CO-INTEGRATION TEST RESULTS	62
5.7 LONG RUN CO-INTEGRATION TEST RESULTS	63
5.8 VECTOR ERROR CORRECTION MODEL.....	65
5.9 VEC GRANGER CAUSALITY/ BLOCK EXOGENEITY WALD TESTS.....	66
5.10 VARIANCE DECOMPOSITION	66
5.11 DIAGNOSTIC TEST RESULTS	68
5.12 CONCLUSION	69
CHAPTER 6	70
SUMMARY, CONCLUSION AND POLICY RECOMMENDATIONS	70
6.1 INTRODUCTION.....	70
6.2 SUMMARY AND CONCLUSION.....	70
6.3 POLICY IMPLICATIONS OF THE STUDY AND RECOMMENDATIONS.....	72
6.4 LIMITATIONS OF THE STUDY AND AREAS OF FURTHER RESEARCH.....	72
7. REFERENCES.....	73

LIST OF FIGURES

Figure 2.1: Foreign capital inflows 1990-2014	19
Figure 2.2: Trends in foreign direct investment South Africa in comparison with other BRICS countries	21
Figure 2.3: Trends in ODA South Africa in comparison with other BRICS countries	23
Figure 2.4: Trends in Remm South Africa in comparison with other BRICS countries	25
Figure 2.5: Trends in GDS South Africa in comparison with other BRICS countries	27
Figure 3.1: Substitution effect of foreign capital	35
Figure 5.1: Graphical plots of key variables at level series	57
Figure 5.2: Graphical plots of key variables at first difference series.....	58
Figure 5.3: Inverse roots of AR characteristic polynomial.....	68

LIST OF TABLES

Table 2.1: Selected macroeconomics indicators	17
Table 5.1: Descriptive statistics.....	55
Table 5.2: Correlation matrix	56
Table 5.3: Unit root tests: Level series	59
Table 5.4: Unit root tests: First difference series	60
Table 5.5: Lag length selection criteria	61
Table 5.6: Johansen co-integration test results.....	62
Table 5.7: Long run co-integration test results.....	63
Table 5.8: Vector error correction model test results	65
Table 5.9: VEC Granger Causality/ Block Exogeneity Wald tests results	66
Table 5.10: Variance decomposition results.....	67
Table 5.11: Other diagnostic tests.....	69

LIST OF ACRONOMYS AND ABBREVIATIONS

ADF	Augmented Dickey Fuller
AIC	Akaike information criteria
ARDL	Autoregressive distributed lag
ARM	Autoregressive moving average
BRICS	Brazil, Russia, India, China and South Africa
DF	Dickey-Fuller
EG	Engle Granger
EU	European Union
FDI	Foreign direct investment
FPE	Final prediction error
GDP	Gross domestic product
GDS	Gross domestic saving
GNP	Gross national product
GEAR	Growth, employment and redistribution
HQC	Hannan-Quinn criterion
LDCs	Least developed countries
LM	Lagragian multiplier
LR	Likelihood ratio test
NCF	Net capital flows
NGO	Non-governmental organization
ODA	Official development assistance
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary least squares
PEPFAR	President's Emergency Plan for AIDS Relief
PP	Phillips Perron
REM	Remittances
PFMA	Public Finance Management Act

SA	South Africa
SADC	Southern African Development Community
SC	Schwarz criterion
SIC	Schwarz information criterion
SSA	Sub-Saharan Africa
TSLS	Two-stage least squares
VAR	Vector Autoregressive
VEC	Vector error correction
VECM	Vector error correction model
USA	United States of America
UK	United Kingdom
UN	United Nations
UNCTC	United Nations Centre of Transnational Corporations
VAR	Vector autoregressive



University of Fort Hare
Together in Excellence

CHAPTER 1

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 INTRODUCTION

The importance of foreign capital to a developing country cannot be underestimated given its role as a source of development finance. This is supported by a number of studies such as Salahuddin, Shahbaz and Chani (2010); Shaheen and Ali (2013), and Agrawal (2000). These studies highlight the positive role played by foreign finance in the development of the Asian economies which have grown enormously over the past 20 years. In addition, Nnadozie (2008) argues that less developed countries, especially in Africa, can close the gap between developed and developing countries through attracting foreign capital.

However, a number of theories and empirical evidence shows that certain local conditions are important in order for a country to attract foreign capital. These conditions include stable macroeconomic policies, investor confidence and perception, natural resource availability, good infrastructure and other incentives (Nnadozie, 2008). Yet, what is most often ignored is establishing whether foreign capital complement or substitute domestic savings. This becomes interesting especially in the case of South Africa where the country has low levels of savings.

Of the available studies which have examined the link between foreign capital and savings, there are authors who argue that foreign capital inflow lowers growth by crowding out domestic savings (Edwards, 1996; Uthoff & Titeman, 1998; Waheed, 2004). These studies suggest a negative effect of foreign financial flows on domestic savings. These authors argue that the flow of foreign capital can reduce domestic savings as the government relax their tax efforts, increase their consumption expenditure, or liberalize imports. Overall, this will result in a reduction in the money which the government can generate as well as the savings which can be accumulated. This becomes worrisome given the importance of saving in the development process in a developing country. Blanchard and Milesi-Ferretti (2011) document that when a country has a high level of savings it will help in reducing the current account deficit. In the event that there is not enough savings, the country is likely to further widen the current account deficit or it may fail to maximize on investments in the domestic economy and economic growth.

1. 2 RESEARCH PROBLEM

South Africa is characterised by low level of domestic savings. Aggregate savings as a percentage of GDP as of 2011 stood at 19.13% in South Africa. Although it compares favourably to Brazil, 17.23%, it is low as compared to other BRICS countries such as India 34.98%, China 52.78%, and Russia 33.76%. This applies to other emerging countries in Africa like Nigeria, 24.41% and Botswana 26.15% (Kapingura & Alagidede, 2014).

This has resulted in the country being heavily dependent on foreign capital to support its investment needs. Therefore, the withdrawal of capital by foreign investors from the economy is likely to lead to low investments and growth. Former Finance Minister Pravin Gordhan (2012) mentioned that South Africa relies heavily on foreign capital to fund its current account deficit and this will likely result in macroeconomic instability if foreign capital inflows dry up.

Shaheen et al. (2013) suggest that if a country is experiencing low savings rates, foreign capital may act as a major determinant of economic growth as well as consumption patterns. Further, FDI may have a negative impact on the recipient economy in that it may create macroeconomic imbalances such as high inflation rates, rapid monetary expansion and widened current account deficits (Shaheen et al., 2013). In addition, there are available studies which suggest that foreign financial flows may crowd out domestic savings (Edward, 1996; Uthoff & Titeman, 1998; Waheed, 2004; Morton, Panday & Kula, 2010; Balde, 2011; Hossain, 2014).

Given that South Africa has adopted policies which are aimed at liberalizing the capital market, leading to an increase in foreign capital inflows, and also given that the country has low levels of savings, this study therefore explores whether foreign capital inflows has an impact on domestic savings in South Africa. Specifically, the study explores whether foreign capital flows compliment or substitute domestic savings in South Africa given the dominant role it has played over the years as one of the major driver of investment in the country.

1.3 RESEARCH OBJECTIVES

The main focus of the study is to examine the impact of foreign capital inflows on domestic savings in South Africa. The specific objectives include:

- Examining trends on foreign capital inflows to South Africa and domestic savings performance;
- Examine empirically the relationship between foreign capital inflows and domestic savings in South Africa; and
- Based on the empirical evidence, come up with policy recommendations of the study on the growth of South African savings.

1.4 HYPOTHESIS

H₀: Foreign capital inflows do not have a significant effect on domestic savings in South Africa.

H₁: Foreign capital inflows have a significant effect on domestic savings in South Africa.

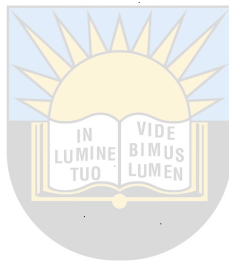
1.5 SIGNIFICANCE OF THE STUDY

South Africa is characterised by low levels of savings which has been attributed to high rates of unemployment and low income. When a country is faced with low domestic savings it can limit the rate of investment and restrain economic growth. In most cases, countries that have achieved and sustained high growth rates are those that were able to maintain high domestic saving rates, enabling strong and sustained domestic investment and employment creation.

A number of studies indicate that the level of savings acts as a buffer in the event that a country is exposed to sudden risks. Given that the South African economy is experiencing low levels of savings, given the huge increase in capital flows, this becomes important to examine the link between the two variables as there are quite a number of initiatives which have been put in place to mobilise savings, however, the country still lags behind its peers when it comes to savings. It is important to take into account that the available studies in this area have largely focused on examining the determinants of savings, excluding the potential effect from foreign capital. Thus, the study adds to the available literature on savings through incorporating the role played by external financial flows.

5. CHAPTER OUTLINE

The study is made up of six chapters. Chapter 1 provides the background to the study, problem statement and objectives of the study. Chapter 2 focuses on the overview of domestic saving and foreign capital inflows in South Africa. Chapter 3 presents the theoretical framework and literature review. Chapter 4 centres on the empirical analysis, emphasising the formulation and estimation of the econometrics methodology utilised in the study. Chapter 5 focuses on interpretation of results. Chapter six contains the conclusion and provides policy recommendation and implication of the study.



University of Fort Hare
Together in Excellence

CHAPTER 2

OVERVIEW OF FOREIGN CAPITAL INFLOW AND DOMESTIC SAVINGS IN SOUTH AFRICA

2.1. INTRODUCTION

The aim of this chapter is to give a general overview of South Africa's foreign capital inflow and domestic savings. The analysis will also be extended to compare South Africa with other emerging countries. The chapter is divided into five different sections. Following the introduction, Section 2.2 provides an overview of macroeconomics performance indicators in South Africa; 2.3 provides historical trends on foreign capital inflows while 2.4 deals with overview and trends in foreign direct investment; 2.5 comprises the overview and trends in domestic savings, and 2.6 concludes the chapter.

2.2 MACRO ECONOMICS PERFORMANCE INDICATORS IN SOUTH AFRICA

South Africa was faced with a massive challenge of low economic growth before 1994. After the 1994 election that heralded South Africa's freedom, the economy started to recover at an unprecedented level. The path to long-run economic growth was ensured in 1996 by introducing macroeconomic policies aimed at reducing fiscal deficits, lowering inflation, maintaining exchange rate stability, decreasing barriers to trade, and liberalizing capital flows (Khamfula, 2004). These macroeconomic policies were steered by a strategy to promote growth, employment and redistribution (GEAR).

The first objective of the GEAR programme was to achieve macroeconomic balance in the South African economy by reducing budget deficit and falling rate of inflation. The second objective was to make the South African economy embark on a 6% growth path by the year 2000. Improved performances in fixed investment and non-gold exports were meant to propel this growth path. The third objective was redistribution through job creation realised from economic growth and labour market reforms (Khamfula, 2004).

According to Khamfula (2004), GEAR strategy was guided by two scenarios. The first scenario was to check how the economy could be expected to perform over the medium term in the event that no policy changes were introduced, and the second was to check how the economy would perform if key policy changes were made. The following policy changes

were deemed necessary for higher economic growth and job creation: The first policy was the significant reduction of the fiscal deficit and containment of debt service obligations; maintenance of consistent monetary so as to contain inflation; further liberalization of the capital account of the balance of payments; further reduction of import tariffs; introduction of tax incentives to stimulate new investments in labour absorbing projects so as to enhance job creation, and increase of the pace of restructuring of state assets.

The core scenario represented the results of unchanged policies, and the integrated scenario represented the results of changed macroeconomic policies. Under the medium-term integrated scenario, substantially higher growth was to be achieved mainly through macroeconomic strategy that hinged on the theoretical postulate that reduction in fiscal deficit would decrease real interest rates, which would ultimately bring about greater investment and job creation (Khamfula, 2004). One criticism levelled against the GEAR strategy is that it restricted economic growth to a level that was likely to have insignificant impact on prevailing levels of unemployment, inequality and poverty (Standing, Sender & Weeks, 1996). The fact that the strategy introduced a cut in government expenditures without corresponding measures to promote the expansion of investment or exports was seen as stifling growth in this regard.

GEAR's performance has been dwarfed by the global economic crisis, which spread to South Africa in 1998. The decline in world demand for South African exports between 1995 and 2000 brought about massive shedding of labour by South African firms. This was done in order for the firms to become competitive.

Table 2.1: Selected macroeconomics indicators

Indicator	2009	2010	2011	2012	2013	2014
GDP	-1.5	3.1	3.5	2.5	2.8	3.8
Private consumption	-1.6	4.4	4.8	3.0	2.9	4.0
Government consumption	4.8	5.0	4.6	3.6	3.3	3.5
Gross fixed capital formation	-4.3	-2.0	4.5	6.5	4.5	6.6
Final domestic demand	-0.8	3.1	4.7	3.4	3.3	4.5
Stock building	-1.0	1.3	0.3	0.1	0.0	0.0
Total domestic demand	-1.6	4.4	4.6	3.4	3.3	4.4
Exports of goods& services	-19.5	4.5	5.9	0.7	3.7	7.0
Imports of goods& services	-17.4	9.6	9.7	5.9	3.6	7.6
Net exports	-0.2	-1.5	-1.1	-1.1	-0.3	-0.8
GDP deflator	8.3	7.2	6.0	5.5	5.0	4.8
Consumer price index	7.1	4.3	5.0	5.6	5.4	5.0
Private consumption deflator	6.5	3.9	5.0	5.6	5.3	4.9
Unemployment rate	23.9	24.9	24.9	25.1	24.3	23.8
Output gap	-1.3	-1.8	-1.8	-2.7	-3.3	-3.3
Household savings ratio	-0.7	-0.3	-0.1	0.0	0.1	0.0
General government financial balance	-4.9	-6.0	-5.3	-5.0	-4.7	-4.0
National government gross debt	30.9	35.3	39.2	40.0	41.0	41.3
Current account balance	-4.0	-2.8	-3.4	-6.0	-6.1	-6.2

Source: Statistics South Africa and OECD (2013)

Table 2.1 shows that in 2009 GDP stood at -1.6% and this could be attributed it was caused by the financial crisis that hit the country in 2008, but it increased between the period 2010-2014 by 3.8%. Between the periods 2009-2010 government consumption started at a high rate from 4.8% to 5.0%, but decreased between the period 2011-2014 from 4.6% to 3.5%. Consumer price index was high in 2009 by 7.1%, but it started to decrease between the periods 2010-2014 to 5.0%. Between the period 2009 -2012, unemployment rates was high

by 23.9% to 25.1% in 2012, but decreased from 24.3% to 23.8% between 2013-2014. High rate of unemployment affects savings negatively, especially household savings. Household savings was below zero percent between the period 2009-2011 and it was zero percent between 2012-2014. Low rate of household savings means low rate of domestic savings. Due to low savings rate, South Africa relies on foreign capital inflows to finance its capacity for future growth.

2.3 HISTORICAL TRENDS ON FOREIGN CAPITAL INFLOWS IN SOUTH AFRICA

Foreign capital inflows formed an integral part of the economic development process in the South African economy since the discovery of gold and diamonds in the latter half of the nineteenth century. The South African economy recorded a net inflow of foreign capital until 1976. South Africa could finance a shortfall on the current account of the balance of payments with the inflow of foreign capital until 1976 when political and social unrest broke out. Since then, South Africa became a net exporter of capital.

The South African economy found itself isolated from the world economy since the middle eighties due to the apartheid policy. The inflow of foreign capital was greatly inhibited by sanctions and disinvestment. The South African economy had to rely on domestic savings to finance investment needs. This shortage of investment funds was an inhibiting factor on economic growth and development. The end of apartheid and the relatively peaceful transition to democracy led to large increases in the amount of capital inflows into South Africa in 1995 (Mohamed & Finnoff, 2005).

Foreign capital inflows play a critical role in sustaining higher levels of investment and growth in South Africa (SA), given the persistently low national savings rate and consequent savings deficit. Foreign capital inflow has been identified as an important vehicle for augmenting the supply of funds for domestic investment (Fosu & Magnus, 2006; Omisakin et al., 2009).

African countries and other emerging economies need substantial inflow of capital to fill their savings and foreign exchange gaps and enhance capital accumulation and growth needed to overcome widespread poverty in these countries. Thus, the relative advantage of foreign capital inflow as a productivity-enhancing package is now widely acknowledged especially since the recent financial crises.

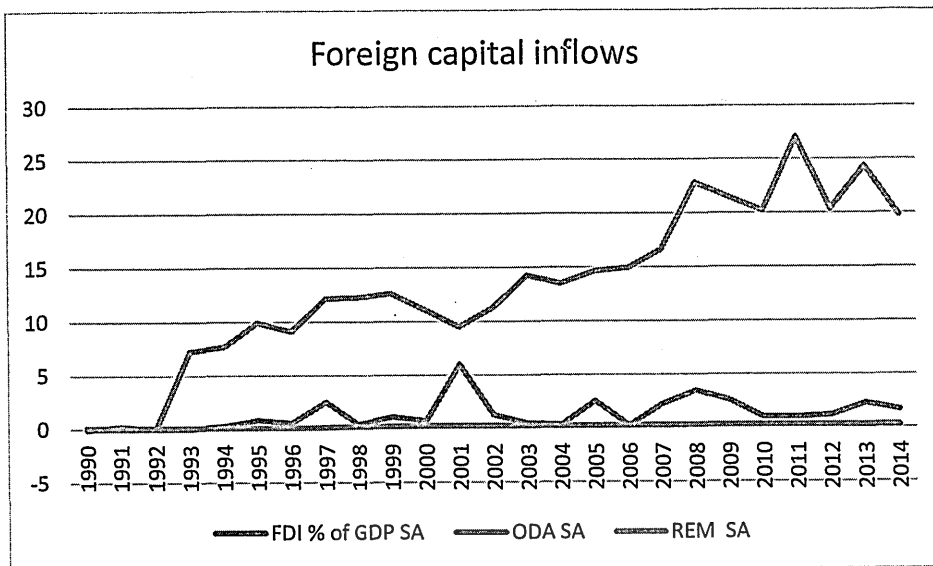


Figure 2.1: Foreign capital inflows in South Africa (1990-2014) (World Bank Indicators, 2014)

Figure 2.1 indicates that forging direct investment (FDI) was less than 0% in 1990, and less than 1% between 1991- 1996. According to Clark and Borgran (2003), throughout the apartheid era South African economics policies were not conducive to attract FDI since there was extensive state involvement in the economy that is why between 1990 - 1996 FDI was less than 1%. There was an increase of 2.50% in FDI in 1997 but it decreased between 1998-2000. The biggest increase of FDI in SA came in 2001 when FDI was 5.98%. The sale of a strategic stake in Telkom, which was a wholly government owned monopoly until 2001, contributed significantly to FDI in that year (Business Map Foundation, 2005:3).

The marked increase is also attributed to the unbundling and delisting of De Beers (Business Map, 2002:1). The graph shows that FDI declined between 2002-2004 but increased in 2005 by 2.53%. The reason behind this was a huge deal in the purchase of ABSA (SA) by Barclays in the United Kingdom. FDI declined between 2006-2007 but increased again in 2008 by 3.45%. Between 2009-2014 FDI decreasead from 2.58% to 1.66% percent. ODA started at less 0% between 1990-1992 but has been on the rise between 1993 to 2011 from 7.22% to 27.07%, then it decreased from 2012 to 2014 by 20.36% to 19. 80%.

Remmitances remain 0% from 1990- 2014 because formal options are not readily available to undocumented migrants and low-income clients wishing to send money across the border.

These clients continue to place their trust in informal money transfer mechanisms, either transferring money in person or using the extensive taxi and bus network.

2.4 OVERVIEW OF FOREIGN DIRECT INVESTMENT IN SOUTH AFRICA

FDI is an important element for developing economies not only because of increasing supply of capital but also helping human capital formation with technology transfer. Attracting FDI in South Africa has been a cornerstone policy of post-apartheid economic policy, especially with the low domestic savings rate. The government was keenly aware of the need to rebuild the country's image with international investors after the isolation of the apartheid era, and a concerted effort was made to build an investment environment that was liberal and open. This culminated in South Africa entering into a flurry of bilateral investment treaties with capital-exporting countries.

FDI is important in South Africa because of the low domestic savings rate, which limits the scope of domestic investment financing. South African government had tried to attract Foreign Direct Investment by using government's GEAR Strategy, which aimed at a broad liberalization of the economy. These policy changes coincided with a wave of optimism over the unrealised prospects of Africa's largest economy, and FDI flows initially looked positive, with investment peaking in the late 1990s with the partial-privatization of telecoms giant Telkom.

Foreign direct investment increased somewhat after 1994 but these flows have, on average, remained relatively low compared to the volume of portfolio investment (Leape & Thomas, 2009). Several large inward investments have taken place, however: for instance, the partial privatisation of Telkom in 1997, the acquisition of De Beers shares from minority shareholders as part of the restructuring of ownership of Anglo American and De Beers in 2001, the partial acquisition of ABSA by Barclays Bank in 2005, and the investment in Standard Bank by the Industrial and Commercial Bank of China in 2008.

Average annual net inflows of FDI to South Africa have also been low relative to the group of middle-income economies amounting to 1.1% of GDP for South Africa, compared to 2.9% for middle-income countries over the five years between 2003 and 2007 (World Bank, 2009). Mining investments remain a vital component of foreign direct investment flows, with the likes of Anglo American and ArcelorMittel leading the field in this area. The sectoral focus

illustrated by these investments on mining, finance and retail reflect in FDI stocks as of 2009, in which mining accounts for 33%, finance 27%, and other services account for 11%.

2.4.1 TRENDS IN FOREIGN DIRECT INVESTMENT SOUTH AFRICA IN COMPARISON WITH OTHER BRICS COUNTRIES

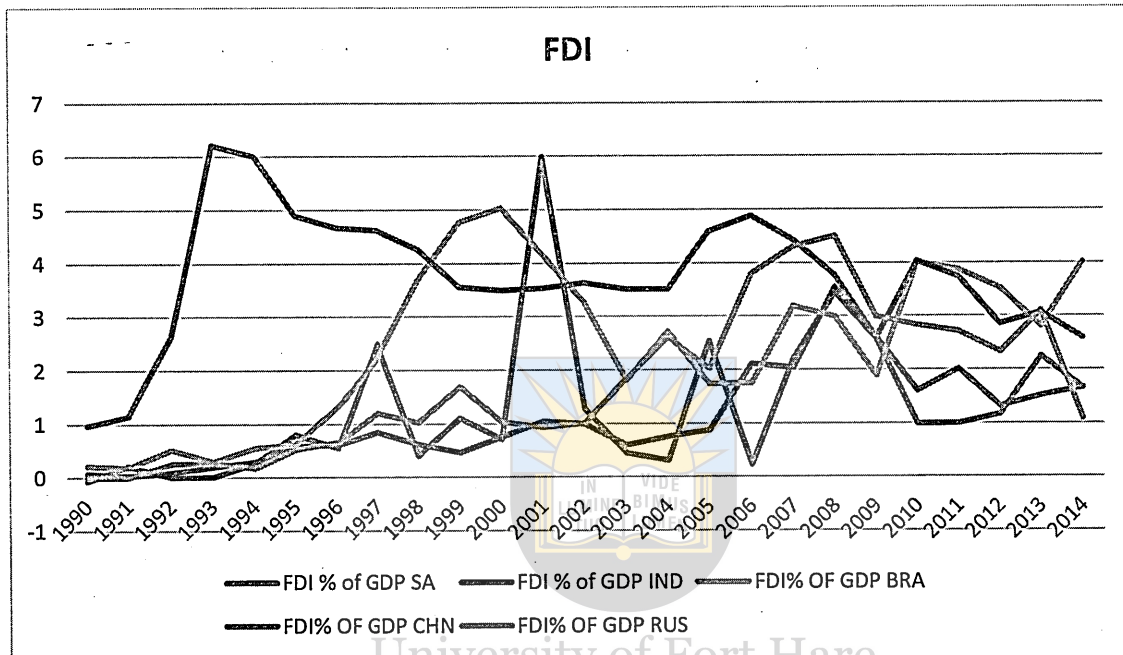


Figure 2.2: Trends in foreign direct investment South Africa in comparison with other BRICS countries (World Bank Indicators, 2014)

Figure 2.2 compares South Africa's FDI with other BRICS countries. In South Africa, FDI was below zero percent in 1990 and it was the lowest compared to other BRICS countries. The low rate of foreign direct investment was caused by the apartheid regime that operated in South Africa. During 2001, South Africa recorded the highest FDI ratio of 5.98% caused by the sale of a strategic stake in Telkom which was a wholly government-owned monopoly until 2001. The marked increase is also attributed to the unbundling and delisting of De Beers (Business Map, 2002:1). But this high ratio of FDI did not last long; it started to decline in 2002 ending at the ratio of 1.66% in 2014.

During 1993, China recorded the highest FDI ratio of 6.21% compared to other BRICS countries. However, this high ratio started to decline in 1994, ending at the ratio of 2.59% of foreign direct investment in 2014. China had the highest rate of foreign direct investment compared to other BRICS countries, followed by Brazil in second place, and Russia, South Africa and India in third. India is the country with the lowest foreign direct investment.

Between 1990 -1995, FDI in Brazil was less than 1 percent but started to increase between 1996- 2000. There was a decrease in FDI between 2001-2009 from 4.15% to 1.89%. Between 2010 -2014, FDI in Brazil was high by 4 percent. Russia started with a low rate of FDI between 1990 -1996 at less than 1 percent. Russia recorded a high rate of FDI of 4.50 in 2008 but decreased between 2009 – 2014 from 2.99% in 2009 to 1.08% in 2014. India has recorded the lowest rate FDI compared to other BRICS countries. The graph above shows that FDI in India was less than 1 percent for 10 years starting from 1990-2000. In 2001, FDI in India was 1.04% but decreased from 2002-2005, and started to increase from 2006-2008. In 2008, India recorded the higher rate of FDI by 3. 55%. FDI was low in India between 2010- 2014.

2.4.2 OVERVIEW OF OFFICIAL/ OVERSEAS DEVELOPMENT ASSISTANCE IN SOUTH AFRICA

South Africa's largest donors are US, EU, Germany, UK, France, Netherlands, Belgium, various Nordic countries, and UN programmes and funds. ODA is provided through a mixture of budget support (provided through the RDP Fund), technical co-operation and concessionary loans. The bulk of foreign aid goes to the health and education sector, where South Africa still has major deficits and the largest HIV-infected population in the world. Large amounts of US funding mostly comes from the US President's Emergency Plan for AIDS Relief or PEPFAR, the US Centre for Disease Control and Prevention, and other HIV-related funds go through NGOs, research centres, universities and public entities. South Africa's total ODA is estimated to be on average ZAR 8 billion a year (over \$1 billion), and is high for a middle-income country.

As opposed to other African countries, ODA is not used as a gap filler or to finance core service delivery functions of the government. In South Africa, ODA is rather a discretionary resource that public institutions can use with more flexibility to conduct experimental work, pilot new ideas, unlock bottlenecks, improve service delivery and leverage other domestic resources. South Africa therefore uses ODA for value-add, risk taking, innovation and knowledge transfer. ODA to South Africa is governed by the Public Financial Management Act (the PFMA of 1999) and ODA guidelines are published by the National Treasury. There are, nevertheless, some perennial challenges in the management of ODA to South Africa. Co-ordination has always been the Achilles heel of a much decentralised and internally competing South African public system.

2.4.3 TRENDS IN ODA SOUTH AFRICA IN COMPARISON WITH OTHER BRICS COUNTRIES

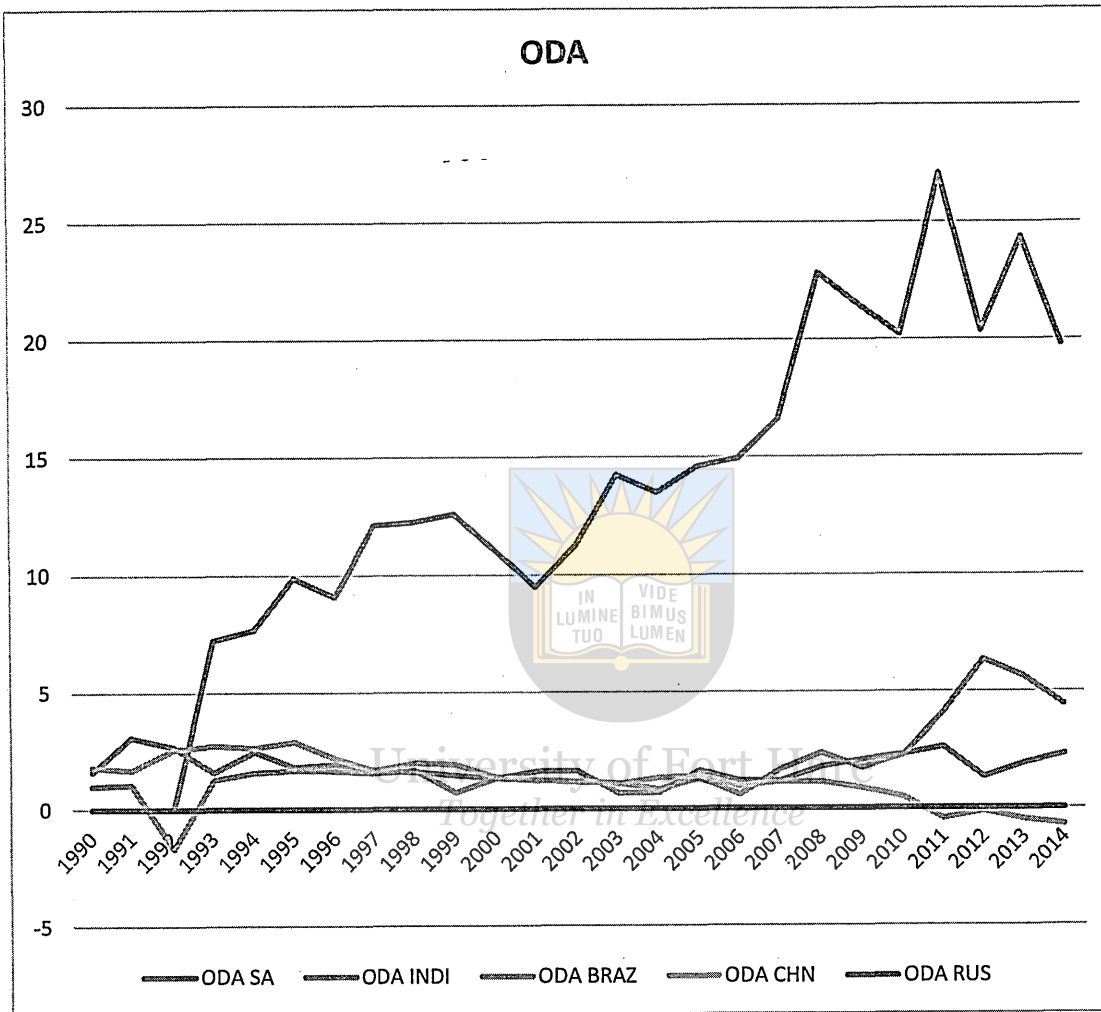


Figure 2.3: Trends in ODA South Africa in comparison with other BRICS countries (World Bank Indicators, 2014)

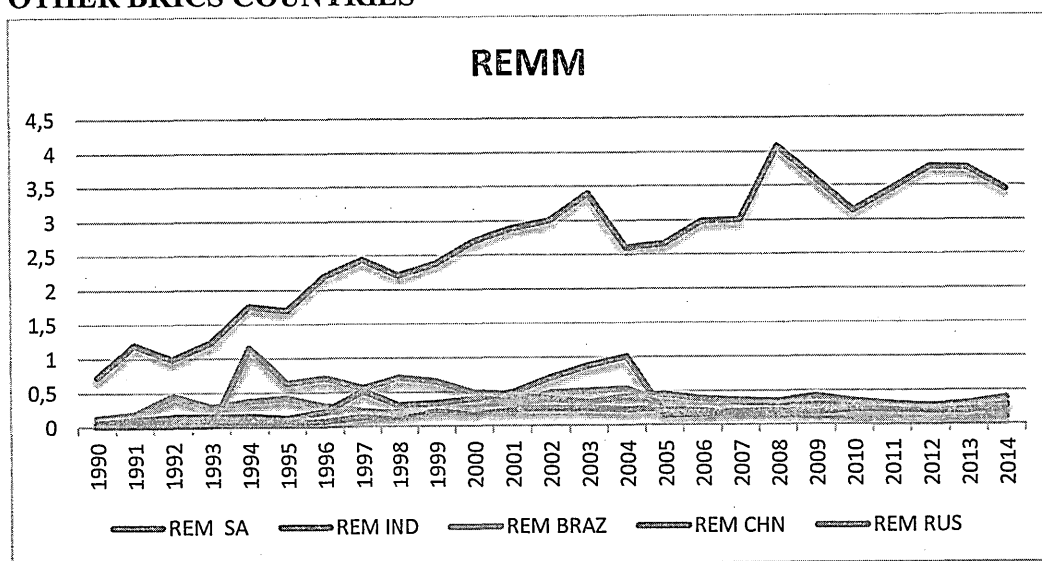
The graph above shows us that South Africa have received the highest rate of ODA as compared to other BRICS countries and it was followed by Brazil, India, China and Russia. Russia has recorded 0 percent of ODA between 1990 – 2014. Between 1990 -1992, South Africa recorded 0 percent of ODA but started to increased in 1993 by 7. 22%. Between 1994 – 1999 the rate of ODA was high but started to decrease between 2000 – 2001, increased between 2002 – 2013, and decreased in 2014 to 19.80%. South Africa recorded the highest rate of ODA in 2011 by 27. 07%. Brazil started at 1 percent of ODA in 1990-1991 but decreased to –(negative) 1 percent in 1992. Brazil recorded the highest rate of ODA in 2012 by 6.33%. Between 2013 – 2014, the rate of ODA depreciated to 4. 42%. ODA in India was

1.61% in 1990 and increased to 3.08% in 1991 but decreased between 1992-2014 from 2.67% to 2.30%. China started at 1.79% rate of ODA in 1990 but decreased to 1.68% in 1991. Between 1992 – 1995, ODA was high but decreased between 1996 – 2014 to -0.70%. China recorded the highest rate of ODA in 1995 by 2.88%.

2.4.4 OVERVIEW OF REMMITANCES IN SOUTH AFRICA

Remittance flows from South Africa to other Southern African Development Community (SADC) member countries are predominantly informal. Affordable formal options are not readily available to undocumented migrants and low-income clients wishing to send money across the border. These clients continue to place their trust in informal money transfer mechanisms, either transferring money in person or using the extensive taxi and bus network. The World Bank has placed an emphasis on reducing the cost of worker remittances globally. The World Bank database lists South Africa as having four of the most expensive “corridors” for workers to remit money from. This was highlighted in a presentation at the World Bank conference held in Cape Town in April 2009. The database stores the costs of remittances between the different countries and reflects that the costs incurred by migrant workers when repatriating funds to family in their home countries are generally very high, hence the World Bank initiative to reduce these costs.

2.4.5 TRENDS IN SOUTH AFRICA REMMITANCES IN COMPARISON WITH OTHER BRICS COUNTRIES



Figure

2.4: Trends in remittances South Africa in comparison with other BRICS countries (World Bank Indicators, 2014)

India has recorded the highest remittance rate compared to other BRICS countries followed by Russia, China, Brazil and South Africa. The graph above shows that SA's remittances remain 0 percent from 1990 – 2014 and is the lowest compared to other BRICS countries. This is caused by formal options that are not readily available to undocumented migrants and low-income clients wishing to send money across the border. These clients continue to place their trust in informal money transfer mechanisms, either transferring money in person or using the extensive taxi and bus network.

Remittance in India started at 0.73% in 1990 and increased between 1991-2008 from 1.2% to 4.08% in 2008, but decreased between 2009-2014 by 3.60% in 2010 to 3.44% in 2014. China and Brazil recorded the lowest rate of remittances. Brazil's remittances was less than 1 percent between 1990-2014 while China recorded less than 1 percent of remittances between 1990-2003. In 2004, remittances in China increased to 1 percent but decreased between 2005- 2014. Remittance in Russia was less than 1 percent between 1990-1993 and it increased to 1 percent in 1994 but decreased again between 1995-2014.

2.5 OVERVIEW OF DOMESTIC SAVINGS IN SOUTH AFRICA

University of Fort Hare
Together in Excellence

South Africa has been burdened with a low and ever falling savings rate since the 1980s, resulting in increasing reliance on short-term foreign capital inflows (Romm, 2003). The impact of low savings has translated into declining levels of both public and private investments and it is affecting South Africa's economic growth. The South African authority has taken steps to boost domestic savings, including the promotion of an environment that fosters a high savings culture. Given government's commitment to raising savings levels, it is important to have an understanding of the importance of savings in South Africa's economic growth.

Domestic savings consist of three components: corporate, household and government savings. In South Africa, household savings are relatively low by international standards. According to the Development Bank of Southern Africa (2011), which makes reference to a recent World Bank economic update on South Africa, it is argued that the primary driver behind low savings is a low household savings rate driven by the country's exceptionally high unemployment rate. This is confirmed by Masilela (2012) who states that while government and corporates are saving, individual South Africans are not, and the trend appears to be getting worse each year. Low domestic savings have required South Africa to

attract large, volatile portfolio capital inflows to fund a structural current account deficit. Aron and Muellbauer (2000:509) affirm that the low savings rate in South Africa may “perpetuate a low-growth trap”.

Concern that a low savings rate acts both as a constraint on growth and subjects a country to greater risk of currency crises gives reason to be concerned about the steep fall in household savings (World Bank, 2011). Due to our low savings rate, South Africa relies on foreign capital inflows to finance its capacity for future growth. Given the uncertainty of capital inflows, such dependency is unhealthy since investors often withdraw their funds at the slightest hint of bad news, which may hinder economic growth (World Bank, 2001).

In order to boost gross savings, the disposable income of households must be increased. While decreasing the income tax rate will increase disposable income, it is doubtful whether it will increase gross savings. However, instead of households saving their extra disposable income they should rather pay off their debt. This will lead to dissaving in the short run but in the long run debt free households will be able to contribute positively to gross savings. As long as households are in debt they will not contribute to gross savings. To improve the gross saving rate, the state has a role to play in the education of the public regarding credit, spending and saving (World Bank, 2011).

Factors that will lead to an increase in the savings and growth rate include higher openness to trade, increase in labour productivity, financial liberalisation, stimulating the investment rate, and faster technical progress. Besides these factors, implementing a culture of saving and paying more attention to savings will also lead to an increase in South Africa’s savings rate (Romm, 2003).

2.5.1 TRENDS IN GROSS DOMESTIC SAVINGS SOUTH AFRICA IN COMPARISON WITH OTHER BRICS COUNTRIES

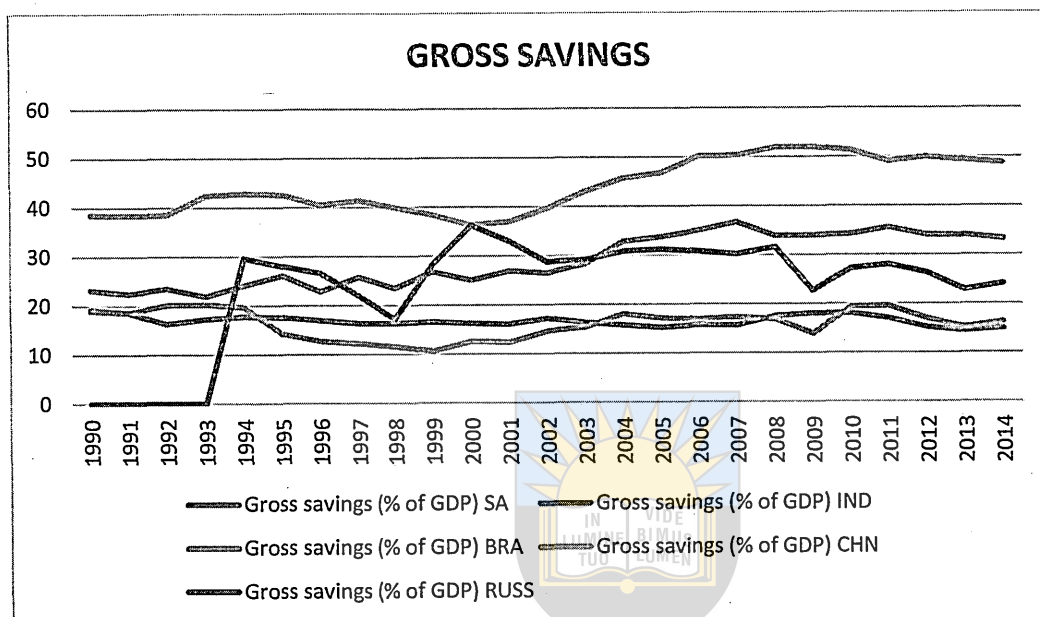


Figure 2.5: Trends in GDS South Africa in comparison with other BRICS countries (World Bank Indicators, 2014) *Together in Excellence*

The graph above shows that China has a high savings rates as compared to other BRICS countries followed by Russia, India, Brazil and South Africa. Households savings are the biggest contributors to China's national savings. Gross savings as a percentage of GDP in India started at 23.11% in 1990 and it decreased in 1991 by 22.35%. In 2007, India recorded the highest ratio of gross savings of 36.61% and the rate of gross savings decreased between 2008-2014 to 33.15%.

Gross savings in Russia started at 0 percent in 1990 and increased in 1994 to 29.58%. Between 1995 -1999, gross savings decreased to 28.25%. In 2000, Russia recorded the highest ratio of gross savings at 36.15% and which decreased between 2001-2014 to 24.01%. The graph above shows that gross savings as a percentage of GDP in Brazil 1990 was 18.92% but depreciated in 1991 to 18.42%. Between 1992 to 1993, gross savings as a percentage of GDP increased from 20.08% to 20.19%, but decreased between 1994 – 2014 from 19.66% to 16.23%.

According to World Bank (2014), gross savings as a percentage of GDP in South Africa ranged around 19.11% in 1990 and between 1991-2009 it decreased significantly to 17.98%. In 2010, gross savings increased to 18.02% and between 2011-2014 it depreciated to 14.91%. The reason behind the depreciation of gross savings is caused by low household savings rate driven by the country's exceptionally high unemployment rate and the associated impact on income, as well as financial sector liberalisation, which resulted in easier access to credit. Low domestic savings have required South Africa to attract large, volatile portfolio capital inflows to fund a structural current account deficit. This low domestic savings rate and large reliance on foreign portfolio capital flows leave South Africa in a low economic growth trap and vulnerable to foreign portfolio capital flows which tend to be fickle.

2.6 CONCLUSION

This chapter provides an overview of foreign capital inflow on domestic savings with trends on FDI. The review indicates that ODA and remittances have been high in South Africa as compared to other emerging countries while FDI was low. In addition, the review shows that savings in the country are low at national level as well as compared to other countries. This suggests that foreign capital has played a significant role in the case of South Africa in contributing towards investment. The next chapter presents the literature on the relationship between foreign capital flows and domestic savings.

CHAPTER 3

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

3.1 INTRODUCTION

The aim of this chapter is to provide the theoretical framework and empirical literature review on foreign capital inflow and domestic savings. The first section discusses theoretical literature focusing on the link between foreign capital inflows and domestic savings. The second section discusses the available studies which have examined the relationship between foreign capital flows and domestic savings.

3.2 THEORETICAL LITERATURE

There has been a number of research which has been carried out to examine the link between foreign capital and domestic savings. The theories in this area include the Harold-Domar growth model, the two-gap model, the AK model and the aid and consumption model. These studies highlight that domestic demand for capital outstrips supply; therefore, foreign capital in its different forms bridges the gap between domestic demand and supply of capital. These theories will be discussed in detail in this section.

3.2.1 HAROLD-DOMAR GROWTH

The growth models of Harrod (1939) and Domar (1946) indicate that increase in savings will lead into high investment, which in turn stimulates economic growth. Higher saving increases the availability of funds for investment. The more capital goods a nation has the more goods and services it can produce. Thus, a higher level of savings rate leads to increased capital stock, which in turn leads to a high level of output. This assumption has also been examined in many empirical studies to determine whether or not a positive relationship exists between the variables.

The theory suggests that an increase in foreign savings has the ability of supplementing domestic resources which are not enough to cover the domestic demands. Foreign savings in this case represents capital flows such as FDI, ODA and remittances. The model can be presented as follows:

$$g=\alpha(s+f) \dots\dots\dots 3.1$$

$$i=s+f \dots\dots\dots 3.2$$

In this case g represents GDP, α the marginal productivity of capital, s represents domestic savings, and f foreign savings. Both an increase in s and f will result in an increase in investment. Therefore, the theory suggests that an increase in foreign savings has a positive impact on savings in the domestic economy.

According to this model, a government's objective is to achieve a target rate of growth of the net national product. For example, assuming the government target rate of growth is 5 percent per annum and its capital output ratio is 4:1, then for the government to achieve its objective of 5 percent of growth it requires a rate of investment of 20 percent. So if the average or marginal rate of domestic savings is less than the rate of investment (20 percent), then obviously domestic savings by itself cannot sustain the desired rate of growth of 5 percent per annum. This is a common problem in developing countries.

In the light of the Harrod-Domar growth model, governments faced with low savings have a number of alternatives. They can adjust the growth rate downwards so that the domestic saving rate exactly balances the rate of investment required to sustain the modified rate of growth. The other alternative can be to raise domestic savings (e.g. through taxation). Finally, they can go for commercial borrowing both domestically and abroad.

Given the extreme inequalities in income and wealth and majority of the population living below subsistence level, government may be reluctant to raise domestic savings because that would mean pushing up taxation effort. Because of the low standard of living of the bulk of the population, imposing taxation (whether direct or indirect) would only place the burden on the few rich people by reducing their growth in consumption. Thus, this model can be criticized for being too aggregative and not providing the basis for detailed quantitative study and also for failing to highlight structural and regional problems. Further, the problem of estimation of capital stock is not easy in many countries and is particularly difficult in LDCS.

The Harrod-Domar model suggests that the savings as well as investment rates must be between 18% - 20 % to sustain the 6% growth of GDP (Jhingan, 2005). However, mostly less developed countries are entrapped by the vicious poverty cycle. They already lack the capital resources and the people's incomes are very low. Because of low incomes, the

savings ratios also remain low, resulting in low investment levels. At the same time, due to low income, the taxable capacity remains lower and also government earnings also remain down. In such situations, the less developed countries have to face savings and investment deficit as well as the deficit in balance of payments. Thus, these gaps can be filled by foreign capital inflows in the form of direct and portfolio investment, aid and foreign borrowing. However, the practical impact of foreign capital inflows in closing these gaps by achieving growth and development of developing countries have not adequately materialized and this has questioned the place of capital inflows in developing countries.

Increasing the savings rate will increase the growth rate of output; these are the means to achieve growth in the Harrod–Domar model. Its implications are that capital formation depends on the level of savings which generates economic growth. Less economically developed countries do not have sufficient incomes to enable high rates of saving, and therefore accumulation of the capital stock through investment is low. As per this model, economic growth depends on policies to increase investment and saving. These policies should encourage international capital flow given that domestic savings are insufficient to satisfy the domestic investment needs. Thus according to this model, an increase in foreign capital complements domestic savings.

3.2. 2 TWO - GAP MODEL

Another important model is the two gap model pioneered by Chenery and Strout (1966). The two-gap model of growth has been adopted as a tool to bring the economy to bear on the path of growth and, if possible, salvage the economy. The model has become one of the major theories employed to examine the link between foreign capital and domestic savings. The two-gap model deals with the interaction between the saving constraint and the foreign exchange constraint in the determination of economic growth in the economy. According to the two-gap model, foreign capital inflows are expected to bring a positive effect on investment and growth. However, the view of this model is that all foreign capital inflows would be used to finance investment.

The model shows how a shortage of foreign exchange can reduce economic growth by constructing both imports and savings. It is assumed that the foreign capital inflows have a multiplier effect on growth and investment. From a mathematical point, this model is illustrated as follows:

$$Y=C+I+G+X-M \dots\dots\dots 3.3$$

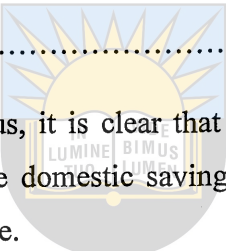
Define capital inflows as foreign savings $F = M - X$. At times it will be convenient to write F as a share of GDP. Since $Y - C = S + T$ where S and T are total domestic savings and taxes respectively, we can rewrite (1) as

$$S + (T-G) + F = I \dots\dots\dots 3.4$$

which simply states that investment (I) must be financed by domestic private savings (S), public savings ($T-G$), or foreign savings (capital inflows) F . Introducing the usual Keynesian savings and tax rate parameters $S = sY$, $T = tY$ and using lower case for g for G/Y , f for F/Y etc.

$$ID = (s + t) Y - G + F \dots\dots\dots 3.5$$

Taking capital inflows, F , as exogenous, it is clear that investment ID increases dollar for dollar with F . This equation yields the domestic savings investment line ID and adds the crucial equation of the two-gap literature.



According to the two-gap model, domestic savings rate and insufficient foreign exchange earnings is the major hurdles in the way of growth which can be reduced with the help of foreign resources, which ultimately lead to desired level of growth.

The major assumption of this model is that most developing countries either face a shortage of domestic savings to augment investment opportunities or they are faced with foreign exchange constraints to finance the needed capital and intermediate goods. Todaro and Smith (2004) claim that most two-gap models assume that the savings gap and the foreign-exchange gap are unequal in magnitude and independent in nature. The implication of this is that one of the two-gaps would be “binding” or “dominant” for any less developed country at any point in time.

The two-gap approach introduces the assumption that an imported commodity not produced domestically is essential for the production of investment goods. On one hand, if the availability of foreign exchange (if trade gap exists) to purchase these imported capital goods constrains or expands (when the economy has human resources and technology of its own) the growth of the economy, the growth would be exogenous of foreign exchange since it does not depend on foreign investment goods and technology.

On the other hand, foreign capital can be introduced in the form of official flows or FDI (provided savings gap exists). If the availability of foreign capital to compensate for the lack of domestic savings constrains or expands the growth of the economy, we may call the growth endogenous of FDI since the economy does not have technology and human resources of its own.

3.2. 3 THE AK MODEL

Another important theory which explains the importance of capital flows is the AK model. Based on the work of Pagano (1993), foreign capital flows can influence investment and hence growth through a number of channels. Firstly, capital flows can promote economic growth if they lead to an increase in the investment rate. The model assumes that international finance will be used to finance investment and not consumption. Also, investment financed by foreign capital must not crowd out domestically financed investment.

The model expresses output as a function of total productivity and capital stock:

$$Y = AK_t \dots \dots \dots 3.6$$

Y = Output, A = Total factor of production, K = Capital stock available in the economy.

The model assumes excess labour supply and production is constrained only by the quantity and quality of capital. The financial system acts as the intermediating units of which part of the capital is also consumed by financial systems, hence not all capital mobilized gets to the real productive sector. The amount of investable capital is determined by the efficiency of financial intermediation (ϕ) since a certain amount of the total domestically mobilized investible savings ($1-\phi$; $0 < \phi < 1$), which represents the cost of financial intermediation per unit of savings, is consumed by the financial market system. This indicates that only the fraction (ϕ) of total domestic savings is available for investment (Bailliu, 2000). Given this constraint, the long run economic growth rate is expressed as a function of total factor productivity, efficiency of financial intermediation, and the savings rate:

$$g = A \left(\frac{I}{Y} \right) - \delta = \phi s - \delta \dots \dots \dots 3.7$$

Where δ is the rate of depreciation, ϕ is the proportion of savings converted to investment and s denotes the gross savings rate. Y is output and I is change in capital. A is the factor productivity and g is the output growth.

Equation (2) represents a closed economy which does not account for capital inflows. To incorporate capital inflows, we assumed that foreign residents invest in the domestic economy and foreign donors grant financial aids to the recipient economy to augment the deficiency in domestic savings. If capital flows is on net, then a larger pool of savings is available for investment than in the absence of net capital flows (NCF). Following Bailliu (2000), the capital market equilibrium:

$\phi st = It$ In the closed economy then becomes:

$$\phi * (S_t + NCF_t) = I_t \dots\dots\dots 3.8$$

Secondly, capital flows can foster economic growth if they lead to investments that are associated with positive spill over. These positive externalities include competition which will result in domestic firms becoming more productive. Additionally, it is believed that foreign firms can help restructure key sectors of the economy by making them more competitive and export oriented (United Nations Centre of Transnational Corporations (UNCTC), 1995). The discussion on the AK model shows that foreign capital flows compliment savings in the domestic economy and this has a positive effect on economic growth.

3.2.4 THE AID AND CONSUMPTION MODEL

According to Griffin and Enos (1970), the previous models emphasise that foreign capital promotes investment through augmenting domestic savings, and they are based on the assumption that any increase in foreign capital is devoted entirely to raising the rate of capital accumulation. As per these models, foreign capital supplements domestic savings rather than consumption. However, Griffin and Enos (1970) argue that foreign capital substitutes savings as a large fraction of capital is used to increase consumption rather than investment.

Griffin and Enos (1970) state that foreign capital in the form of aid, as much as it can be argued that it is tied to a specific project and it is not possible to switch aid from investment to consumption, is “fallacious”. He argues that when the country is given aid for a project, it

present and future consumption will decline as neither of these bundles of goods will be considered inferior. The savings gap model would assume that the resources provided through foreign capital will be allocated between consumption and investment in such a way that the opportunity cost of current consumption is exactly equal to the satisfaction obtained from consuming one additional item. Thus in this regard, the new equilibrium point would be expected to move from E to E' so that C_t would remain constant. However, this will not be the case as the new equilibrium would likely to be at some point such as H where both C_t and C_{t+1} are higher than they were before.

Thus, the increase in capital flows from other countries will lead to a rise in current consumption which is a fall in savings represented by EF. Therefore, the amount of aid supplements investment is only FG which will lead to a future increase in consumption of FH. The model thus suggests a significant part of the inflow of foreign capital is offset by a decline in domestic savings. In the event that the inflow of foreign capital is quite large as compared to total investment, the marginal productivity of capital and the real rate of interest might decline. The fall in the rate of interest would, in turn, reduce domestic savings further.

Based on the model explained above, Griffin and Enos (1970) explains several channels through which foreign capital substitutes domestic savings. Firstly, it is assumed that an increase in foreign capital will result in a decline in public savings. This will happen if tax receipts fall or if there is a change in the composition of government expenditure. In this case, tax revenue will fall if the government reduces taxation or if less effort is made to collect taxes or if taxes are not raised periodically given inflation and an inelastic tax system. State capital formation may remain virtually unchanged and be financed in effect by foreign aid while the government expenditure will be directed toward providing more public consumption such as higher salaries for civil servants, increased employment and greater social security benefits.

The second channel through which foreign capital reduces domestic savings is through reducing private domestic savings. Foreign capital maybe channelled to private indigenous entrepreneurs. The availability of debt finance on soft terms may reduce the incentive of local investors to save. Foreign finance, which in this case may take the form of a multinational company or a Greenfield investment, will likely compete with local companies. As a way to attract such companies, governments usually grant them special tax and import privileges

which will benefit them more. In this case, foreign firms may take all profitable opportunities which may reduce the supply of indigenous entrepreneurship and savings.

The final channel through which foreign capital reduces domestic savings is through capital imports which may stimulate the consumption of importable and exportable. Thus, the increased availability of imported goods which are facilitated through foreign capital may lead to an increase in their consumption. This may even result in an increase in foreign exchange which may result in the government adopting or maintaining inappropriate exchange rates or other trade policies. This may have detrimental effects to domestic consumption of potential export goods. Thus, according to this model, an increase in foreign capital reduces the available domestic savings.

3.3 EMPIRICAL LITERATURE REVIEW ON CAPITAL FLOWS AND SAVINGS

The literature on the nexus between foreign capital and savings in Africa is sparse. Among the few available studies, the methodology adopted for the studies raises a number of questions, especially how they deal with the occurrence of endogeneity in the data set. Some studies focused on theoretical discussions while others applied empirical analysis using various types of statistical tests. The available studies in this regard mainly from Asia and Western countries include Chen (1977); Rana and Dawiling (1990); Boon (2000); Athukorala and Sen (2002); Waheed (2004); Caceres and Saca (2006); Osili (2007); Zhu et al. (2009); Das and Serieux (2010); Balde (2011), and Hossain (2014).

Starting with studies which established that foreign capital displaces domestic savings, Rana and Dawiling (1990) examined the impact of foreign capital on economic growth in the Asian economies utilising the simultaneous equation models taking into account the two way relationship between the variables. The authors criticised the previous studies on the link between the two variables in that they relied much on the single equation models. They argue that failing to account for a possible endogeneity in the variables could lead to biased and misleading results. This is consistent with Waheed (2004) who on conducting an evaluation of selected studies on foreign capital inflows and savings found a negative relationship between foreign capital inflow and domestic savings.

However, Rana and Dawiling (1990) concluded that the results of previous studies are largely controversial mainly due to methodological problems or data limitations. The authors

established that of the different types of external finance analysed, aid was found to reduce the efficiency of investment. This was attributed to aid financing projects which are unnecessarily capital intensive. It was also argued that aid could have introduced inappropriate technology. Conversely, the authors established that export performance has a direct influence on savings in these countries. In this regard, foreign trade is argued to be providing a vent for surplus commodities which bring into use resources which were not employed. However, these findings were criticised in that they failed to account for an investment function in the model. It was argued that investment is a function of aid and growth, therefore failing to account for these variables may result in unreliable results.

In employing the common correlated effects mean group (CCEMG) model, Hossain (2014) examined the differential impacts of foreign capital and remittances inflows on domestic savings of 63 countries for the period 1971 to 2010. From the conventional homogeneous panel estimates, foreign aid and remittances were found to be substituting domestic savings. However, when the author utilised the CCEMG model which considers cross-section dependence and parameter heterogeneity properties, the empirical results suggest that foreign aid and remittance flows had a significant negative impact on domestic savings, with the latter having a stronger crowding-out effect on domestic savings compared to the former. The impact of FDI and portfolio inflows was found to be statistically insignificant. According to the authors, the results of the study supported the hypothesis that large capital inflows lead to displacement of domestic savings.

Of the majority of studies which examined the impact of remittances on savings, Athukorala and Sen (2002), in the case of India, established that remittances displace domestic savings, even though the impact was found to be weak. This result was found to be consistent El Salvador where Caceres and Saca (2006) found that for the 1990s, increased remittance inflows into the country was accompanied by a sharp decline in savings in that country. On the contrary, Osili (2007) established that remittances have a positive impact on savings, investment and economic growth through reducing poverty in the country of origin.

There are, however, a number of studies which have suggested that foreign capital flows promote domestic savings. Bosworth and Collins (1999) studied the implications of both aggregated financial flows and disaggregated flows (FDI, portfolio investment and international bank loans) on domestic investment, savings and current accounts for 58 developing countries for the period 1978 – 1995. The authors employed OLS fixed effect and

instrumental variables approaches. The result for aggregate data shows an insignificant relationship between foreign capital inflows and savings. However, when the foreign capital inflows are disaggregated, they have different implications on the savings. There is a significant, positive effect of FDI, negative effect of international bank loans, and “little” negative effect of portfolio investment.

Ahmad and Ahmed (2002) employed co-integration and error correction models to examine the impact of foreign capital inflows and domestic saving in Pakistan for the period 1972 to 2002. The authors suggest that the unrestricted error correction model found a short run significance inverse relationship between domestic savings and foreign inflows, but the short-run dynamic Engle-granger procedure found an insignificant inverse relationship between foreign capital inflow and domestic savings. Thus, the authors argued that external capital flows permitted a relaxation in savings effort and encouraged an increase in consumption, therefore external flows may particularly impede the public saving as well as private savings.

Bashier and Bataineh (2007) studied the causal relationship between FDI and net domestic savings in Jordan for the period 1971-2005, employing the Johansen cointegration test and error correction model. The authors emphasised that there is a positive causal relationship between FDI and net domestic saving. The estimation result of the error correction model shows that the causal relationship runs from FDI to net domestic savings, not from net domestic savings to FDI.

Kumar (2007) investigated the impact of FDI on savings and investment and found that FDI has a significant effect on both savings and investment. The author indicates that FDI to GDP leads to an increase of a half percentage point in the fourths percentage point in domestic savings. Thus, the author stress that FDI actually crowds in domestic investment and has a positive impact on savings.

Okafor et al. (2009) determined the potential causality between foreign debt and savings within the context of developing countries, sub-Saharan Africa and Latin America for the period of 1975 to 2004. The results showed that foreign debts impacts negatively on gross domestic savings, especially in the long run. The sensitivity analysis suggests that there is indeed a strong magnification effect – a 1 percent increase in foreign debt share may result in as much as a 7.8% reduction in savings efforts and GDP per capita positively related with

gross domestic saving. However, these results were contrary to Balde (2011) who utilised the OLS fixed effects model and the two stage least square technique on 37 Sub-Saharan countries, which established that remittances and foreign aid have a significant positive impact on savings in those countries.

There are, however, studies which have established mixed results or that found that the growth impacts of the different financial flows on savings are not the same. Of the available studies in this category, Ouattara (2009) examined the extent to which foreign capital displaces domestic savings in 97 aid receiving countries employing the system generalised method of moment (SGMM) for the period from 1973 to 2001. The findings from the study indicated that aid displaces domestic savings. However, the other types of foreign capital were found not to have a significant effect on domestic savings.

In the case of the SADC countries, there are fewer studies which have been carried out to examine the link between foreign capital and savings. Of the available studies, Temitope (2014) studied the effects of foreign resources inflow and savings on the economic growth of South Africa by using the vector autoregressive analysis (VAR) and the impulse response function (IRF) over the period of 1975 to 2011. The results from the VAR Granger test of causality showed that domestic savings lead economic growth, while economic growth leads to investment. This result of the IRF also showed that while increased domestic savings is important to improve the level of economic growth in South Africa, it also leads to FDI. This means that the economic environment needs to be suitable in order to attract foreign investments.

3.4 ANALYSIS OF LITERATURE ON THE IMPACT OF FOREIGN CAPITAL ON SAVINGS AND INVESTMENT

The section has focused on reviewing the available theoretical and empirical studies which have examined the link between foreign capital and domestic savings and investment. The review of both theory and empirical studies reveals mixed results. From the review, it is evident that it is an area which has received attention but not much in South Africa. However, it is important to note that much of the earlier studies which examined the link between the variables of interest omitted other important variables which are supposed to be in the savings function. In addition, much of these available studies focused primarily on foreign aid as

compared to other sources of foreign financial flows. Moreover, the majority of these studies employed models which do not take into account the problems of endogeneity which are likely to be present in the savings and investment models.

All these points are likely to have resulted in biased and inconsistent results. Furthermore, in the case of South Africa, there are no specific studies of this nature. Much of the available studies on savings have largely focused on either the determinants of savings in the region focusing on the conventional variables of savings, but have not specifically examined how different forms of foreign capital may influence domestic savings and investment in the region. This becomes important in the case of South Africa given that the country relies much on foreign capital while at the same time it experiences low levels of savings.

3.5 CONCLUSION

The main objective of this chapter was to review the available empirical and theoretical literature on foreign capital inflows and domestic savings. Theories that link foreign capital inflow and domestic savings were also discussed. The theories include the two-gap theory, Harold-Domar growth model, AK model, and aid and consumption model. According to the two-gap model, foreign capital inflows are expected to bring a positive effect on investment and growth. The Harold-Domar model suggests that an increase in foreign savings has a positive impact on savings in the domestic economy. The AK model assumes that international finance will be used to finance investment and not consumption, and that investment financed by foreign capital must not crowd out domestically financed investment. In South Africa, more foreign capital inflow is needed to finance investment because the savings rate is low.

CHAPTER 4

DATA AND RESEARCH METHODOLOGY

4.1 INTRODUCTION

This chapter outlines the methodology applied to find the impact of foreign capital inflow on domestic savings. It also presents the theoretical framework and variables used in this study. The chapter is divided into seven different sections. Following the introduction, Section 4.2 specifies the model and how estimation of the model was applied, 4.3 deals with definition of variables, while Section 4.4 presents the data sources. Section 4.5 provides a review of the estimation techniques for the study of the impact of foreign capital inflows on domestic savings, Section 4.6 deals with diagnostic tests, and Section 4.7 concludes the chapter.

4.2. MODEL SPECIFICATION

Based on the theoretical considerations discussed, the study will benefit from the model developed by Salma et al. (2013). The model expresses savings as a function of foreign capital, amongst other variables. The model is specified as follows:

$$S = f(FDI, REMIT, ODA, INC, Ir) \quad 4.1$$

Where S represents savings, FDI is foreign direct investment, REMIT is remittances, ODA is Oversees Development Assistance, INC is GDP per capita, Iris interest rate.

The empirical model to be used in the study can be estimated as follows:

$$LS_t = \beta_0 + \beta_1 LFDI_t + \beta_2 LREMIT_t + \beta_3 ODA_t + \beta_4 LINC_t + \beta_5 Ir_t + \beta_6 GDP_t + \mu_t \quad 4.2$$

All the variables were normalised through.

4.3. DEFINITION OF VARIABLES

FDI is a major source of foreign capital inflows and is crucial for any economy, especially emerging markets like South Africa. FDI helps to offset the deficit in domestic savings and accelerates economic growth. It is a measure of foreign ownership of productive assets such as factories, mines and land, and can include buying shares of an enterprise in another country, then reinvesting earnings of a foreign owned enterprise in the country where it is located. Further, FDI contributes positively to savings ratios in the short run as well as in the long run. Hence, suggesting that a transitory or permanent change in FDI would augment the supply of domestic savings (Baharumshuh & Thanoon, 2000).

Over (1975) reported a positive link between FDI and national savings. Besides that, he noted that an increase in FDI provided an equal boost to savings rates and was a stimulus to economic growth. Based on a large data set from 18 Asian and Latin America countries, Gruben and Mclead (1998) showed that an increase in the share of FDI to GDP is positively and significantly related to domestic savings, which is supported by Edwards (1990), Leape (2010), Weisskopf (1970) and Ajayi (2006).

Remittance is the transfer of money by a foreign worker to an individual in her or his home country and according to macro-economic theory, remittances have a negative impact on savings through interest rates. However, authors like Obwona and Ddumba (1995) revealed that in Uganda, the household sector is the main source of domestic savings and one of the factors that influence the saving behaviour of households is the ability to save, which depends on disposable income and the household expenditure. Since remittances increase households' disposable income, this clearly indicates that there is a positive relationship between remittances and domestic savings.

Official development assistance (ODA) is a major source of external financing funding such as loans on concessional terms and grants provided by rich governments and official agencies to developing countries. Studies by Odhiambo (2009); Edwards (1995); Reinhart and Talvi (1998); Khan, Hassan, Hassan and Malik (1992); Shabbir and Mahmood (1992); Hachicha (2003), and Sabra and Sartawi (2015) reveal that the relationship between aid and savings is negative. If aid generates sufficient savings and investment that would generate a self-sustained growth, which in turn frees the country from the need of more aid. On the other hand, if aid consumes, that would create more consumption in the future and decrease savings

again and generate more aid dependency. This case could be as a result of tied aid or ineffective use of aid as a result of commodity aid such as foods, or aid redirected to support the government's current expenditures. Furthermore, foreign aid showed more use effectiveness in middle income level than lower middle income level countries such as this study's sample countries.

GDP per capita is the gross domestic product divided by the country's population, so GDP per capita is the average personal income. When the average personal income increases then saving also increases. In low-income countries that are closer to subsistence levels, the expectation is that most incomes are consumed with little left for savings while higher income levels make it possible for a country to save more. However, the size of the effect declines as income raises, in line with a decline in investment and growth opportunities, aging of the population and lower fertility rates are features that tend to be observed in countries that approach higher per capita income levels. Carrol and Weil (1994) report that higher saving rates are due to the increase in income per capita.

Loayza et al. (2000) confirm that savings are positively related to income per capita by using co-integration approach in India. Ozcan et al. (2003) found that income levels in Turkey were positively affected on savings. Modigliani (1986) found that developing countries need a higher savings rate to growing up faster. Collins (1989) also found that income and savings were positively related. According to subsistence-consumption theories, those countries tend to achieve a higher savings rate when they increase their level of per capita income. Studies such as Edwards (1996), Loayza et al. (1998), and Dayal-Ghulati and Thimann (1997) proved this theory empirically.

Interest rate is generally supported in a number of studies on savings as a major determinant of savings. An increase in the interest rate can result in people substituting consumption for savings. Khan et al. (1992) showed a significant, positive impact of the interest rate on the savings rate. The net effect of the real interest rate on savings can be classified into two effects: 1) the substitution effect, which implies that a higher interest rate increases the current price of consumption relative to the future price and thus affecting savings positively, and 2) the income effect, which indicates that if the household is a net lender, an increase in the interest rate will increase lifetime income and so increase consumption and reduce saving. Therefore, it is expected that the interest rate will have a positive impact on the savings ratio only when the substitution effect dominates the income effect.

In developing countries where financial markets are still not well developed, the substitution effect is expected to be much greater than income effect, and thus the real interest rate is likely to have a net positive impact on domestic savings (Ozcan et al., 2003). However, the complexity and distortions in both the real and the financial sides of the economy tend to reduce the benefits of an increase in interest rates, and thus the positive impact on domestic savings may not be achieved. The Keynesian view here breaks down, however, if individuals are net savers; an increase in the interest rate will favour future relative to current consumption. The substitution effect is large and savers will increase.

4.4 DATA SOURCES

The study will utilise quarterly time series data covering the period 1990 to 2012. The data will be obtained from different sources such as the South African Reserve Bank Quarterly Bulletin, Statistics South Africa and African Development Indicators: World Bank.

4.5 ESTIMATION TECHNIQUES

The study will seek to establish if there is a long-term relationship between foreign capital inflow and domestic savings by applying the Johansen co-integration technique. The Johansen technique derived the maximum likelihood estimation using sequential tests for determining the number of co-integrating vectors. However, prior to employing the co-integration technique, the time series properties of the variables were established through unit root tests.

After establishing the order of integration, the next step will be to check if there is a long-term relationship between the variables using the Johansen co-integration technique. The Johansen co-integration is a multivariate technique which takes into account the problem of more than two variables. In the event that co-integration is not found, the study will estimate a VAR model in first difference.

4.5.1 UNIT ROOT TESTS

The study employed the augmented Dickey Fuller (ADF) test and Phillips Peron tests to determine the stationarity of the time series. The two tests will be utilised to obtain robust results. These two methods will be discussed in detail in this section.

4.5.1.1 AUGMENTED DICKEY FULLER

The augmented Dickey Fuller test is an improvement of the Dickey-Fuller test (DF) devised by Dickey and Fuller (1979; 1981). The improved ADF test gives better results than the DF test because it includes extra lagged terms of the dependent variable in order to eliminate autocorrelation.

The ADF is given by the following equation:

$$\Delta y_t = a_0 + \gamma y_{t-1} + a_2 t + \sum_{i=1}^p \beta_i \Delta y_{t-i} + u_t \quad 4.3$$

The equation shows that $\Delta y_t = y_t - y_{t-1}$; $\Delta y_{t-1} = y_{t-1} - y_{t-2}$ etc., and the number of lags to be included is empirically determined using Schwarz information criteria.

The same critical values for the DF are calculated by Monte Carlo simulation in Mackinnon, Haug and Michelis (1999) as the distribution is not standard. The test proceeds by testing the significance of the coefficient of Y_{t-1} . The augmenting is done to remove possible autocorrelation among error terms. In the event that the calculated values are greater than the critical values, we reject the null and state that the variable is stationary.

According to Culver and Papell (1997), ADF is unable to discriminate well between non-stationary series with a high degree of autocorrelation. Further, the ADF test may also incorrectly indicate that the series contains a unit root when there is a structural break in the series. In addition, it is widely believed that the ADF test does not consider the cases of heteroscedasticity and non-normality frequently revealed in raw data of economic time series variables (Asteriou & Hall, 2007).

4.5.1.2 PHILLIPS PERRON TESTS

The Phillips Peron (PP) tests were developed by Phillips and Perron (1988) and are similar to the ADF tests. PP tests differ in how they deal with serial correlation and heteroscedasticity in the errors. Where the ADF tests use a parametric auto-regression to approximate the autoregressive moving average (ARM) structure, the PP tests ignore any serial correlation in the test regression. The PP tests correct the DF tests by the bias induced by the omitted autocorrelation. The model allows for fairly mild assumptions concerning the distribution of errors (Asteriou & Hall, 2007). The regression for the PP test is the AR (1) process given as:

$$\Delta y_{t-1} = \alpha_0 + \gamma y_{t-1} + e_{t-1} \quad 4.4$$

One of the advantages of the PP test is that it corrects for higher order serial correlation by adding lagged differenced terms on the right-hand side. This test makes a correction to the t statistic of the coefficient γ from the AR (1) regression to account for the serial correlation in e_t . Himalal (2008) argues that the PP test has an advantage over the ADF test when the concerned time series has a structural break. This becomes apparent in the current case given that the time series stretches over a longer period.

4.5.2 CO-INTEGRATION TESTS

After establishing the order of integration, the next step will be to check if there is a long-term relationship between the variables of interest using the Johansen co-integration technique. In the event that there is evidence of co-integration, this will be an indication that the variables share a certain type of behaviour in terms of their long-term fluctuations. However, prior to testing for co-integration, the lag length to incorporate in the VAR was selected empirically. This is important to avoid spurious rejection or acceptance of estimated results and to have standard normal error terms that do not suffer from non-stationary, autocorrelation or heteroscedasticity.

According to Brooks (2008), the Johansen test can be affected by the lag length employed in the VECM which is chosen optimally. This becomes important because the chosen lag length should produce the number and form of co-integration relations that conform to all the *apriori* expectations associated with economic theory. If too many lagged terms are included, degrees of freedom will be wasted and this may introduce the possibility of multicollinearity (Asteriou & Hall, 2007). Including too few lags will lead to specification errors and omission of important lag dependences. In addition, if serial correlation is present, the estimated coefficients will be inconsistent. The lag length also influences the power of rejecting hypothesis.

The lag length was chosen based on the different information criteria which include the Akaike's information criterion (AIC) (Akaike, 1973), Schwarz information criterion (SIC) (Schwarz, 1978), and Hannan-Quinn criterion (HQC) (Hannan & Quinn, 1979). Khim-SenLiew (2004) argues that the AIC has been popularly adopted in economic studies, and

suggests that the criterion is able to pick up the correct lag length at least half of the time in small samples. Additionally, its performance increases substantially as the sample size grows.

After choosing the correct lag length, co-integration tests were carried out. There are a number of tests which can be employed to establish if there is co-integration between variables. These methods include the Engle Granger method, the Johansen co-integration tests and the auto-regressive distributed lag (ARDL) approach. In the current study, the Johansen co-integration test was preferable as it has several advantages over the simple Engle Granger approach as well as the ARDL method. Asteriou and Hall (2007) state that when testing for co-integration using the Engle Granger (EG) approach, all variables are treated as endogenous variables.

In the event that there are more than two variables, there may be more than two co-integrating vectors, and the EG approach and the ARDL procedure are not able to carry out such an analysis. The EG approach relies on a two-step estimator: The first step involves generating residuals, and the second step involves testing the stationarity of the residuals. This therefore means any error introduced in the first step is carried into the second step (Asteriou & Hall, 2007).

The Johansen approach takes into account the shortcomings of the EG and the ARDL approach discussed above. The Johansen approach is a multivariate equation approach in which we are able to obtain the estimates for more than two co-integrating vectors.

The Johansen co-integration test used in the study is discussed as follows. Assuming that X_t is the $n \times 1$ vector of variables, the intra-impulse transmission process of which is to be captured by the study, the dimension of X_t (that is n) is 6, given the six variables of the analysis. Using matrix algebra notations, a 6-variable structural dynamic economic model for the study is stated as:

$$BX_t = \mu + \Gamma X_{t-1} + \varepsilon_t \quad 4.5$$

Where B is the matrix of variable coefficients, X_t is the 6×1 vector of observations at time t of the variables of the study that is vector X is defined as:

$$X_t = (\ln S / GDP_t, \ln FDI / GDP_t, \ln Remit / GDP_t, \ln ODA / GDP_t, \ln Inc / GDP_t, I_r_t) \quad 4.6$$

ε_t is a diagonal matrix of *structural innovations* that has zero means, constant variance, and are individually serially uncorrelated, i.e.

$$\varepsilon_t \sim (O, \hat{\sigma}) \quad 4.7$$

The co-integrating vector is therefore stated as follows:

$$(\beta_{11}InS/GDP_{t-1} + \beta_{21}InFDI/GDP_{t-1} + \beta_{31}IREMIT/GDP_{t-1} + \beta_{41}IODA/GDP_{t-1} + \beta_{51}IINC/GDP_{t-1} + \beta_{61}IR_{t-1} + \beta_{71}C) \quad 4.8$$

which feeds into eight different equations as follows:

$$\Delta LogS/GDP_t = a_{11}(\beta_{11}InS/GDP_{t-1} + \beta_{21}InFDI/GDP_{t-1} + \beta_{31}IREMIT/GDP_{t-1} + \beta_{41}IODA/GDP_{t-1} + \beta_{51}IINC/GDP_{t-1} + \beta_{61}IR_{t-1} + \beta_{71}C) \quad 4.9$$

$$\Delta LogFDI/GDP_t = a_{12}(\beta_{11}InS/GDP_{t-1} + \beta_{21}InFDI/GDP_{t-1} + \beta_{31}IREMIT/GDP_{t-1} + \beta_{41}IODA/GDP_{t-1} + \beta_{51}IINC/GDP_{t-1} + \beta_{61}IR_{t-1} + \beta_{71}C)$$

$$\Delta LogREMITs/GDP_t = a_{13}(\beta_{11}InS/GDP_{t-1} + \beta_{21}InFDI/GDP_{t-1} + \beta_{31}IREMIT/GDP_{t-1} + \beta_{41}IODA/GDP_{t-1} + \beta_{51}IINC/GDP_{t-1} + \beta_{61}IR_{t-1} + \beta_{71}C)$$

$$\Delta LogODA/GDP_t = a_{14}(\beta_{11}InS/GDP_{t-1} + \beta_{21}InFDI/GDP_{t-1} + \beta_{31}IREMIT/GDP_{t-1} + \beta_{41}IODA/GDP_{t-1} + \beta_{51}IINC/GDP_{t-1} + \beta_{61}IR_{t-1} + \beta_{71}C)$$

$$\Delta LogINC/GDP_t = a_{15}(\beta_{11}InS/GDP_{t-1} + \beta_{21}InFDI/GDP_{t-1} + \beta_{31}IREMIT/GDP_{t-1} + \beta_{41}IODA/GDP_{t-1} + \beta_{51}IINC/GDP_{t-1} + \beta_{61}IR_{t-1} + \beta_{71}C)$$

$$\Delta LogIR/GDP_t = a_{16}(\beta_{11}InS/GDP_{t-1} + \beta_{21}InFDI/GDP_{t-1} + \beta_{31}IREMIT/GDP_{t-1} + \beta_{41}IODA/GDP_{t-1} + \beta_{51}IINC/GDP_{t-1} + \beta_{61}IR_{t-1} + \beta_{71}C)$$

The Johansen procedure produces two statistics, the likelihood ratio test based on maximal eigenvalue of the stochastic matrix, and the test based on trace of the stochastic matrix. These statistics are then used to determine the number of co-integrating vectors. The test is based around an examination of the π matrix, where π can be interpreted as a long-run coefficient matrix. The test for co-integration between the variables is calculated by looking at the rank of the π matrix via its eigenvalues; π can be defined as the product of two matrices:

$$\pi = \alpha\beta' \quad 4.10$$

The matrix β gives the co-integrating vectors, while α gives the amount of each co-integrating vector entering each equation of the VECM, also known as the 'adjustment parameter' under the maximum eigenvalue (denoted by λ_{\max}) test, the null hypothesis that

Rank (Π) = r is tested against the hypothesis that the rank is $r+1$. The null hypothesis attests that there are co-integrating vectors and that there are up to r co-integrating relationships, with the alternative suggesting that there are $(r+1)$ vectors.

The test statistics are based on the characteristic roots (eigenvalues) obtained from the estimation procedure. The test consists of ordering the largest eigenvalues in descending order and considering whether they are significantly different from zero. If the variables are not co-integrated, the rank of Π is zero and all the characteristic roots will equal zero. To test how many of the numbers of the characteristic roots are significantly different from zero, the maximum eigenvalue uses the following statistic:

$$\lambda_{\max}(r, r+1) = -T \ln(1 - \hat{\lambda}_{r+1}) \quad 4.11$$

The second method is based on a likelihood ratio test about the trace of the matrix and it is called the trace statistic. The latter considers whether the trace is increased by adding more eigenvalues beyond the r^{th} eigenvalue. The null hypothesis in this case states that the number of co-integrating vectors is less than or equal to r . Just like under the maximum eigenvalue, in the event that $\hat{\lambda}_i = 0$, the trace statistic will be equal to zero as well. On the other hand, the closer the characteristic roots are to unity, the more negative is the $\ln(1 - \hat{\lambda}_i)$ term and therefore the larger the trace statistic. The trace statistic is calculated by:

$$\lambda_{\text{trace}}(r) = -T \sum_{i=r+1}^n \ln(1 - \hat{\lambda}_{r+1}) \quad 4.12$$

The procedure to determine the presence of co-integration involves working downwards and stopping at the value of r which is associated with a test statistic that exceeds the displayed critical value. Critical values for both the maximum eigenvalue and trace statistic are provided in Eviews.

4.5.3 VECTOR ERROR CORRECTION MODEL (VECM)

A vector error correction (VEC) model is a restricted VAR designed for use with non-stationary series that are known to be co-integrated. Having established co-integration, a vector error correction model (VECM) was estimated to analyse the joint behaviour of the series in the dynamic system. The VECM specification provided both short run and long run adjustments. The VECM specification utilised in the study is as follows:

$$\begin{aligned} \Delta \ln S / GDP_{1t} &= \beta_{10} + \sum_{i=1}^p \beta_{11,i} \Delta \ln S / GDP_{1,t-i} + \sum_{i=1}^p \beta_{12,i} \Delta \ln FDI / GDP_{2,t-i} + \sum_{i=1}^p \beta_{13,i} \Delta \ln REMIT / GDP_{3,t-i} \\ &+ \sum_{i=1}^p \beta_{14,i} \Delta \ln ODA / GDP_{4,t-i} + \sum_{i=1}^p \beta_{15,i} \Delta \ln LINC / GDP_{5,t-i} + \sum_{i=1}^p \beta_{16,i} \Delta Ir_{6,t-i} + \lambda_1 ECT_{t-1} + \varepsilon_{1t} \end{aligned}$$

4.13

$$\begin{aligned} \Delta \ln FDI / GDP_{1t} &= \beta_{10} + \sum_{i=1}^p \beta_{11,i} \Delta \ln FDI / GDP_{1,t-i} + \sum_{i=1}^p \beta_{12,i} \Delta \ln S / GDP_{2,t-i} + \sum_{i=1}^p \beta_{13,i} \Delta \ln REMIT / GDP_{3,t-i} \\ &+ \sum_{i=1}^p \beta_{14,i} \Delta \ln ODA / GDP_{4,t-i} + \sum_{i=1}^p \beta_{15,i} \Delta \ln LINC / GDP_{5,t-i} + \sum_{i=1}^p \beta_{16,i} \Delta Ir_{6,t-i} + \lambda_1 ECT_{t-1} + \varepsilon_{1t} \end{aligned}$$

$$\begin{aligned} \Delta \ln REMIT / GDP_{1t} &= \beta_{10} + \sum_{i=1}^p \beta_{11,i} \Delta \ln REMIT / GDP_{1,t-i} + \sum_{i=1}^p \beta_{12,i} \Delta \ln S / GDP_{2,t-i} + \sum_{i=1}^p \beta_{13,i} \Delta \ln FDI / GDP_{3,t-i} \\ &+ \sum_{i=1}^p \beta_{14,i} \Delta \ln ODA / GDP_{4,t-i} + \sum_{i=1}^p \beta_{15,i} \Delta \ln LINC / GDP_{5,t-i} + \sum_{i=1}^p \beta_{16,i} \Delta Ir_{6,t-i} + \lambda_1 ECT_{t-1} + \varepsilon_{1t} \end{aligned}$$

$$\begin{aligned} \Delta \ln ODA / GDP_{1t} &= \beta_{10} + \sum_{i=1}^p \beta_{11,i} \Delta \ln ODA / GDP_{1,t-i} + \sum_{i=1}^p \beta_{12,i} \Delta \ln S / GDP_{2,t-i} + \sum_{i=1}^p \beta_{13,i} \Delta \ln FDI / GDP_{3,t-i} \\ &+ \sum_{i=1}^p \beta_{14,i} \Delta \ln REMIT / GDP_{4,t-i} + \sum_{i=1}^p \beta_{15,i} \Delta \ln LINC / GDP_{5,t-i} + \sum_{i=1}^p \beta_{16,i} \Delta Ir_{6,t-i} + \lambda_1 ECT_{t-1} + \varepsilon_{1t} \end{aligned}$$

$$\begin{aligned} \Delta \ln LINC / GDP_{1t} &= \beta_{10} + \sum_{i=1}^p \beta_{11,i} \Delta \ln LINC / GDP_{1,t-i} + \sum_{i=1}^p \beta_{12,i} \Delta \ln S / GDP_{2,t-i} + \sum_{i=1}^p \beta_{13,i} \Delta \ln FDI / GDP_{3,t-i} \\ &+ \sum_{i=1}^p \beta_{14,i} \Delta \ln ODA / GDP_{4,t-i} + \sum_{i=1}^p \beta_{15,i} \Delta \ln REMIT / GDP_{5,t-i} + \sum_{i=1}^p \beta_{16,i} \Delta Ir_{6,t-i} + \lambda_1 ECT_{t-1} + \varepsilon_{1t} \end{aligned}$$

$$\begin{aligned} \Delta Ir_{1t} &= \beta_{10} + \sum_{i=1}^p \beta_{11,i} \Delta Ir_{1,t-i} + \sum_{i=1}^p \beta_{12,i} \Delta \ln S / GDP_{2,t-i} + \sum_{i=1}^p \beta_{13,i} \Delta \ln FDI / GDP_{3,t-i} \\ &+ \sum_{i=1}^p \beta_{14,i} \Delta \ln ODA / GDP_{4,t-i} + \sum_{i=1}^p \beta_{15,i} \Delta \ln REMIT / GDP_{5,t-i} + \sum_{i=1}^p \beta_{16,i} \Delta \ln LINC / GDP_{6,t-i} + \lambda_1 ECT_{t-1} + \varepsilon_{1t} \end{aligned}$$

Where,

Δ represents the first difference operator, p is the lag length and ECT_{t-1} is the lagged error correction term which shows the degree of disequilibrium levels of variables in the previous period. The ECT_{t-1} was expected to be negative and statistically significant as evidence that in the event that there is disequilibrium in the short term, the variables will adjust to their long run equilibrium.

4.5.4 VARIANCE DECOMPOSITION

Variance decompositions were also constructed in the study. According to Brooks (2008), variance decomposition analysis shows the proportion of movements in the dependent

variables that are due to its own shocks, against shocks to other variables. Yinusa and Akinlo (2008) state that variance decomposition separates the variation in an endogenous variable into the component shocks to the VECM. The variance decomposition analysis thus provides information about the relative importance of each random innovation in affecting the variables in the VECM.

4.5.5 GRANGER CAUSALITY TESTS

After conducting stationarity and co-integration tests, Granger causality tests will be carried out to establish the existence and nature of the causality relationship between the variables. The test shows the correlation between the current value of one variable and the past values of others. The test will thus answer the question: Do past inflows of FDI cause changes in domestic savings in South Africa or vice versa? Granger causality tests are based on the assumption that the time series used in the analysis is stationary and the appropriate lag length is used.

The Granger causality test is represented by the linear model:

$$X_t = \alpha + \alpha X_{t-1} + \alpha X_{t-k} + \hat{Z}_{t-1}\gamma_1 + \hat{Z}_{t-k}\gamma_k + e_t \dots \dots \dots (4.14)$$

X_t and \hat{Z}_t are vectors for FDI and domestic savings respectively, and e_t is the error term.

In the above equation, the null hypothesis is that \hat{Z}_t does not Granger cause X_t if $H_0: \gamma_1 = \gamma_2 = \dots = \gamma_k = 0$. The null hypothesis implies that one FDI does not Granger cause domestic savings and will be tested using the F-test.

The VAR representation of the model can be shown as:

$$\begin{bmatrix} Y_t \\ Z_t \end{bmatrix} = \sum_{i=1}^p \begin{bmatrix} a_{11i} & a_{12i} \\ a_{21i} & a_{22i} \end{bmatrix} \begin{bmatrix} Y_{t-1} \\ Z_{t-1} \end{bmatrix} + \mu_t \dots \dots \dots 4.15$$

If the variables are I(0), to show that Y_t Granger causes Z_t , the test can be shown as:

$$a_{21i} = 0 \text{ for } i = 1, 2, 3, \dots, p.$$

And if the variables are I(1), the VAR Granger causality model can be rewritten in a VECM format as:

$$\begin{bmatrix} \Delta Y_t \\ \Delta Z_t \end{bmatrix} = \alpha \hat{\beta} \begin{bmatrix} Y_{t-1} \\ Z_{t-1} \end{bmatrix} + \sum_{i=1}^{p-1} \begin{bmatrix} \gamma_{11i} & \gamma_{12i} \\ \gamma_{21i} & \gamma_{22i} \end{bmatrix} \begin{bmatrix} \Delta Y_{t-1} \\ \Delta Z_{t-1} \end{bmatrix} + \mu_t \dots \dots \dots 4.16$$

Where $\alpha\hat{\beta}$ can be expressed as:

$$\alpha\hat{\beta} = \begin{bmatrix} \alpha_1 \\ \alpha_2 \end{bmatrix} [\beta_1 \beta_2] = \begin{bmatrix} \alpha_1 \beta_1 & \alpha_1 \beta_2 \\ \alpha_2 \beta_1 & \alpha_2 \beta_2 \end{bmatrix} \dots\dots\dots 4.17$$

By replacing $\alpha\hat{\beta}$ by the latter expression to the former I(1) Granger causality model, the Granger causality tests the following hypotheses: $\gamma_{21i} = 0$, for $i = 1, 2, 3, \dots, p-1$; and $\alpha_2 \beta_1 = 0$.

4.6 DIAGNOSTIC TESTS

Once Granger causality tests are done, diagnostic tests of the VECM based test will also be conducted to examine the validity of the fitted model. The following diagnostic tests will be done.

4.6.1 LAGRANGIAN MULTIPLIER (LM) TEST

According to Walter A. Shewhart Lagrange multiplier tests can be used to test for a specific of nonlinearity. Lagrange multiplier tests can help select the proper functional form to use in non-linear estimation. The test will establish if there is serial correlation in the error term and the null hypothesis can be stated as: $H_0: E(u_t, u_{t-q}) = 0$ for $t \neq q, q = 1, 2, \dots, p$.

4.6.2 NORMALITY TESTS

This will be used to examine whether or not the residuals are normally distributed and its null hypothesis is stated as: H_0 : Residuals are normally distributed.

4.6.3 THE VECTOR ERROR CORRECTION (VEC) HETEROSCEDASTICITY TEST

The test will be conducted to establish if the residuals are homoscedastic. The null hypothesis is stated as: H_0 : Variance of the residuals is constant.

4.6.4 THE AUTO-REGRESSION (AR) ROOTS GRAPH

The graph will be constructed to examine the stability of the model. If all the roots lie within the circle, this will indicate that the VAR model is stable. According to Eviews 8 manual, a stable VAR shows that the results of variance decomposition and impulse response can be relied upon.

4.7 CONCLUSION

This chapter discussed the methodology, variable analysis and the estimation of the model which will be used to carry out the analysis on the impact of foreign capital inflow and domestic savings in South Africa. The ADF and PP tests were used to determine the stationarity of the time series. Additionally, the Johansen co-integration technique was used to check if there is a long-term relationship between the variables. VECM was estimated to analyse the joint behaviour of the series in the dynamic system. Granger causality tests were used to establish the existence and nature of the causality relationship between the variables, followed by a discussion of the diagnostic tests.



University of Fort Hare
Together in Excellence

CHAPTER 5

ESTIMATION AND INTERPRETATION OF EMPIRICAL RESULTS

5.1 INTRODUCTION

This chapter focuses on the interpretation of models that were estimated in Chapter 4. This chapter is divided into 12 sections: Following Section 5.1 which is the introduction, Section 5.2 presents descriptive statistics of the data utilised in the study; 5.3 provides the correlation matrix between the variables; 5.4 comprises formal unit root tests and stationarity test results; 5.5 presents the lag length selection criteria; 5.6 discusses the Johansen co-integration test results, 5.7 presents the long-run co-integration test results; 5.8 provides the VECM test results; 5.9 exhibits the VEC Granger causality tests results; 5.10 provides the variance decomposition test results; 5.11 presents the diagnostic test results, and 5.12 concludes the chapter.

5.2 DESCRIPTIVE STATISTICS

Table 5.1: Descriptive statistics

	FDI	GDPP	GDS	ODA	REMMITANCES	R
Mean	21.27117	8.438496	24.40684	2.593442	19.70730	5.813947
Median	21.19882	8.392365	24.30486	2.567378	19.78535	4.756070
Maximum	22.76346	8.934591	25.03720	3.192694	20.80442	12.99255
Minimum	19.44017	8.038877	23.99068	1.976445	18.40826	-0.268865
Std. Dev.	0.957049	0.304265	0.399167	0.362830	0.894218	3.654309
Skewness	-0.340479	0.161483	0.273113	-0.052559	-0.357608	0.572957
Kurtosis	2.717796	1.513044	1.394003	2.098983	1.644379	2.427910
Jarque-Bera	0.362228	1.543563	1.918393	0.548587	1.566161	1.093605
Probability	0.834340	0.462189	0.383201	0.760109	0.456996	0.578798
Sum	340.3387	135.0159	390.5094	41.49507	315.3168	93.02316
Sum Sq. Dev.	13.73913	1.388660	2.390009	1.974681	11.99438	200.3096
Observations	16	16	16	16	16	16

Source: Author Computation utilising Eviews 9 Econometric Software Table 5.1 presents the descriptive statistics for the variables used in the study. The mean value for FDI is 21.27

for the period 1980-2011 with a standard deviation of 0.957. On the other hand, the GDP mean value is 8.44 with a standard deviation of 0.304. The GDS mean value is 24.41 with a standard deviation of 0.399.

5.3 CORRELATION MATRIX

Table 5.2: Correlation matrix

Correlation						
Probability	LFDI	LGDP	LGDS	LODA	LREMMIT ANCES	R
LGDS	1.000000					

LFDI	0.643047	1.000000				
	0.0072	-----				
LGDP	0.628170	0.987385	1.000000			
	0.0092	0.0000	-----			
LODA	0.642954	0.826163	0.883177	1.000000		
	0.0072	0.0001	0.0000	-----		
LREMMITANCES	0.524899	0.810978	0.869131	0.944612	1.000000	
	0.0368	0.0001	0.0000	0.0000	-----	
R	-0.005591	-0.586710	-0.562997	-0.274571	-0.373258	1.000000
	0.9836	0.0169	0.0232	0.3034	0.1544	-----

Source: Author Computation using Eviews 9 Econometric Software

*** Correlation is significant at the 0.01 level of significance

** Correlation is significant at the 0.05 level of significance

* Correlation is significant at the 0.1 level of significance

Table 5.2 represents the correlation between GDS and GDPP, FDI, ODA, remittances and interest rate. The results show that the correlation between GDS and FDI is 0.64 and highly significant. This supports the literature on the important role which foreign finance plays on explaining savings in South Africa. The same applies to GDP, ODA and remittances. Conversely, the correlation matrix presents a negative relationship between GDS and interest rates. However, these preliminary results are insufficient to arrive at a conclusion. Further tests will be reviewed in the following sections.

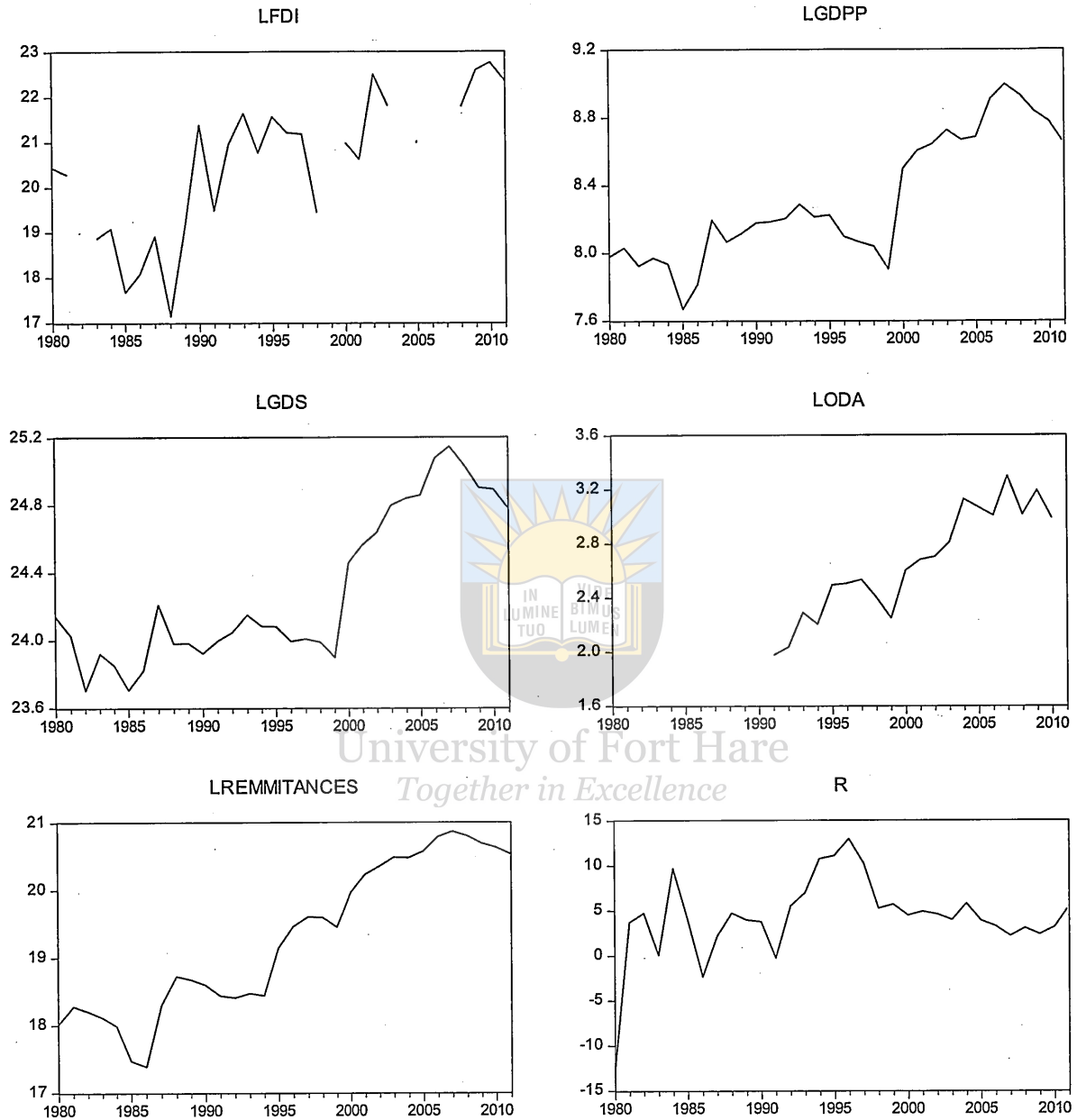


Figure 5.1: Graphical plots of key variables at level series (Author Computation using Eviews 9 Econometric Software)

The graphical plots in Figure 5.1 show that the key variables LFDI, LGDPP, LGDS, LODA, LRemittances, and R exhibit some evidence of non-stationarity as they trend. The same variables were examined at first difference and results are illustrated in Figure 5.2.

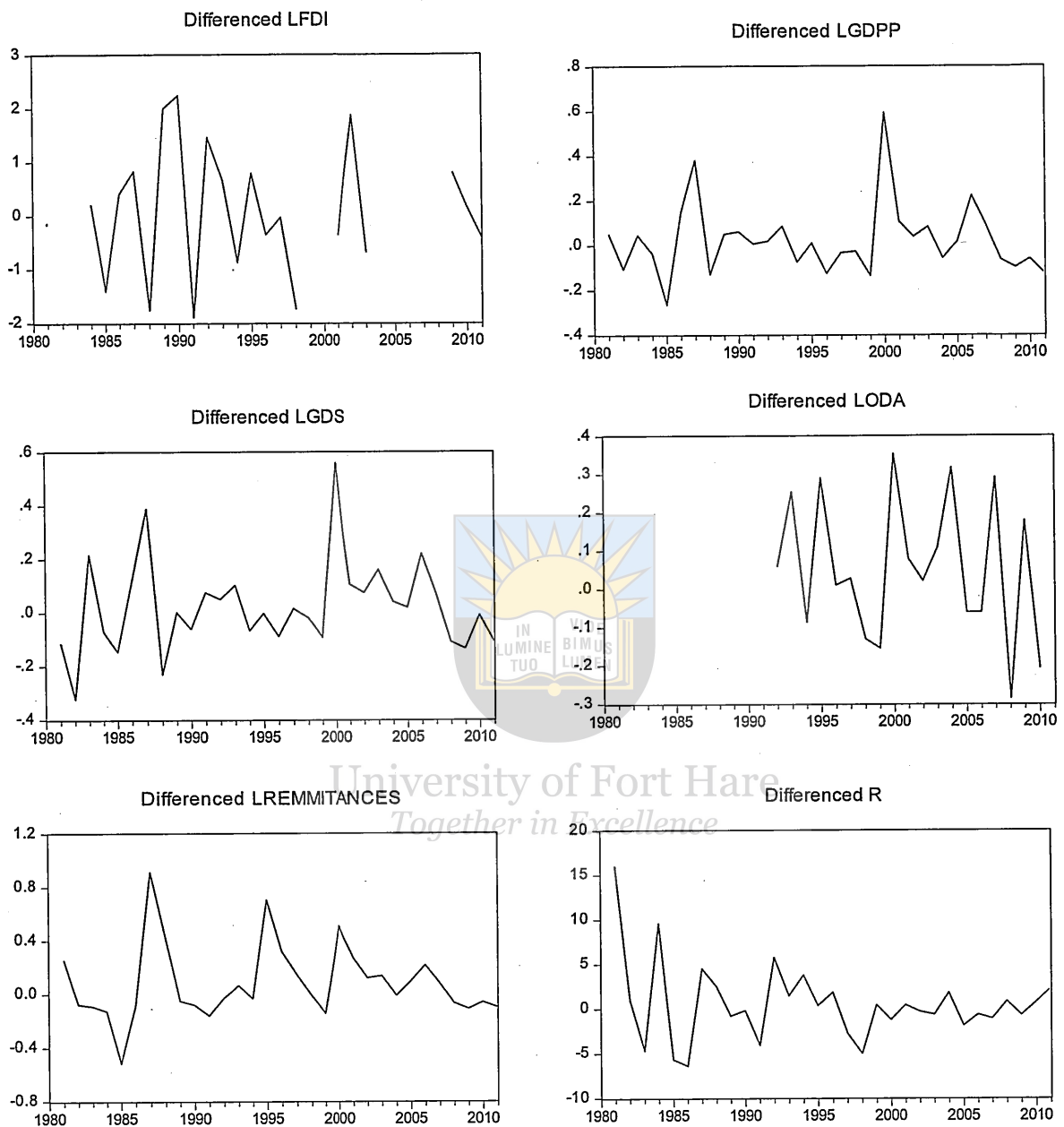


Figure 5.2: Graphical plots of key variables at first difference series (Author Computation using Eviews 9 Econometric Software)

In Figure 5.2, the variables in first difference illustrate that there is some evidence that they revolve around their mean at first difference. This further implies that the variables are stationary in their first differences. The graphical plots are, however, regarded as informal tests, and formal tests are used to analyse the time series properties of the data in detail. This is discussed in Section 5.4.

5.4 FORMAL UNIT ROOT AND STATIONARITY TESTS

Unit root tests are done to determine the orders of integration for time series data. In this study, the ADF and PP unit roots tests for stationarity were used to establish the time series properties of the data. The two tests were utilised to produce robust results. The results are reported in Tables 5.3 and 5.4 respectively.

Table 5.3: Unit root tests: Level series

VARIABLE	ADF			PHILLIPS PERRON		
	CONSTANT	CONSTANT AND TREND	NONE	CONSTANT	CONSTANT AND TREND	NONE
GDS	-0.7902	-2.7221	0.6516	-0.7368	-2.7295	0.6746
FDI	-2.7999	-3.4486	-2.1814	-2.8419	-3.4130	-2.1814
GDPP	-1.1938	-2.5432	0.6899	-1.2018	-2.6215	0.7056
R	-5.6117	-5.3101	-2.5871	-5.3637	-5.1329	-2.8234
ODA	-1.6774	-3.0124	0.9683	-1.6774	-2.9711	1.3973
REMMITANCES	-0.6973	-3.7318	0.9189	-0.5921	-1.8978	1.9191

Source: Author Computation using Eviews 9 Econometric Software

Note: ***represents significance at 1% level; **represents significance at 5% level and *represents significance at 10% level.

Table 5.3 illustrates that at level series all the variables were not stationary. This suggested that the mean, variance and co-variance of the series were not constant. The variables will then be investigated for stationarity at first difference and the results will be reported in Table 5.4.

Table 5.4: Unit root tests: First difference series

VARIABLE	ADF			PHILLIPS PERRON		
	CONSTANT	CONSTANT AND TREND	NONE	CONSTANT	CONSTANT AND TREND	NONE
GDS	-5.6516***	-5.5647***	-5.6228***	-5.6609***	-5.5681***	-5.6358***
FDI	-6.5878***	-6.5339***	-6.6609***	-8.8009***	-11.1195***	-8.1292***
GDPP	-5.4249***	-5.3229***	-5.4300***	-5.4247***	-5.3227***	-5.4312***
R	-7.9817***	-7.6848***	-8.1491***	-10.5530***	-10.2318***	-10.8512***
ODA	-6.2003***	-6.2618***	-5.5252***	-6.2381***	-6.4285***	-5.5198***
REMMITANCES	-3.9830***	-3.9146***	-3.8743***	-3.7729***	-3.6790***	-3.7394***

Source: Author Computation using Eviews 9 Econometric Software

Note: ***represents significance at 1% level; **represents significance at 5% level and *represents significance at 10% level.

Table 5.4 illustrates that at first difference level all the variables are stationary. This suggested that the mean, variance and co-variance of the series are constant at first difference. This is consistent with the behaviour of macroeconomic variables. This is also a requirement for the Johansen co-integration test that variables should be stationary at first difference level. Given that the condition has been satisfied, the next step was to estimate the Johansen co-integration test. However, prior to estimating the Johansen co-integration test, the lag length was first determined empirically.

5.5 LAG LENGTH CRITERIA

Table 5.5 contains the lag length results.

Table 5.5: Lag length selection criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-48.10	14.45	0.000*	3.721	3.911	3.779
1	18.84	1.099	1.305	0.082	1.034*	0.373*
2	33.49	19.88	1.505	0.178	1.891	0.702
3	56.43	24.57	1.165	-0.316*	2.157	0.439
4	72.20	12.39	1.895	-0.300	2.934	0.688

Source: Author Computation using Eviews 9 Econometric Software

* 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

The choice of optimal lag length to be used in the estimation is imperative, especially in a VAR model. This is important to avoid spurious rejection or acceptance of estimated results. The lag length also influences the power of rejecting the null hypothesis. The likelihood ratio test (LR), final prediction error (FPE), Akaike information criteria (AIC), Schwarz information criterion (SC), and Hannan-Quinn information criterion (HQ) were used in this study to select lag length used in estimating the Johansen co-integration test. The LR, SC, and HQ chose lag 1, while FPE and AIC chose lag 3. Therefore, lag of 1 in the model was chosen for this study.

5.6 JOHANSEN CO-INTEGRATION TEST RESULTS

Having determined the lag length and established the order of integration of the variables, the Johansen co-integration test was estimated. The results are reported in Table 5.6.

Table 5.6: Johansen co-integration test results

Unrestricted Co-integration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.911	184.3	103.8	0.000
At most 1 *	0.844	113.9	76.97	0.000
At most 2	0.587	59.91	54.07	0.053
At most 3	0.515	34.23	35.19	0.063
At most 4	0.307	13.23	20.26	0.345
At most 5	0.084	2.565	9.164	0.664
Trace test indicates 2 co-integrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				
Unrestricted Co-integration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.911	70.40	40.95	0.000
At most 1 *	0.844	53.99	34.80	0.000
At most 2	0.587	25.67	28.58	0.112
At most 3	0.515	21.00	22.29	0.075
At most 4	0.307	10.66	15.89	0.277
At most 5	0.084	2.565	9.164	0.664
Max-eigenvalue test indicates 2 co-integrating 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 Computation using Eviews 9 Econometric Software

Table 5.6 contains the Johansen co-integration test results. The results are reported by two tests: the trace test and maximum eigenvalue test. The results illustrate that there are two co-integrating relationships for both the trace test and maximum eigenvalue test. This confirms that the variables of interest have a long run relationship. The interest of this study is not to analyse the interaction between the variables but to establish whether there is a long-run relationship between the variables of interest. Thus it is concluded that there is a long run relationship between gross domestic savings, GDP per capita, FDI, remittances, ODA and interest rate based on the results in Table 5.6. Having established that there is a long run relationship between the variables of interest, the VECM was estimated to analyse the long run and short run interaction between the variables of interest.

5.7 LONG-RUN CO-INTEGRATION TEST RESULTS

Table 5.7 below shows the long run co-integration test results for the variables.

Table 5.7: Long run co-integration test results

Dependent Variable: Gross Domestic Savings (GDS)

Variables	Coefficient	Standard Error	T-statistic
LFDI(-1)	0.354	(0.113)	[3.151]
LODA(-1)	-0.258	(0.073)	[-3.529]
LREMMITANCES(-1)	0.271	(0.060)	[4.518]
LGDPP(-1)	0.133	(0.046)	[2.860]
R(-1)	-0.105	(0.028)	[-3.655]
C	2.322		

Source: Author Computation using Eviews 9 Econometric Software

The standard approach in interpreting the long run co-integrating equation model was followed. In the long run, a negative coefficient is interpreted as a positive coefficient and a positive coefficient is interpreted as a negative. All the coefficients were therefore multiplied by -1. The results in Table 5.7 show a positive relationship between FDI and gross domestic savings. This is supported by Shaheen, Maryam and Javed (2013) who showed that FDI had

positive and significant impact on gross domestic savings. These results corroborate the findings of Hussein and Thirlwall (1999) and Baharumshah and Thanoon (2002). These results also support the Harold Domar model that foreign capital bridges the gap between domestic demand and domestic supply of finance. Given that South Africa on average does not have sufficient savings, foreign capital plays a pivotal role in supporting growth in the country. Therefore, South Africa needs policies which are aimed at encouraging more FDI.

The empirical results also show that there is a positive relationship between remittances and domestic savings in South Africa. This again is supported by Leon-Ledesma and Piracha (2001) who state that remittances contribute significantly in increasing the level of savings in their home countries. This is also in line with Adelman and Taylor (1990) who argue that inward remittances are believed to have a positive impact on savings and investment. Grabel (1996) also maintains that there is unambiguous evidence that once basic needs are met, remittances are used for savings, debt repayment, consumer durables, land and housing purchases, small enterprise development and agriculture, and investments in education and healthcare; this shows that there is a positive relationship between the two variables.

The empirical results also reveal that there is a negative relationship between aid and domestic savings in South Africa. This is in line with Griffin and Enos (1970) who argue that foreign aid inflows displace domestic savings in developing countries. One of the channels is through the financing of the recurrent costs of projects which are usually left to the recipient government which is likely to increase government consumption and reduce public savings and hence domestic savings *ceteris paribus* (Griffin & Enos, 1970).

The results also suggest that there is a positive relationship between domestic savings and GDP in South Africa. This corresponds to the a priori expectation. In other words, growth of the economy amounts to an increase in savings. This is also in line with the life cycle hypothesis which suggests that the savings ratio tends to rise with the rise of the rate of growth of income since the higher the growth rate, the greater will be the gap between the target consumption levels of the current generation of working households and the dissaving of the retired people from prosperous generations. These results are supported by Loayza et al. (2000) and Ozcan et al. (2003).

The interest rate coefficient is negative and significant. This corresponds to the income effect dominating the substitution effect hypothesis and this is supported by the findings of Odhiambo (2006), Simleit, Keeton and Botha (2011) and Kapingura (2016). However, this is

contrary to the Keynesian theory which suggests that an increase in interest rates promote savings. Kapingura (2016) suggests that majority of South Africans are net borrowers. Therefore, an increase in the interest rate is likely to cause the income effect to dominate the substitution effect, resulting in a fall in savings. This calls on authorities to pursue programmes of educating the general masses on the dangers of taking too much debt. Since the financial sector is well developed, people can access credit without any hassle. However, any increase in the interest rate will result in them paying more in terms of interest costs, thus reducing any portion which may be allocated towards savings.

5.8 VECTOR ERROR CORRECTION MODEL

According to Johansen and Juselius (1992), VECM measures not only the parameters of the co-integrating equations but also the short-term adjustment parameters. This is reported in Table 5.8.

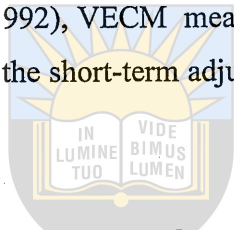


Table 5.8: Vector error correction model test results

Error Correction:	D(LGDS)	D(LFDI)	D(LODA)	D(LREM MITANC ES)	D(LGDPP)	D(R)
CointEq1	-0.619	0.038	-1.331	-0.002	-6.828	7.901
	(0.306)	(0.129)	(1.710)	(0.004)	(3.608)	(1.910)
	[-2.056]	[0.299]	[-0.077]	[-0.615]	[-1.886]	[0.409]
D(GDS(-1))	-0.312	-0.342	-1.201	0.008	3.878	1.161
	(0.773)	(0.289)	(3.810)	(0.009)	(8.108)	(4.310)
	[-0.404]	[-1.180]	[-0.313]	[0.880]	[0.479]	[0.269]

Source: Author Computation using Eviews 9 Econometric Software

This illustrates the short-run VECM results. The results indicate that the ECM term which is D(LGDS) is -0, 62 significant and with the right sign. This proves that the variables of FDI, ODA, remittances, GDP per capita (income) and interest rate are the long term Granger cause for gross domestic savings in South Africa. In other words, the savings variable in the equation bears the burden of dispersed error correction of short-term balance to achieve long-term balance as much as 62% within a quarter. This is supported by Wongbangpo and Sharma (2002).

5.9 VEC GRANGER CAUSALITY/ BLOCK EXOGENEITY WALD TESTS

Granger causality tests were conducted to determine the direction of effect of the variables employed in the study and the results are shown in Table 5.9.

Table 5.9: VEC Granger causality/ Block Exogeneity Wald tests results

Dependent variable: D(LGDS)			
Excluded	Chi-sq	df	Prob.
D(LFDI)	4.160	2	0.022
D(LODA)	6.972	2	0.064
D(LREMITTANCES)	5.352	2	0.068
D(LGDPP)	3.381	2	0.014
D(R)	7.852	2	0.039
All	12.56	10	0.029

Source: Author Computation using Eviews 9 Econometric Software

Granger causality tests provide the direction of causality. The test results indicate that the past values of all the capital flows employed in the study play a role in determining savings in SA. FDI is significant at 5% whilst ODA and remittances are significant at 10%. Income as measured by GDP is also significant at 1%. The interest rate also is significant at 5%. These results are consistent with the long run results discussed earlier. Of great importance is the role of income as compared to other variables employed in the study. This strongly supports the hypothesis that when a country achieves economic growth, this also plays a vital role towards the accumulation of savings.

5.10 VARIANCE DECOMPOSITION

Variance decomposition was also constructed. The analysis shows the proportion of movements in the dependent variables that are due to its own shocks, against shocks to other variables. According to Brooks (2008:300), a shock to the i^{th} variable will directly affect that variable and will be transmitted to all of the other variables in the system through the

dynamic structure of the VAR. The analysis was conducted over 36 periods, and the results are depicted in Table 5.10.

Table 5.10: Variance decomposition results

Period	LGDS	LFDI	LODA	LREMMIT ANCES	LGDPP	R
1	100.00	0.000	0.000	0.000	0.000	0.000
2	73.23	0.230	0.000	11.13	5.335	10.05
3	49.40	3.202	0.000	21.57	11.50	14.30
4	38.15	4.868	0.142	26.40	14.29	16.14
5	32.16	4.532	0.576	29.68	16.40	16.64
10	26.20	4.016	1.619	30.83	17.83	19.49
15	23.72	3.861	1.741	31.76	18.59	20.30
20	22.44	3.822	1.722	32.22	19.01	20.77
25	21.73	3.798	1.692	32.45	19.23	21.08
30	21.29	3.776	1.679	32.59	19.37	21.28
35	20.97	3.758	1.674	32.69	19.46	21.42
36	20.91	3.756	1.673	32.71	19.48	21.44

Source: Author Computation using Eviews 9 Econometric Software

Since the interest in the study is in the adjustments of savings following shocks to itself or its determinants, only the variance decomposition in the savings variable is reported and the relative importance of each of its determinants analysed.

The variance decomposition is reported over a period of 36 quarters. The results show that for the 32 periods, the predominant source of variation in savings is own shock, which accounts for between 20% and 100%. This is consistent with Brooks (2008) and Gonyenko et al.'s (2008) findings. Another important source of variation in savings is remittances, which accounts for nearly 33% of the variation in the long run. Variations in interest rate and GDP are also essential determinants of savings in South Africa. This is followed by FDI and lastly ODA. These results to a greater extent corroborate the long run results and the Granger causality tests results.

5.11 DIAGNOSTIC TEST RESULTS

The VAR model was subjected to rigorous diagnostic tests to establish if the assumptions of the classical linear regression model were observed. The VAR was tested for AR roots, serial correlation LM tests and heteroscedasticity tests. The results of the tests are shown by Figure 5.3 below.

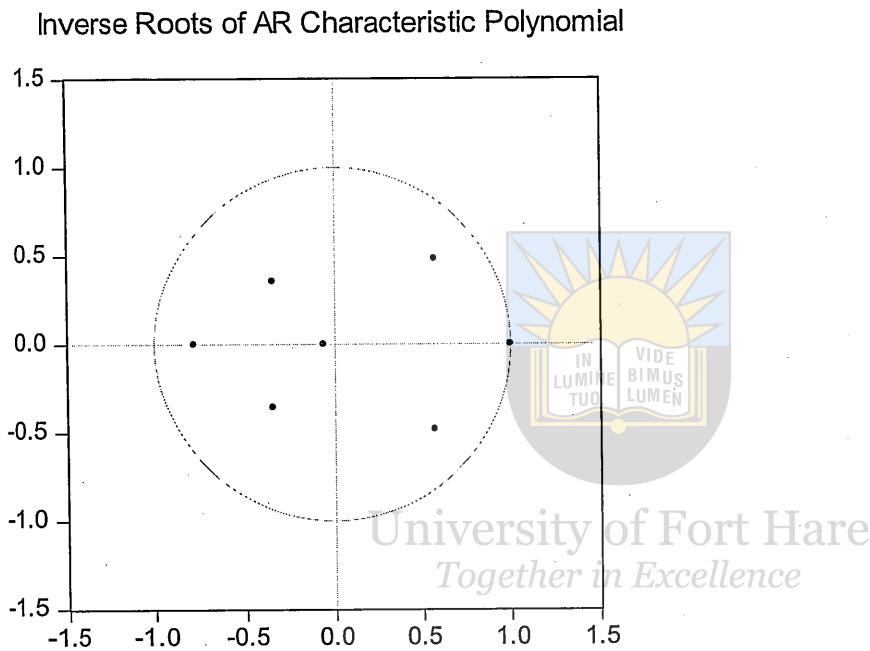


Figure 5.3: Inverse roots of AR characteristic polynomial
(Author Computation using Eviews 9 Econometric Software)

The AR roots graph above reports the inverse roots of the AR polynomial. The estimated VAR is stable under the AR test and this means that it is stationary if all roots have modules less than one and lie inside the unit circle. Figure 5.3 shows that all roots lie inside the unit circle which indicates that the VAR model is stable. The residuals were also examined for normality, autocorrelation and heteroscedasticity and the results are contained in Table 5.11 below.

Table 5.11: Other diagnostic tests

Test	H ₀	Test Statistic	p-value	Conclusion
VEC residual normality (Jarque-Bera)	Residuals are normally distributed	10.61	0.388	Errors are normally distributed
VEC Residual Serial Correlation LM Tests	There is no serial correlation in the residuals	28.83	0.270	No 2nd-order autocorrelation
VEC Residual Heteroscedasticity Tests	The residuals are homoscedastic	184.3	0.395	No heteroscedasticity

Source: Author Computation using Eviews 9 Econometric Software

Table 5.11 shows that there is no serial-correlation in the residuals, no heteroscedasticity and there is non-normality. This proved that the results obtained from the analysis were robust.

5.12 CONCLUSION

University of Fort Hare
Together in Excellence

This chapter has focused on estimation and interpretation of models that were estimated in Chapter 4. Formal unit root tests and stationarity tests were done to determine the orders of integration for time series data. Having determined the order of integration, the lag length used in the Johansen co-integration test was determined empirically, with the majority of the information criteria settling for the lag of one. In this chapter, Johansen co-integration was estimated by two tests: the trace test and maximum eigenvalue test. The results indicated that there are two co-integrating relationships for both the trace test and maximum eigenvalue test and this shows that there is a long run relationship between the variables. The estimation of VECM was done to analyse the long run and short run interaction between the variables. In the long run, the results revealed that there is a negative relationship between gross domestic savings and interest rate and ODA, while other variables have a positive relationship with gross domestic savings in South Africa. In the short run, the results indicate that the D (LGDS) is negative and significant, suggesting that if there is any disequilibrium, the variable will adjust to its long run equilibrium. Other tests were conducted in the short run such as the Granger causality tests and the variance decomposition. All these highlighted the important role which the selected variables have played in determining savings in South Africa.

CHAPTER 6

SUMMARY, CONCLUSION AND POLICY RECOMMENDATIONS

6.1 INTRODUCTION

This chapter will discuss the summary, conclusion and policy recommendations of the study. The first section of this chapter discusses the summary and conclusion of the study, the second section will discuss policy implications and recommendations, and the last section discusses limitations of the study and areas for further research.

6.2 SUMMARY AND CONCLUSION

The main aim of the study was to find the impact of foreign capital inflow on domestic saving in South Africa. With Chapter 1 having provided a background to the study, Chapter 2 provided an overview of foreign capital inflow and domestic savings. An overview of FDI, ODA, remittances and domestic savings was discussed comparing South Africa with other BRICS countries. The chapter revealed that FDI was low in SA during the apartheid regime and improved substantially after 1994. This was attributed to the integration of the country into the international community.

The chapter also revealed that South Africa has low domestic savings at national level as well as when compared to other countries such as Brazil, China and Russia. The low levels of domestic savings have had a significant effect on both public and private investment as well as economic growth in the country. The review also indicated that the country has relied on foreign capital flows to drive the level of investment and economic growth given that there are low levels of savings.

The theoretical and empirical literature was reviewed in Chapter 3. Theories that were discussed included the two-gap model, Harrod-Domar model, AK model and the aid and consumption model. The two-gap theory and the Harold-Domar model argue that an increase in foreign capital inflows promote investment through complementing domestic savings. The AK model assumes that international finance will be used to finance investment and not consumption. Also, investment financed by foreign capital must not crowd out domestically financed investment. On the other hand, the aid and consumption model suggests that an increase in aid is usually channelled towards consumption as compared to investment.

Therefore, this results in aid displacing domestic savings in the recipient country. This therefore highlighted the lack of agreement in the theoretical literature review section. On the empirical studies examined, the studies indicate that there is no consensus regarding the impact of foreign capital on domestic savings. There are studies that argue that an increase in foreign capital results in an increase in available capital, hence a boost to investment. Conversely, there are studies which argue that an increase in foreign capital actually displaces domestic savings. There are also studies which highlighted that there is no link at all between the two variables.

Chapter 4 presented the model specification and how the model was estimated. The variables used were gross domestic savings, FDI, official/ overseas development assistance (foreign aid), remittances, GDP per capita as a measure of income, and interest rate. The ADF test and PP tests were used to determine the level of integration of the variables and stationarity of the time series. The Johansen co-integration technique was employed to determine if there is co-integration between the variables of interest. The Granger causality test was also employed to establish the existence and nature of the causality relationship between the variables of interest.

University of Fort Hare

The time series properties of the data revealed that the data utilised in the study is integrated of order 1. $I(1)$. The Johansen co-integration was thus estimated after determining the order of integration of the data used in the study. The results indicates that there is a long-term relationship between gross domestic savings, GDP per capita, FDI, remittances, ODA and interest rate.

Having established that there is a long-run relationship between the variables of interest, the VECM was estimated to analyse the long run and short run interaction between the variables of interest. The long run co-integration test results revealed that there is a positive relationship between gross domestic savings and FDI, remittances and the measure of income.

The empirical results also revealed that there is a negative relationship between aid and domestic savings in South Africa, as well as a negative relationship between interest rate and gross domestic savings. The negative relationship between domestic savings and interest rate suggests that the majority of South Africans are net borrowers. Therefore, an increase in the interest rate is likely to cause the income effect to dominate the substitution effect, resulting in a fall in savings.

The Granger causality test was also estimated to analyse the short-term interaction between the variables. The Granger causality test results revealed that the past values of income are highly significant in explaining the level of savings in South Africa as compared to the other variables employed in the study. This strongly supports the hypothesis that when a country achieves economic growth, this also plays a vital role towards the accumulation of savings.

Diagnostic tests were also done to confirm the robustness of the research findings. The inverse roots of the AR polynomial graph showed that all the variables were inside the unit circle and the VAR was stable. Other diagnostic tests showed that there is no serial-correlation in the residuals, no heteroscedasticity and there is non-normality. This proved that the results obtained from the analysis were robust.

6.3 POLICY IMPLICATIONS OF THE STUDY AND RECOMMENDATIONS

Findings from this study have a number of policy implications for the South African economy. Co-integration results explained that there is a long run positive relationship between gross domestic savings and FDI, remittances and income. This suggests that if any of these variables are influenced in the country, it will have an effect on the level of savings. This calls for authorities to implement policies which attract foreign capital such as FDI and remittances as they augment savings in the country.

The negative relationship between savings and interest rate suggests that the majority of South Africans are net borrowers. This suggests that in the event that there is an increase in interest rates, costs of borrowing will increase, hence reducing the amount of money which can be directed towards savings. Therefore, the study recommends that South African government need to educate its citizens on the use of financial products so that people are not over-indebted.

6.4 LIMITATIONS OF THE STUDY AND AREAS OF FURTHER RESEARCH

The main aim of the study was examining the impact of foreign capital inflow on domestic savings. Previous researchers encountered the challenge of unavailability of data. The problem that was encountered in the study was ODA data which started from 1993, meaning that there was no data for ODA from 1990- 1992, but that did not limit the study. It is important to note that there are other qualitative variables which could have played a part in determining the level of savings but which are not included in the model such as trade openness and foreign portfolio investment.

7. REFERENCES

- Abaidoo, R. 2012. Economic growth, regional savings and FDI in sub-Saharan Africa: Trivariate causality and Error Correction Modelling approach. *International Journal of Economics and Finance*, 4 (11):2012.
- Adelman, I. Taylor, J. 1990. Is structural Adjustment within a Human face possible? *J. dev. studies*. 26(3): 387-407.
- Aghion, P., Comin, D. & Howitt, P. 2009. When does domestic saving matter for economic growth? *Harvard Business School*.
- Agosin, M.R. & Meyer, R. 2000. Foreign investment in developing countries: Does it crowd in domestic investment? Paper delivered at the United Nations Conference on Trade and Development, Geneva, 12-19 February.
- Agrawal, P. 2000. Savings, investment and growth in South East Asia. *Indira Ghandi Institute of Development Research*.
- Ahlburg, D. 1991. 'Remittances and their Impact: A study of Tonga and Western Samoa', *Pacific Policy Papers No. 7*, National Centre for Development Studies, Australian National University, Canberra.
- Ahmad, M.H. & Ahmed, Q.M. 2002. Foreign capital inflows and domestic savings in Pakistan: co-integration techniques and error correction modelling. *The Pakistan Development Review*, 41:4 Part II, 825-836.
- Ajayi, S.I. 2006. The Determinants of Foreign Direct Investment in Africa: A Survey of the Evidence. In S.I Ajayi (ed.) *Foreign Direct Investment in Sub-Saharan Africa: Origins, Targets, Impact and Potential*. African Economic Research Consortium: Nairobi.
- Akaike, H. 1973. Information theory as an extension of the maximum likelihood principle. In B.N. Petrov, and F. Csaki (Eds.), *Second International Symposium on Information Theory* (pp 267-281). Budapest: Akademiai Kiado.
- Aron, J., Leape, J. & Thomas, L. 2010. *Foreign portfolio investment and capital markets in South Africa. Unpublished - Working Paper*, [http://www.academia.edu/999128/foreign portfolio investment and capital markets in South Africa](http://www.academia.edu/999128/foreign_portfolio_investment_and_capital_markets_in_South_Africa)

- Aron, J. & Muellbauer, J. 2000. *Personal and Corporate Saving in South Africa*. England: University of Oxford.
- Aron, J. & Muellbauer, J. 2000. Personal and corporate saving in South Africa. *World Bank Economic Review*, 14(3): 509-544.
- Asteriou, D. & Hall, S.G. 2007. *Applied Econometrics: A modern approach using Eviews and Microfit*. Revised ed. England: Palgrave Macmillan.
- Athukorala, P. & Sen, K. 2002. *Saving, investment and growth of India*. New Delhi: Oxford University Press.
- Baharumshah, A. Z. & Thanoon, H. 2000. *Foreign capital, savings and economic growth: A dynamic panel study on the East Asian Countries*. Malaysia: Department of Economics. University of Putra.
- Balde, Y. 2011. The impact of remittances and foreign aid on savings/ investment in Sub-Saharan Africa. *African Development Review*, 23: 247-62.
- Bailliu, J. N. 2000. Private capital flows, financial development and economic growth in developing countries. *Bank of Canada Working Paper No. 2000: 15*
- Bashier, A. & Bataineh, T.M. 2007. The causal relationship between foreign direct investment and savings in Jordan: an error correction model. *International Management Review*, 3 (4): 2007. 12-18.
- Basnet, H. C. 2013. Foreign aid, domestic savings, and economic growth in South Asia. *International Business & Economic Research Journal*, 12(11): 1389 -1393.
- Blanchard, O. & Milesi-Ferretti, G.M. 2011. Why Should Current Account Balances be reduced? *IMF Staff Discussion Note SDN/11/03*.
- Boon, T.H. 2000. Real exchange rate volatility and Malaysian exports to its major trading partners. *Working Paper 6*, University Putra Malaysia.
- Boss, H. C., Sanders, M., & Secchi, C. 1968. Private foreign investment in developing countries: A quantitative study on the evaluation of the macro-economic effects. *International Studies in Economics and Econometrics*, 7.

- Bosworth, B. & Collins, S. 1999. Capital flows to developing economies: implications for saving and investment. *Brookings Papers on Economic Activity*, 1: 143-169.
- Bowles, P. 1987. Foreign Aid and Domestic Savings in LDCs: Some Tests for Causality. *World Development*, 15(6).
- Brooks, C. 2008. *Introductory econometrics for finance*. (Cambridge) Cambridge University Press
- Brown, R. 1997. Estimating remittance functions for Pacific Island migrants. *World Development*, 25: 613-26.
- Brown, R. & Ahlburg, D. 1999. Remittances in the South Pacific. *International Journal of Social Economics*, 26:325-44.
- Business Map. 2002. *Regional Investor Survey 2001*. Opportunities in Waiting, Houghton Estate, Johannesburg.
- Business Map Foundation. 2005. *Angola remains the favoured FDI destination into SADC in 2005*. Johannesburg: Business Map Foundation.
- Caceres, L. & Saca, N. 2006. What do remittances do? Analysing the private remittance transmission mechanism in El Salvador. *IMF Working Paper No. WP/06/250*, IMF, Washington DC.
- Carrol, C. & Weil, D. 1994. Carnegie-Rochester, Conference Series on Public Policy (1994). Saving and growth: A Re-interpretation. *Carnegie-Rochester Conference Series on Public Policy*, (40): 133-192.
- Chang, Y. & Lin, C. 1999. Foreign direct investment and productivity: Evidence from selected countries. In Building Coalitions for Effective Development Finance. *Global Development Finance*.
- Chen, E. K. Y. 1977. Domestic saving and capital inflow in some Asian countries: A time series study. *Asian Survey*, 17, 679-87.
- Chenery, H.B. & Strout A.M. 1966. Foreign assistance and economic development. *American Economic Review*, 56(4): 123-145.

Chenery, H.B. & Eckstein, T. 1968. Development alternatives for Latin America. *Journal of Political Econ.*, 78: 966-1006.

Clark, H. R., & Borgran, A. 2003. Foreign direct investment in South Africa, *Development Journal international and policy studies*, 27 (3), 337-358.

Collins, S. M. 1989. Saving behaviour in ten developing countries, paper presented at the NBER conference on savings, maui (Cambridge, Massachusetts: National Bureau of Economic Research).

Connell, J. & Conway, D. 2000. 'Migration and remittances in Island Microstates: A comparative perspective on the South Pacific and the Caribbean. *International Journal of Urban and Regional Research*, 24: 52-78.

Culver, S.E. & Papell, D.H. 1997. Is there a unit root in the inflation rate? Evidence from sequential break and panel data models. *Journal of Applied Econometrics*, 12:436-44.

Das, A. & Serieux, J. 2010. *Remittances and Reverse Flows in Developing Countries, Discussion Paper*, International Development Economics Association, No. 02.

Dayal-Ghulati, A. & Thimann, C. 1997. Saving in Southeast Asia and Latin America compared: searching for policy lessons, *IMF Working Paper WP/97/110*.

Delwar, H. 2012. Differential impacts of foreign capital and remittance inflows on the domestic saving in the developing countries: a dynamic heterogeneous panel analysis.

DeMello, L.R. 1999. Foreign direct investment-led growth: Evidence from time series and panel data. *Oxford Economic Papers*, 51: 133-151.

DBSA (Development Bank of Southern Africa), 2011a. Programmes in support of transitioning South Africa to a Green Economy. Working Paper 24. Midrand: DBSA

Dickey, D.A & Fuller, W.A. 1979. Distribution of estimators for autoregressive time series with a unit root test. *Journal of American Statistical Association*. Vol 74, issue 366 427-439

Dickey, D. & Fuller, W.A. 1981. Likelihood Ratio Statistics for Autoregressive Time Series with a Unit Root, *Econometrica*, 49, 1057-1072

Domar, E. 1946. Capital expansion, rate of profit & employment. *Econometrica*.

Domar, E. 1946. Capital expansion, rate of growth and employment, *Econometrica*, 137-47.

- Edwards, S. 1990. Capital flows, foreign direct investment, and debt-equity swaps in developing countries. *NBER Working Paper* No. 3497. Cambridge, Massachusetts: National Bureau of Economic Research.
- Edwards, S. 1995. Why are saving rates so different across countries?: An international comparative analysis. *NBER Working Paper* No. 5097. Cambridge: National Bureau of Economic Research.
- Edwards S. 1996. Why are Latin American's savings rates so low?
- Eregba, P. B. & Irughe, I. R. 2009. An empirical analysis-run impacts of aid on domestic saving of the short-run and & long-run in Nigeria. *Journal of Economic Theory*, 3(3): 53-56.
- Eviews 8 Manual 2014 EViews Illustrated for Version 8 - EViews.com, Available on <<http://www.eviews.com/illustrated/illustrated.html>>, Accessed on 10 June 2014.
- Fosu, O.E. & Magnus, F.J. 2006. Bounds testing approach to co-intergration: An examination of FDI, trade and growth relationships. *An American Journal of Applied Sciences*, 3(11): 2079-2085.
- Fry, M. J. 1984. Domestic resource mobilization through financial development: Appendixes. ADB, Economics Office, February.
- Gonyenko, R., Subrahmanyam, A. & Ukhovu, A. 2008. Term Structure of Bond Market Liquidity. [Online]. Available from: <http://project.hkkk.fi/gsf/seminar_papers/Subra_tbondliq.pdf>. [25 August 2010].
- Gordhan, P, J. (2012), National budget review of 2012. [Online] Available: <http://www.treasury.gov.za/documents/nationalbudget/nationalbudgetreview/economicpolicy&outlook/2012> (November 30, 2013)
- Grabel, I. 1996. The political economy of remittances; what do we need to know? *Working Paper Series* No.184.
- Grekou, D. 2009. The effect of remittances on savings and investment behaviour: a network approach. *Working Paper*. Ontario: University of Ontario.
- Griffin, K. B. & Enos, J. L. 1970. Foreign assistance, objectives and consequences. *Economic Development and Cultural Change*, 18: 313-327.
- Grinols, E. & Bhagwati, J. 1976. Foreign capital, savings and dependence. *The Review of Economics and Statistics*, 58:416-26. The MIT Press.

- Gruben, W. & McLeod, D. 1998. Capital flows, saving and growth in the 1990s. *The Quarterly Review of Economics and Finance*, 38(3): 287-301.
- Gruben, W. C. & McLeod, D. 1996. *Capital flows, savings and growth in the 1990s*. Montevideo: Banco Central Del Uruguay.
- Gupta, K. L. 1970. Personal saving in developing nations: further evidence. *Review of Economics and Statistics*, 46(1): 33-50.
- Gupta, K. L. & Islam, K. 1983. Foreign capital and domestic savings: a test of haavelmo's hypothesis with cross sectional data: A comment. *Review of Economics and Statistics*, 52: 214-216.
- Hachicha, N. 2003. Capital inflows-national savings dynamics in Tunisia: Evidence from co-integration, weak exogeneity and simultaneous error-correction model. *International Economic Journal*, 17(4): 43-60. <http://dx.doi.org/10.1080/751248071>
- Haavelmo, T. 1963. *The econometric approach to development planning*. Holland: North Holland Publishing Company.
- Hannan, E. J., & Quinn, B. G 1979. The Determination of the Order of an Autoregression, *Journal of the Royal Statistical Society*, 41, 190-195.
- Harrod, R.F. 1939. An essay in Dynamic Theory, *Economic Journal*, March
- Hasan, M. S. 2002. Concessional foreign capital inflows and domestic savings across countries. Dependency hypothesis re-visited. *Journal of Economics Studies*, 29(6): 388-422.
- Himalal G. 2008. Testing unit roots in the presence of structural breaks in some Nepalese macroeconomic indicators.
- Hossain, D. 2014. Differential Impacts of Foreign Capital and Remittance Inflows on Domestic Savings in the Developing Countries: *A Dynamic Heterogeneous Panel Analysis*, *Departmental Working Papers*, The Australian National University, Arndt-Corden Department of Economics.
- Hussein, K. A. & Thirlwall, A. P. 1999. Explaining differences in domestic savings ratio across countries: a panel data study. *Journal of Development Studies*, 36,:31- 52.

Jhingan, M. L. 2005. *The economics of development and planning*. 38th ed. New Delhi: Vrinda Publications PTY LTD.

Johansen, S. & Juselius, K. 1990. Maximum likelihood estimation and inference on Co-integration with applications to the demand for money. *Oxford Bulletin of Economics and Statistics*, 52 (2): 169-210.

Kapingura, F.M. & Alagidede, P. 2014. 'The Relationship between Financial Sector Development and Savings Mobilisation in South Africa: An Empirical Study', *Global Development Finance Conference*, Dubai.

Katircioglu, S.T. & Naraliyeva, A. 2006. Foreign direct investment, domestic savings and economic growth in Kazakhstan: Evidence from co-integration and causality tests. *Investment Management and Financial Innovations*, 3 (2): 2006, 34-45.

Khamfula, Y. 2004. Real interest and exchange rate volatility: the rule of ideal inflation target. Department of Economics, University of the Witwatersrand: Mimeo.

Khan, Ashfaq Hassan, Hassan, L. & Malik, A. 1992. Dependency ratio, foreign capital inflows and rate of savings in Pakistan. *Pakistan Development Review*, 3(4): 843-856.

Khan Naheed, Z. & Rahim, E. 1993. Foreign aid, domestic savings and economic growth in Pakistan: 1960 -1988. *Pakistan Development Review*, 32(4): 1157-1167.

Khan, R.E.A. & Hye, Q.M.A. 2010. Financial liberalization and demand for money: a case of Pakistan, University Library of Munich, Germany, *MPRA Paper 34795*.

Khim-SenLiew, V. 2004. On autoregressive order selection criteria. *Computational Economics* 0404001, EconWPA.

Kumar, A. 2007. Foreign direct investment. *Insights from the Federal Reserve Bank of Dallas*, 2 (1).

Leape, J. & Thomas, L. 2009. Capital flows, financial markets and the external balance sheet" Chapter 5 in Aron. J., B. Kahn and G. Kingdon (eds.), *South African Economic Policy under Democracy*, Oxford University Press

Leape, J., Aron, J. & Thomas, L. 2010. Foreign portfolio investment and capital markets in South Africa.

- Leon-Ledesma, M. & Piracha, M. 2001. International migration and the role of remittances in Eastern Europe. *Studies in Economics*, 0113.
- Loayza, N., Schmidt-Hebbel, K. & Servén, L. 2000. Saving in developing countries: An overview. *The World Bank Economic Review*, 14(3): 393–414.
- Mackinnon, J.G., Haug, A.A. & Michelis, L. 1999. Numerical distribution functions of likelihood ratio tests for co-integration. *Journal of Applied Econometrics*, 14:563-577.
- Masilela, E. 2012. *Savings for the Culture*. South African Savings Institute.
- Modigliani F. 1986. Life cycle individual thrift and the wealth of nations. *The American economic review*. 76(3) (jun., 1986):297-313. American economic association. Available from: <https://www.jstor.org/stable/1813352>
- Mody, A., Murshid, A. P. & Mishra, P. 2000. Private capital flows and growth. *Finance and development*, 28(2).
- Mohamed, S. 2003. 'Capital Inflows since the End of Apartheid and the 2001 Currency Crisis', prepared for *TIPS/DPRU Conference, The Challenge of Growth and Poverty: the South African Economy since Democracy*.
- Mohamed, S. & Finnoff, K. 2005. 'Capital Flight from South Africa, 1980-2000'. In G. A. Epstein. *Capital Flight and Capital Controls in Developing Countries*. Cheltenham: Edward Elgar Press.
- Morisset, J. 1989. The impact of foreign capital inflows on domestic saving re-examined: the case of Argentina. *Journal of World Development*, 17.
- Morton, J., Panday, P. & Kula, M. 2010. Remittances, poverty and economic growth. *International Journal of Arts and Science*, 3: 390-9.
- Nnadozie, E. 2008. *African Economic Development*. Missouri: Department of Economics. Truman State University.
- Nurhan, Y. 1999. Short-term capital inflows and their impact on macroeconomic structure: Turkey in the 1990s. *The Developing Economies*, 37(1): 89-113.
- Obstfeld, M. & Rogoff, K. 1995. The inter-temporal approach to the current account. *NBER Working Paper*, 4893

Obwona, M. & Ddumba, S. 1995. Nature and determinants of domestic savings in Uganda. *Econ. Policy Research Bulletin*, 2(2): 5-16.

Odhiambo, N.M. 2006. Financial Liberalisation and Savings in South Africa: An Empirical Analysis, Savings and Development Supplement, African Review of Money Finance and Banking.

Odhiambo, N. M. 2009. Savings and economic growth in South Africa: a multivariate causality test. *Journal of Policy Modelling*, 31: 708-718.

Okafor, L. M. 2010. Saving less when there is more? Foreign debt and savings in developing countries. *Journal of Economic Policy Reform*, 13(3): 213-223.

Omisakin, O., Adeniyi, O. & Omojolaibi, A. 2009. Foreign direct investment, trade openness and growth in Nigeria. *Journal of Economic Theory*, 3(2): 13-18.

Onyemelukwe, C. C. 2005. *The Science of Economic Development and Growth – The theory of Factor Proportions*. New York, USA: M. E. Sharpe Inc.

Ouattara, B. 2009. A re-examination of the savings displacement hypothesis. *Empirical Economics*, 671-683.

Osili, U. O. 2007. Remittances and savings from international migration: theory and evidence using a matched sample. *Journal of Development Economics*, 83; 446-65.

Over, M. 1975. An example of the simultaneous problem: A note on foreign assistance and consequences, *Economic Development and Cultural Change*, 23:751-746.

Ozcan, K., Gunay, A. & Ertac, S. 2003. Determinants of private savings behaviour in Turkey. *Applied Economics*, 35:1405-1416.

Pagano, M. 1993. Financial markets and growth: An overview. *European Economic Review*, 37 (2-3): 613-622.

Papanek, G. 1972. The effect of aid and other resource transfers on savings and growth in less developed countries. *The Economic Journal*, 81: 934-950.

Papanek, G.F. 1973. Aid, foreign private investment, saving and growth in less developed countries, *Journal of Political Economics*, 8(1): 120-130.

- Paul, M. & Sakthivel, S. 2002. 'Has Domestic Savings been Crowded Out' by foreign savings in India? An Empirical Investigation' Discussion Paper 56, *Institute of Economic Growth*, Delhi
- Phillips, P. & Perron, P. 1988. Testing for a unit root in time series regression, *biometrika*, 75: 335-346.
- Rahman, M.A. 1968. Foreign capital and domestic savings: a test of Haavelmo's hypothesis with cross-country data. *Review of Economics and Statistics*, 5(1):137-138.
- Rana, P. B. & Dawiling, J. M. 1990. Foreign capital and Asia economic growth. *Journal of Asian Development*, 8(1).
- Razzaque, A. & Ahmed, N. 2000. A re-examination of domestic savings, foreign aid relationship in the context of Bangladesh, *The Bangladesh Development Studies*, 26(4): 1-37.
- Reinhart, C. & Talvi, E. 1998. Capital flows and savings in Latin America and Asia: A reinterpretation, *Journal of Development Economics*, 57: 45-66.
- Romm, A. T. 2003. *The relationship between savings and growth in South Africa: An empirical study*. University of the Witwatersrand.
- Sabra, M. M., & Sartawi, S. 2015. Development impacts of foreign aid on economic growth, domestic savings and Dutch disease presence in Palestine. *International Journal of Economics and Empirical Research*, 3(11), 532-542
- Salahuddin, M., Shahbaz, M. & Chani, M.I. 2010. A note on causal relationship between FDI and savings in Bangladesh. *Theoretical and Applied Economics*, 11(552): 53-62.
- Salma, S., Ali, M. M., Fahreen, M. & Fumaira, J. 2013. Impact of foreign capital inflow on domestic saving of Pakistan. *Interdisciplinary Journal of Contemporary Research in Business*, 4(10), 443-453.
- Schwarz, G. 1978. Estimating the Dimension of a Model. *Annals of Statistics*, 6:461-464
- Shabbir, T. & Mahmood, A. 1992. The effects of foreign private investment on economic growth in Pakistan, *Pakistan Development Review*, 31(4): 831-841.
- Shaheen, S. & Ali, M.M. 2013. Impact of trade liberalization on economic growth in Pakistan. *Interdisciplinary Journal of Contemporary Research in Business*, 5(5).

- Shaheen, S., Maryam, F. & Javed, F. 2013. Impact of foreign capital inflows on domestic saving of Pakistan. *Institute of Interdisciplinary Business Research*, 4(10): 443-457.
- Shewhart A., Walter and Wilks S. S. 2004. *Applied Econometric Time Series* (John Wiley & Sons, Inc, United States of America
- Sikdar, S. 2006. 'Foreign Capital Inflow into India: Determinants and Management', INRM Policy Brief No. 4, Asian Development Bank, Indian Resident Mission, India.
- Simeo, F. 2004. *Foreign Direct Investment and its impact on economic growth and gross domestic savings-the case of Zambia. 1970-2000*. Masters Thesis, University of Lusaka.
- Simleit, C., Keeton, G. & Botha, F. 2011. The determinants of household savings in South Africa.
- Snyder, D. 1990. 'Foreign Aid and Domestic Savings: A Spurious Correlation?', *Economic Development and Cultural Change*, 39(1): 175-81.
- Standing, G., Sender, J. & Weeks, J. 1996. *Restructuring the Labour Market: The South African Challenge*, International Labour Office – Geneva.
- Taslim, J. T. & Weliwita, R. 2000. Foreign direct investment and productivity: evidence from selected countries. In building coalitions for effective development Finance. *Global Development Finance*.
- Taspınar, N. 2011. *Foreign Direct Investment, domestic savings and economic growth: The case of Turkey*. MSc thesis, Eastern Mediterranean University.
- Temitepo, L.A.L. 2014 The effects of foreign resources inflow and savings on the economics growth of South Africa: A VAR. *Journal of Economics & Behavioural Studies*, 6 3): 232-241.
- Todaro, M. P. & Smith S. C. 2004. *Economic Development*. 10th Ed.
- United Nations Centre on Transnational Corporations (UNCTC). 1995. *World Investment Report 1995: Transnational Corporations and Competitiveness*. New York: UNCTC.
- Uthoff, A. & Titeman, D. 1998 *The relationship between foreign and national savings under financial liberalization*.

- Waheed, A. 2004. Foreign capital inflow and economic growth of developing countries: A critical survey of selected empirical studies. *Journal of Economic Corporation* 25(1): 1-36.
- Weisskopf, T.E., 1970. The impact of foreign capital inflow on domestic savings in undeveloped countries. *Economic Development Report No.* 156.
- Weisskopf, T.E. 1972. The impact of foreign capital inflow on domestic savings in underdeveloping countries. *Journal of International Economics*, 2(1): 25-38.
- Wongbangpo, P. & Sharma, S.C. 2002. Stock market and macroeconomic fundamental dynamic interaction: ASEAN-5 Countries. *Journal of Asian Economics*, 13(1):27-51.
- World Bank. 1993. *Pacific Island economies: Toward efficient and sustainable growth*. Vols. 1, 6 & 8. Washington, DC: World Bank.
- World Bank 2009. *South Africa Economic update: Focus on savings, investment and inclusive growth*. Washington D.C: World Bank.
- World Bank 2011. *South Africa Economic update: Focus on savings, investment and inclusive growth*. Washington D.C: World Bank.
- Yentürk, N. 1999. Short-term Capital Inflow and their Impact on Macroeconomics Structure: Turkey in the 1990s. *The Developing Economies*, 37: 89-113.
- Yinusa, D.O. & Akinlo, A.E. 2008. Exchange rate volatility, currency substitution and monetary policy in Nigeria. *Botswana Journal of Economics*, 5(9): 61-83.
- Zhu, Y., Wu, Z., Wang, M., Du, Y. & Cai, F. 2009. 'Do Migrants really save more? Understanding the impact of Remittances on Savings in Rural China', *Kent Discussion Paper* No. KDPE 09/23, Canterbury: The University of Kent.