UNIVERSITY OF BOTSWANA

DEPARTMENT OF ECONOMICS

DETERMINANTS OF SAVINGS IN LESOTHO

BY

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APPROVAL

This Dissertation has been examined and approved as meeting the requirements for the partial fulfilment of the Master of Arts degree in Economics.

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DECLARATION

This dissertation was undertaken from October 2016 to May 2017. I hereby declare that the study has not been done before. The contents of this paper are my original work, except where referenced.

Name: Ts'episo Christina Khalechane

Signature: ……………………… Date: …………………

DEDICATION

To my wonderful husband, Teboho Mokone and my beautiful baby girl, Mpho Mokone, your love, patience, support and encouragement gave me strength throughout the course of my study.

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LIST OF ACRONYMS

AIH	Absolute Income Hypothesis
AOE	African Economic Outlook
AfDB	African Development Bank
ADF	Augmented Dickey-Fuller
BoS	Bureau of Statistics
CBL	Central Bank of Lesotho
FSDS	Financial Sector Development Strategy
GDP	Gross Domestic Product
GNI	Gross National Income
GNS	Gross National Savings
GoL	Government of Lesotho
IFAD	International Fund for Agricultural Development
IMF	International Monetary Fund
LCH	Life Cycle Hypothesis
MAFS	Ministry of Agriculture and Food Security
MPC	Marginal Propensity to Consume
PHI	Permanent Income Hypothesis
PP	Phillips-Perron
REH	Rational Expectations Hypothesis
RIH	Relative Income Hypothesis
RUFIP	Rural Financial Intermediation Programme
SACU	Southern African Customs Union
SUFIL	Support for Financial Inclusion in Lesotho

UNCF   United Nations Capital Development Fund

UNDP   United Nations Development Programme

ABSTRACT

This study examined the determinants of savings in Lesotho during the period 1982-2014. Though similar studies have been done in other countries, few have been done in Lesotho. The objectives of the study were to estimate the short-run and long-run determinants of savings in Lesotho and to propose policies to guide future decision making of government. To achieve these objectives, the study adopted the Auto Regressive Distributed Lag bounds approach in analysing the determinants of savings in Lesotho. The empirical results indicate that in the long run, Budget deficit, money supply and terms of trade were found to have a significant positive effect on national savings in Lesotho. On the other hand, deposit rate and GDP per capita income had a significant negative effect on national savings in the long run.

The results for short run indicate that budget deficit, deposit rate and GDP per capita income have a positive effect on national savings. On the other hand, terms of trade was found to have a negative effect on national savings in short run. Policy implications emerging from the empirical results were that the government should expand their fiscal policy, reduce unemployment rate by proving new opportunities for employment, resort to diversification and also it should align its policies to those of South Africa since Lesotho's economy is influenced mostly by South African economy.

CHAPTER 1

INTRODUCTION

1.1 Background

Saving is defined as resource endowment unconsumed in the present day, to be consumed in the future (Sturm, 1983). As far back as the classical times, saving has been considered as one of the important determinants of economic growth. Higher rates of savings increase funds available for investment, which in turn lead to increases in real output and employment, implying economic growth (Lewis, 1955).

The empirical literature asserts the point that savings naturally play an important role in the economic growth and development process of the economies. They observed that indeed high saving rates lead to an economic growth, implicating that low saving rates are serious constraints to substantial growth (see Romm, 2003; Adebiyi, 2005; Caroll & Weil, 1994; Bankole & Fatai, 2013). The kingdom of Lesotho is a less developed economy characterised by low levels of savings. According to World Bank (2015), gross domestic savings have been systematically declining for the past 52 years, thus from 1960 to 2012, to be more precise, gross domestic savings have been negative in all those years.

Romm (2003); Caroll & Weil (1994); have indicated that low rates of savings severely retards the economic growth of the country, make it excessively dependent on foreign capital inflows to finance investment, which makes it vulnerable to external shocks. The government of Lesotho (GoL) has over the past years made efforts to reduce domestic dissaving. During the period 2013/14, the GoL adopted a working policy document called the Financial Sector Development Strategy (FSDS), which was developed with the assistance of the International Monetary Fund (IMF) and the World Bank. FSDS was formulated amongst other things to enhance access to credit by boosting financial inclusion and promoting a savings culture in the country, critical elements for investment and further growth (African Economic Outlook (AEO), 2015).

Furthermore, the GoL, in collaboration with United Nations Capital Development Fund (UNCDF) and the United Nations Development Programme (UNDP), implemented two

programmes called Support for Financial Inclusion in Lesotho (SUFIL) and the Rural Financial Intermediation Programme (RUFIP). SUFIL is aimed at promoting access to financial services by the low-income population, vulnerable groups and micro-enterprises while RUFIP is intended to facilitate access to financial services in the rural areas (70 percent of Basotho reside in rural regions). Most of the financial institutions are located in the urban areas due to the fact that the rural areas consists of foothills and mountain plateaus. The government believes that an improvement in accessibility of financial services will lead to an increase in domestic saving (International Fund for Agricultural Development (IFAD), 2008).

Though extensive research has explored determinants of savings in other countries, little has been done in Lesotho (see Matlanyane, 1997; Kalebe, 2015). This study therefore aims at investigating the determinants of savings in Lesotho, as well as macroeconomic policies that decision makers can use in order to help improve the overall savings of the economy.

1.2 The Problem Statement

Despite the government of Lesotho's efforts to improve savings rates, the overall savings are still low, hence making it very crucial to study the determinants of savings in Lesotho.
The empirical literature suggests that the extent to which economic agents save represents the economy's ability to finance its own investment needs. The central bank of Lesotho (CBL) has indicated that in an ideal world, for an economy to stand a chance of strong economic growth, the total amount saved should at least be equal to investment demand. It further states that developing countries such as Lesotho should record at least an annual economic growth of 5 percent (CBL, 2012). Lesotho Gross Domestic Product (GDP) annual growth rates reported were 2.29 percent, 4.7 percent, 4 percent and 3.6 percent in 2004, 2007, 2011 and 2014 respectively (World Bank, 2015). It is evident from the statistics that the growth rates are below the targeted growth rate for developing countries. To achieve higher rate of growth with relative price stability, the marginal propensity to save should be raised by appropriate incentives and policies.

Lesotho has been experiencing negative gross domestic savings (as a percentage of GDP) since the country's independence in 1966. For instance, in 1997, the gross domestic savings (as a percentage of GDP) was -35 percent, -38 percent in 2010, and -32 percent in 2012 (World

Bank, 2015). On the other hand, the Gross National Savings (as a percentage of Gross National Income) was 14.2 percent in 2010, 6.2 percent in 2011, and 11.1 percent in 2012. The decline was due to a decrease in government savings, which fell from 14.7 percent of GNI to 3.9 percent (CBL, 2012). Furthermore, the gross national savings (as a percentage of GDP) was 32.8 percent, 19.2 percent, 20 percent and 26.5 percent in 1992, 2010, 2011, and 2012 respectively. Though these rates are not bad as compared to those of countries such as Swaziland and Ghana, they are still relatively low when compared to other sub-Saharan countries such as Gabon, Botswana and Zambia, and they are not steady as they keep fluctuating (International Monetary Fund (IMF), 2015). These fluctuating low levels of savings affect the investment negatively, saving-investment gap as a share of GNI, was recorded at negative 7.5 percent in 2011 while it was negative 16.5 percent in 2010. The negative saving-investment gap is indicative of lower gross national savings relative to national investment (CBL, 2012).

The economy of Lesotho is without a doubt experiencing low levels of savings which have led to low levels of investment, which explains the low GDP growth rates faced by this country. This is in line with the empirical literature which observed that by implication, low levels of investment mean low levels of output and employment, hence low growth rates. To establish high rates of savings, it is vital to study the determinants of savings in Lesotho and to also draw policy implications that will help stimulate the saving rates in the kingdom of Lesotho.

1.3 Objectives of the Study

1.3.1 General Objective

The main objective of this study is to provide an empirical investigation on the factors that determine national savings in Lesotho.

1.3.2 Specific objectives

In line with the above general objective, the study seeks to achieve the following specific objectives:

- ➢ To examine the key factors which influence savings in Lesotho.
- ➢ To derive policy implications.

1.4 Hypotheses Testing

The following hypotheses have been formulated and will be tested:

- ✓ Inflation has a negative effect on National Savings
- ✓ Budget Deficit has a positive relationship with National Savings
- ✓ Terms of Trade is negatively related to National Savings
- ✓ Money Supply has a negative effect on National Savings
- ✓ Deposit Rate has a positive relationship with National Savings
- ✓ GDP per Capita has a positive effect on National Savings

1.5 Justification and the Significance of the Study

The role and the significance of savings to economic growth of any country cannot be overemphasized. The low levels of saving in any country prompts academics, researchers, society and government to establish the cause of low saving rates as they are constraint to economic growth. Despite the government of Lesotho's efforts to improve the saving rates, the overall saving rates are still low, with the country's gross domestic saving rates being negative since its independence. Few studies have been done on this topic, the study done by Kalebe (2015), focused on determinants of private savings, which does not provide the key determinants of savings for the country as a whole. National savings are an aggregate of private savings, business savings and government savings. Another study was conducted by Matlanyane (1997), which provided key factors that influence the overall savings for the

country but her study covered the period from 1974 to 1994, and this study will employ data from 1982 to 2014.

Furthermore, Matlanyane (1997) used simple Ordinary Least Squares for her study for which the problem of spurious results is easily encountered. It is also important to note that for this study, variables which will be captured were not used in Matlanyane (1997) study but are found to be key variables (per capita income, inflation rate, terms of trade, budget deficit and money supply) that were found to affect savings in most studies (see Kwakwa, 2013; Epaphra, 2014; Chaudhry et al, 2014; Hondroyainnis, 2006). Moreover, this study will utilize the Autoregressive Distributed Lag (ADRL) model which is found to be utilized by some studies (see Ahmad & Mahmood, 2013; Chaudhry et al, 2014; Narayan & Siyabi, 2005). Alos, the use of ARDL is preferred because it can simultaneously test short-run and long-run relationships between the variables.

1.6 Organisation of the Study

The rest of the paper is organised as follows: Chapter two represents an overview on the financial sector of Lesotho. Chapter three review both the theoretical and empirical literature review. It is then followed by Chapter four which entails a discussion on the theoretical framework and econometric model employed in this study. Chapter 5 indicate clearly the discussion of the results from the econometric model employed in chapter four. Finally, chapter six will provide conclusion, policy implications and recommendations.

CHAPTER TWO

AN OVERVIEW OF FINANCIAL SECTOR IN LESOTHO

2.1 Introduction

The aim of this chapter is to provide a reader with an overview of the financial sector in Lesotho, its major developments with more emphasis put on the role played by the financial sector in promoting savings in the country. The savings trends in Lesotho will also be highlighted, together with the impact of savings on investment. Initiatives put in place by the government of Lesotho and the financial sector to promote savings will also be discussed in this chapter.

2.2 Financial Sector

Lesotho's financial sector is made up of four commercial banks (three are subsidiaries of South African banks and the other one is owned by the government), a non-banking sector consisting of insurance companies and micro-finance credit institutions, cooperative banks and money lenders (African Development Bank (AfDB), 2014). In terms of structure, the financial sector is dominated by the non-bank financial institutions, this sector is relatively small when compared to other sub-Saharan countries. However, the overall assets of the non-bank financial institutions, as a whole, are significant, standing at 31.7 percent of GDP in 2010, with insurance and pension funds being the two largest subsectors each with asset size at 14 percent of GDP. The sector grew by 8.7 percent of GDP from 2007 to 2010. Furthermore, this sector claims a regulatory and supervisory regime for banks and other financial institutions that is of an international standard, and has shown resilience to uncertain financial and economic conditions, thus the financial institutions continue to be well capitalized, liquid and profitable. (African Economic Outlook (AEO), 2015).

According to the Lesotho Financial Sector review (2015), Lesotho's financial sector is still faced with a lot of challenges, there is lack of competition, important transaction costs and relatively high interest rate spreads that still encumber the banking sector. The share of non-

performing loans to total gross loans was 4 percent in 2009 and decreased to 2.9 percent in 2011. The credit to deposit ratio increased from 35 percent in 2010 to 41 percent in 2011.

The review further revealed that 47 out of 1000 adults is a depositor in commercial banks while only 4.7 percent of adult population is a borrower. Moreover, in 2009, a large Ponzi scheme, operated by a closed institution without proper licensing, emerged, affecting numerous investors and effectively wiping out the savings of thousands of individuals. The Central Bank intervention to liquidate the scheme and redistribute existing funds did not help all those affected, and only a few that were assisted recuperated only part of their original investments. While financial intermediation does not seem to have been widely affected, poor individuals that were involved have suffered important financial losses. To further enhance the sector and reduce the risks arising from inadequately regulated non-bank financial institutions, the central bank introduced the 2011 Financial Institutions Act, which is expected to strengthen the prudential regulations of Savings and Credit Cooperatives and other non-banking financial institutions.

The other problem faced by Lesotho's financial sector is that there is no Stock Exchange that has been established in the country, however, companies are able to list their shares at the Johannesburg Stock Exchange.

Moreover, with the exception of the treasury-bills, capital market activities are not well developed. Although authorities are looking to introduce multiple Treasury bill products and establish a bond market and Stock Exchange in the near future, the fixed income market remains, for now, limited to short-term government securities (African Economic Outlook (AEO), 2015).

2.3 Savings in Lesotho

As mentioned earlier, savings is of key importance to economic growth of any economy, it provides funds for investment purposes which will in turn leads to high economic growth. Savings also helps smooth future consumption of economic agents.

For years, the financial sector has played a significant role in promoting savings in Lesotho. Over the years, the national savings (as a percent of GDP) have been improving, with relatively higher rates as compared to other countries such as South Africa and Namibia. However, Based

on figure 1 below, Lesotho's share of national savings to GDP has realised fluctuating rates. For instance, in 1980 the country recorded 40 percent, improved later in 1985 to 48 percent, and then realised a significant decline in 1989 where 16 percent was attained. An improvement was realised 1990, with 39 percent recorded, but later in 1998, a massive decline was recorded where the savings were 11 percent. After 1998 decline, the kingdom of Lesotho realised an improvement in the savings, with 42 percent recorded in 2008, however, since 2008 to recent, the rates have been falling, the latest being 20 percent recorded in 2014. The national savings as a share of GDP has in general been fluctuating over the years, with Lesotho reaching as high as 48 percent and as low as 11 percent, of recent, thus from 2008 to 2014, the rates have been declining. Given the importance of savings to any economy, the study that can help improve the saving rates is imperative.

Figure 1: Gross National Savings (percent of GDP) in period 1980-2014 in Lesotho
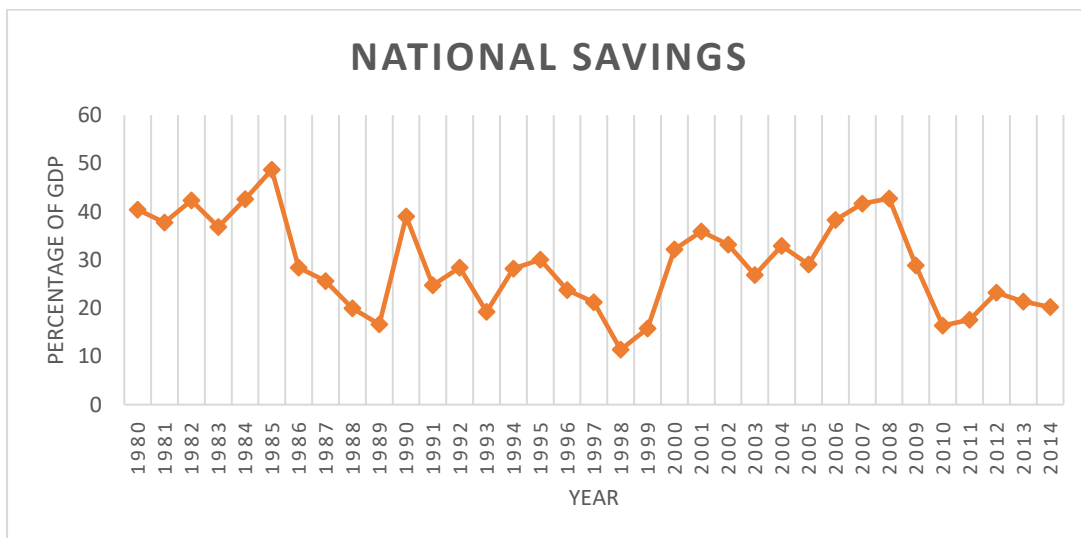
Source: (computations using IMF database, World Economic Outlook, 2017)

We mentioned above that though Lesotho's national savings are a bit higher as compared to other countries such as Namibia and South Africa, however, on its own, the rates are worrisome as they keep fluctuating, with a consistent decline being realised in the recent years (2008-2014). On the other hand, Gross domestic savings have been negative since the country's independence, thus since 1966 to date. Though they have been improving over the years, they

have still continued to remain negative. According to Lesotho Financial sector review (2004), the gross domestic savings in Lesotho were negative, averaging -16.2% of GDP over 1999-2002. They reported that this negative gross domestic savings is a reflection of Lesotho's substantial migrant labour population, a direct reflection of the low levels of income and the increasing levels of poverty incidence in Lesotho. Also, the increasing levels of fiscal deficits and the associated depletion of public sector savings have also reduced total domestic savings. Figure 2 below demonstrates the domestic saving trends of Lesotho compared to other SACU members.

Figure 2: Gross Domestic Savings (percent of GDP) in period 2001-2011 (SACU)
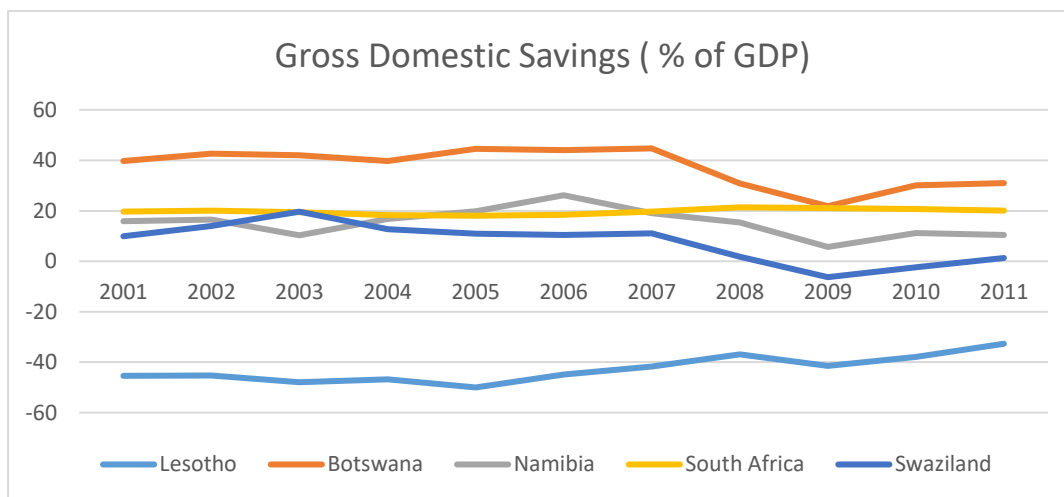
Source: (Computed using data from World Development Indicators, 2016)

Based on the graph, Lesotho is the only country which has recorded negative rates throughout the period. Botswana has dominated with higher rates than all the SACU countries. In 2011, gross domestic savings (as percentage of GDP) was recorded -32.7 percent, 30.9 percent, 10.4 percent, 20 percent and 1.3 percent for Lesotho, Botswana, Namibia, South Africa and Swaziland respectively. Though Lesotho's rates have remained negative, they have however improved, in 2009, 2010 and 2011, the rates were -41.5 percent, -37.9 percent and -32.7 percent respectively.

2.4 Savings and Investment

According to the central bank of Lesotho, the level of domestic investment should at least be 45 percent GDP for a developing country like Lesotho to reach a GDP growth rate of 5 percent per year (CBL, 2012). For Lesotho, the level of domestic investment has fallen from a high of 58.4 percent of GDP in 1996 to stand at only 36.2 percent of GDP in 2002, the available national savings have not been sufficient to cover domestic investment, with the resultant resource imbalance standing at 14.4 percent of GDP in 2002. This shows that the level of domestic investment (36.2 percent of GDP) is well below the estimated 45 percent of GDP considered necessary to maintain a GDP growth rate of 5 percent per annum, the estimated growth rate required to make a significant dent in poverty.

Figure 3: Savings and Investment (2009-2013)
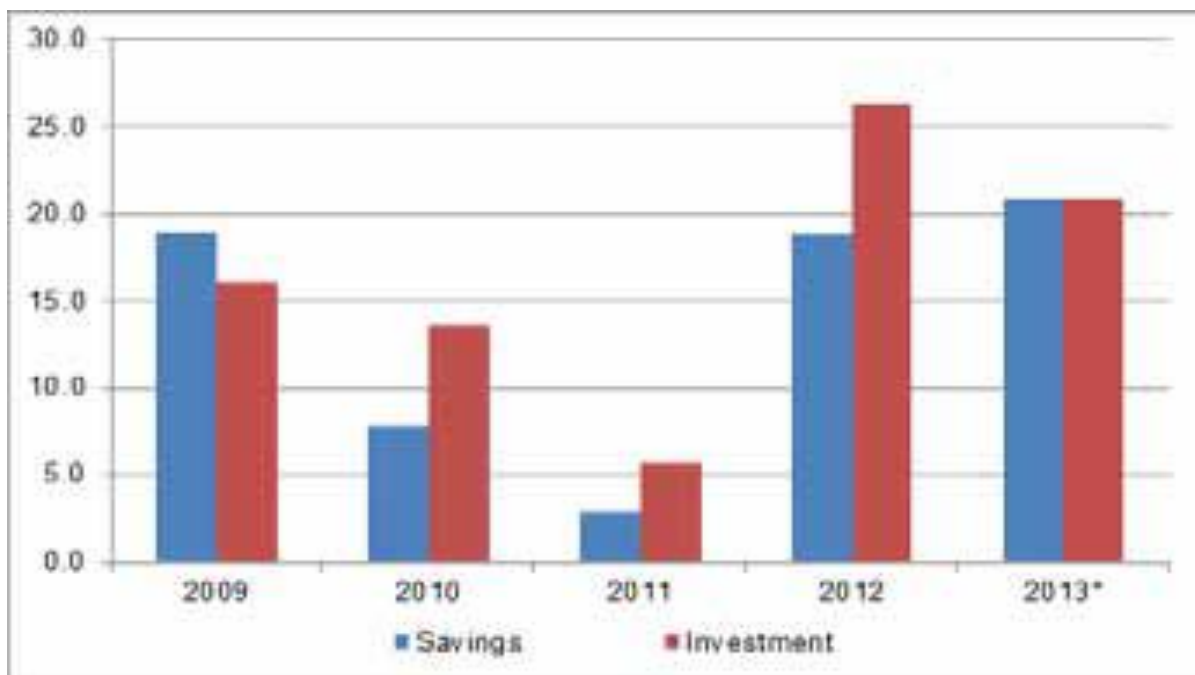
Source: (Central Bank of Lesotho, 2013)

According to figure 3 above, the saving-investment gap had narrowed to 0.02 percent in 2013 compared with negative 7.4 percent registered in 2012. The improvement resulted from higher national savings relative to national investment in 2013. Furthermore, the 2015 central bank

annual report reported that the saving-investment gap as a share of GNI was recorded negative 9.2 per cent in 2015 and at negative 9.3 per cent in the previous year. The report stipulated that the widening of the saving-investment gap resulted from a decline in national savings, which mainly reflected deterioration in government saving to 8.2 per cent as a share of GNI in 2015 from 10.3 per cent in 2014 given that there was an improvement in private sector savings in 2015.

2.5 Major Challenges and Initiatives

Despite the overall improvement in gross domestic savings, they are still negative and very low when compared to other SACU countries. On the other hand, the gross national saving rates in Lesotho, though relatively higher as compared to other countries, are not steady as they keep fluctuating, and have been declining of recent, thus from 2008 to 2014. It is argued that lack of accessibility of financial services contributed to low saving rates, in that, there may be people who want to save and build assets, but do not have access to savings or payments services (CBL, 2013). Also, majority of pension funds, which account to 14 percent of GDP, which could contribute significantly to savings in the country, are managed in South Africa, a scenario which tends to break the link between savings and investment in Lesotho, but instead enhances investment and development in South Africa (World Economic Outlook (WEO), 2014).

The Government of Lesotho (GoL) has over the years took initiatives to address the problem of dissaving in the country of which some have been mentioned earlier. The Gol has in addition adopted a more proactive financial inclusion strategy called MAP (Making Access Possible). MAP ensures that there is development of institutions and effective demand for credit, payments, insurance and financial resources and savings mobilisation. A financial education strategy, championed by the Central Bank was launched in 2014 to facilitate implementation of the financial sector reforms. The emerging developments in the sector include a budding mobile payments system for transactions and cash transfers, led by mobile network operators and the banking service providers (World Economic Outlook (WEO), 2014).

The Lesotho Financial Sector Review (2004) reported that the credit extension in Lesotho is very low, banks are risk averse due to lack of sufficient information regarding the credit

worthiness of borrowers. As a result, credit is offered by a few business borrowers and individuals, who offer very high interest rates and harsh repayments enforcements, with little finance provided to medium, small and micro enterprises (MSMEs). This problem prompted the government of Lesotho to implement reforms aimed at removing some of the supply-side constraints to accessing credit. These include the Legal Capacity of Married Persons Act (2006), which capacitated women to carry out business on their own, removing the need for spousal consent, and the Land Act (2010) and Land Administration Authority Act (2010), which streamlined and regularised registration of fixed property, enabling it to be used as collateral. The central bank of Lesotho also took initiative to help with solving the problem of low credit extension, the CBL's credit bureau project formulated Credit Reporting Act (2012). The Act was formulated to help with making provision for the licensing of private credit bureau operators and technical bureau services to assist financial institutions in lending money by establishing a credit information point on borrowers (Lesotho Financial Sector Review, 2004).

In 2012, the government of Lesotho, in collaboration with commercial banks contributed 50 million maloti towards the Partial Credit Guarantee Scheme, the aim of the scheme was to supports the extension of credit to MSMEs, with local commercial banks receiving a 50 percent guarantee on behalf of qualifying local enterprises to access funding. Furthermore, to help solve the problems associated with information asymmetry, which have curbed credit extension, the government has embarked on a civil registry overhaul programme that requires every Mosotho to have a national identity card.

CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

The review of literature is organized into two main sections. The first section involves the review of theoretical theories of savings. The second section entails the review of empirical studies on determinants of savings, highlighting on the methodologies employed in each study as well as providing summary of the results obtained.

3.2 The Theoretical Literature

The theories of consumption and savings have emerged as far back as 1930s. Savings and consumption are normally considered together in most theories of savings because if a household makes a decision to consume, is in effect making a decision not to save the consumed. However, households do not spend their entire income on the purchase of consumption goods but they save part of their current earnings for future spending. In terms of the economy, part of national income leaks out of the aggregate expenditure stream in the form of savings (Mbuthia, 2011). The theoretical basis for the determinants of saving starts from these known theories; Absolute Income Hypothesis (AIH), Relative Income Hypothesis (RIH), Permanent Income Hypothesis (PIH), Life Cycle Hypothesis (LCH) and Rational Expectations Hypothesis (REH).

3.2.1 Absolute Income Hypothesis (Keynesian Theory)

The relationship between Income and consumption/saving was established by Keynes (1936), he states that household's current consumption expenditure is a positive function of real current disposable income. This means that consumers determine the fraction of their disposable income to allocate to consumption based on their absolute income level. The theory further

postulates that as income increases, consumption will also increase but not at the same rate, meaning that part of the increment is saved.

The absolute income hypothesis further indicates that at higher levels of income, households spend small proportion of their income on consumption and save a larger proportion. The reason for this is because the theory assumes that marginal propensity to consume (MPC) lies between zero and one, implying that MPC declines with increase in income. This therefore by implication means that marginal propensity to save increases as income increases. By intuition, low income families save a lower percentage of their income as compared to high income families.

In general terms, the Keynesian saving function takes a form of linear function with constant Marginal Propensity to Save (MPS)

$$S_t = \varsigma + \beta Y_t$$

Where: S_t = real value of savings at time t

Y_t = total disposable income at time t

$\beta = \frac{\Delta S}{\Delta Y}$, this is the MPS and it constant and positive but less than unity.

As mentioned earlier, this means that higher income leads to higher savings.

3.2.2 Relative Income Hypothesis

The relative income hypothesis was developed by Duesenberry (1949), according to this theory, the utility of consumers does not depend on absolute income, but rather on relative income. According to relative income hypothesis, individuals' consumption behaviour is relative to a certain reference group, that is, a certain group that they feel they are in competition with. It further states that lower income households consumes larger portion of their income and at times dis-save in order to align their consumption patterns with that of high income households.

In the long run, consumers become used to these consumption habits, for which they are then forced to apportion part of their income towards maintaining them. The theory further postulates that as income increases in the short run, consumption increase by the same amount,

irrespective of whether the increment is small or large, implying MPC is the same in the short run. But a decline in income results into a less than proportionate decline in consumption. The reason being that households repel changing their consumption patterns to accommodate the decline. By intuition, lower income households allocate their income on consumption, hence higher income households save most of their income as compared to their counterparts.

3.2.3 Permanent Income Hypothesis

The permanent income hypothesis was developed by Friedman (1957), the theory relates an economic agent's consumption at any point in time with their total lifetime income. It states that individuals equate their expected marginal utility of consumption across time and that they are able to respond to income changes by either saving or dissaving. According to this theory, households change their consumption plans with income that they consider as permanent, hence they would not let their consumption fluctuate with transitory income.

According to the permanent income hypothesis, the saving function at time t, given the transitory and permanent income can be expressed as:

$$S_t = \varsigma + \phi Y^P + \varphi Y^T$$

Where: $Y = Y^P + Y^T$, ϕ = MPS given permanent income (Y^P) and φ MPS given transitory income (Y^T).

Moreover, the hypothesis states that individuals do not consume transitory income, meaning that $\varphi = 1$. It further asserts that changes in transitory income will lead to changes in savings, that is, higher levels of transitory income leads to higher levels of saving rate as transitory income is not consumed.

3.2.4 Life Cycle Hypothesis

The life-cycle hypothesis was formulated by Modigliani (1970), the theory states that consumers plan consumption on the basis of all their resources and allocates their income to

consumption over time so as to maximize utility over their lifetime. People's incomes vary systematically over the phases of their life, hence saving allows consumers to move income from those times in life when income is high to those times when it is low. The motion of saving for households is to rearrange lifetime consumption in relation to the expected future income stream. The theory states that a typical household dis-saves or save a little when young, saves more in the middle years and dis-saves upon retirement. This means that income streams rises in yearly of working, reaches plateau in the middle years and declines upon retirement. Middle income is relatively high, the main reason being that consumer durables are already acquired, the only thing that they can do is to accumulate assets which will finance consumption upon retirement.

3.2.5 Rational Expectations Hypothesis

The theory of rational expectations was proposed by Muth (1961). The hypothesis states that economic agents form expectations about the future economic activities based on past events, to try to forecast what will actually occur in the future. The theory further states that in making expectations, agents have acquired all the required and relevant information in order to avoid making systematic forecasting errors. According to this rational expectations theory, outcomes do not differ systematically from people's expectations. Rational expectations theory asserts that economic agents optimize their utility subject to their given constraints.

3.3 The Empirical Literature Review

3.3.1 Overview of the Empirical Models used different Studies

Most of the researchers opted to using Error Correction Model (ECM), mainly for short-run analysis; these included researchers such as Kwakwa (2013); Ahmad & Mahmood (2013); Hasnain et al. (2006); Nwachukwu & Egwaikhide (2007); Ehikioya & Mohammed (2014); Chaudhry et al (2014); Nwachukwu & Odigie (2009); Johnson (2015). Alternatively some authors used Autoregressive Distributed Lag (ARDL) Model for long-run relationship (Ahmad & Mahmood, 2013; Chaudhry et al, 2014; Narayan & Siyabi, 2005).

Other studies employed Vector Error Correction Model (VECM) for regression (Cermeño, Roth & Villagòmez, 2008; Ahmed, 2007). Epaphra (2014) opted to using Vector Autoregressive (VAR) Model. On the other hand, Cermeño, Roth & Villagòmez (2008) decided to use Structural Vector Autoregressive (SVAR) for their study. Ndirangu & Muturi (2015); Cårdenas & Escobar (1998); Tony (2007) used Ordinary Least Squares (OLS) method, while Hondrayiannis (2006) employed Fully Modified Least Squares (FMLS) method and Kudaisi (2013) used Generalized Least Squares (GLS) method. ARIÇ (2015) employed pooled OLS model for panel data was used in their study.

3.3.2 The Review of Variables

3.3.2.1 GDP Per Capita Income

A majority of studies observed that there is a positive and statistically significant relationship between per capita income and savings, the higher the economic position of the households, the higher the level of savings (see Kwakwa, 2013; Sen, 2004; Kwack & Lee, 2005; Hondrayiannis, 2006; ARIÇ, 2015; Ehikioya & Mohammed, 2014; Epaphra, 2014; Nwachukwu & Odigie, 2009; Tony, 2007; Jain & Baliyan, 2014). By intuition, the absolute income theory postulates that as income increases, consumption will also increase but not at the same rate, meaning that part of the increment is saved. The absolute income hypothesis further indicates that at higher levels of income, households spend small proportion of their income on consumption and save a larger proportion. So as income increases, part of the income is saved. These is also supported by other theories such as life cycle hypothesis and permanent income hypothesis, which also assert to the point that increases in income leads to increase in savings. Alternatively, some studies determined that there is a negative and significant relationship between per capita income and savings, it is was observed that this was caused by disequilibrium in income distribution for most countries, and for other countries it was mainly due to high inflation rates and economic downturn (see Ahmad & Mahmood, 2013; Kudaisi, 2013).

3.3.2.2 Deposit Rate

Chaudhry et al (2014); Hasnain et al. (2006); Kazmi (1993); Athukorala & Sen (2004); Hondrayiannis (2006); Ahmed (2007) found a positive and statistically significant relationship between deposit rate and savings. By intuition, high deposit rates encourage people to save so as to obtain high returns on their savings, all things being equal. Though some studies also discovered a positive relationship between these variables, they found the relation to be insignificant. By implication, an increase in real deposit rates lead to an increase in saving rates, but the relationship being statistically insignificant implies that an increase in real deposit rate

will not improve the rate of saving substantially. (Oshikoya, 1992; Ephaphra, 2014; Ehikioya & Mohammed, 2014; Odhiambo, 2008). Conversely, some studies established a negative and statistically significant relationship between deposit rate and savings. This relationship was as a result of income effect outweighing the substitution effect (Kwakwa, 2013; Nwachukwu & Egwaikhide, 2007).

3.3.2.3 Inflation Rate

A majority of studies have discovered that there is a significant negative relationship between inflation and savings. By intuition, inflation means a fall in the welfare of households as prices increase, hence households spends more of their income on consumption and less on savings, which therefore means inflation encourages consumption and discourage saving (Esmail, 2014; Ehikoya & Mohammed, 2014; Ephaphra, 2014; Johnson, 2015). Alternatively, some studies observed a positive relationship between inflation and savings. This was based on the intuition that during high inflation periods, individuals would increase their savings in order to avoid economic uncertainty, consumers are rational and they make decisions based on their perceptions Thus, precautionary motive induces people to save part of their incomes in the presence of increased macroeconomic uncertainty (Chaudhry et al, 2014; Hondroyainnis, 2006; Nwachukwu & Egwaikhide, 2007).

3.3.2.4 Dependency Ratio

Studies found that age dependency have a significant negative effect on savings, these findings were based on the intuition that households with more children and old age persons are most likely to consume more and save less (Kwakwa, 2013; Kwack & Lee, 2005; Ndirangu & Muturi, 2015; Hallaq, 2003). Conversely, other studies perceived that age dependency is positive and significantly related to savings, the observation was associated with the idea that children contribute directly to household market and non-market income, hence contribute to increased income. Also, families with more children encourage parents to work more and to

save most of their income so as to support their children during economic downturn (ARIÇ, 2015; Hondroyiannis, 2006).

3.3.2.5 Fiscal Policy

A study conducted by Harjes and Ricci (2005) for South Africa discovered that there is a positive and statistically significant relationship between fiscal policy and overall savings. Similar results were found in other studies done in countries such as Mexico, India and Pakistan (see Cermeño, Roth & Villagòmez, 2008; Athukorola & Sen, 2004; Chaudhry et al, 2014). This is based on Ricardian Equivalence Theory which states that when consumers predict tax cuts or higher spending by the government to lead to future tax increases, they tend to save the tax cut so as to pay the future tax increases. Conversely, Cȧrdenas & Escobar (1998) observed that fiscal policy is negative and significantly related to savings in Colombia, thus, high government expenditures are associated with lower national savings, disapproving the Ricardian Equivalence Hypothesis.

3.3.2.6 Financial deepening

Harjes & Ricci (2005); Ang & Sen (2011) established that financial deepening has a negative and significant impact on savings. By intuition, financial facilities do not bring about an improvement in saving rates but instead improve consumption opportunities, thus for instance, improved access to credit lead to more consumption opportunities and a reduction in overall savings. Alternatively, the study done in Tanzania by Odhiambo (2008) discovered that there is a positive and statistically significant relationship between financial deepening and domestic savings, which was as a result of interest rate liberalization. Ehikioya & Mohammed (2014) agrees that financial deepening has a direct and significant relation to private domestic savings in Nigeria, they emphasize that initiatives adopted by Nigeria Central Bank to strengthen and develop financial markets and institutions have contributed to an increase in private domestic savings.

3.3.2.7 Budget Deficit

Ang & Sen (2011); Hondroyiannis (2006) observed that there is a positive and statistically significant relationship between government budget deficit and savings. The intuition is that when the government runs a budget deficit, the private sector respond by saving more to offset any undesirable effect on future generations. Alternatively, studies by Ehikioya & Mohammed (2014); Chaudhry et al (2014) found that the government budget deficit is negative and significantly related to savings, By intuition, an increase in budget deficit means that government expenditures are greater than the government revenues, as a result, public savings decreases. Since the public savings have a large share in national savings, this then leads to national savings also decreasing with decrease in public saving.

3.3.2.8 Money Supply (M2)

Ahmad & Mahmood (2013); Paiva & Jahan (2003) observed that there is positive and significant relationship between money supply and national savings. By intuition, countries with developed financial markets and institutions, thus countries experiencing financial deepening leads to money supply having a direct effect savings. Alternatively, Narayan & Siyabi (2005); Chaudhry et al (2014); Touny (2008) observed that there is a negative and statistically significant relationship between money supply and national savings. By intuition, expansion of money supply increase opportunities for consumption, hence impact negatively on savings. Also, through the interest rate channel, increase in money supply leads to an fall in interest rates which in turn leads to a fall in savings.

3.3.2.9 Terms of Trade

A study conducted by Athukorala & Sen (2004) in India noted that there is a negative and significant relationship between terms of trade and saving rates. Also, a study done in Nigeria by Ehikioya & Mohammed (2014) discovered that terms of trade has an inverse and significant influence on private savings. Moreover, Jain & Baliyan (2014) also observed that in India,

terms of trade have a negative impact on savings. By intuition, the Harberger-Laursen-Metzler hypothesis does not hold, that is terms of trade improvement will cause a decrease in savings. Thus, economic agents assumes myopic expectations and postulates that improvement in the terms of trade reduces real income, hence a decrease in savings. However, other researchers have argued that a change in terms of trade has an ambiguous effect on savings. They asserts the point that effect of terms of trade on savings depends on whether the change is seen as permanent or temporary. They point out that a transitory improvement to the terms of trade, leading to transitory change in income, leads to higher savings, and not higher consumption, which is in line with the direction of the Harberger-Laursen-Metzler hypothesis. However, a permanent improvement leads to increase in consumption and hence a reduction in saving as consumers increase their consumption based on permanent changes in their income. In short, the effect of terms of trade changes on savings depends on whether or not the change is transitory or permanent. Alternatively, Kwakwa (2013) observed that there is a positive and highly significant relationship between terms of trade and savings in Ghana. The intuition is that Harberger-Laursen-Metzler hypothesis holds for Ghana, that is, an improved terms of trade has a positive impact on savings. This implies that changes in terms of trade are seen as transitory and not permanent, hence leading to an increase in savings in Ghana.

3.3.3 Population growth

Some studies have categorised the population into young population (working population) and old population (non-working population). ARIÇ (2015), observed that there is a positive and significant relationship between level of young population and savings in APEC countries (Australia, Malaysia, China, Philippines, Peru, etc). The rationale is based on the Life-cycles theory which claims that the higher rate of individuals at a working age tend to save more for future consumption during retirement period. They further observed that old population has a positive and insignificant relationship with savings. Epaphra (2014) discovered that in the case of Tanzania, population growth has a positive and significant impact on national savings. On the contrary, Ehikioya & Mohammed (2014) found a negative and insignificant relationship between population growth and domestic savings in Nigeria. The perception is that increase in population growth means increases in household sizes, as the household increases, consumption increases while savings is reduced.

3.3.3.1. External Debt

Aliyu and Usman (2013); Mlambo and Elhiraika (1997); Chinaemerem and Anayochukwu (2013); Chete (1999) observed a negative and statistically significant relationship between external debt and savings. By intuition, external debt is a result of external borrowing, and accumulated debt act as tax on future income, which leads to savings decreasing. Moreover, a high external debt ratio of a country signals as future tax liabilities to economic agents, which prompts them to invest their capital to foreign countries, thereby reducing domestic saving. On the other hand, Uremadu (2007); Nwachukwu and Egwaikhide (2007), obtained a positive and statistically significant relationship between external debt and savings in Nigeria, the intuition behind this results was that the government of Nigeria is prudent in managing the external debt of the nation.

3.3.3.2. Interest Rate Spread

Athukorala & Sen (2004); Uremadu (2007); Adesoye and Maku (2015) observed a positive and statistically significant relationship between interest rate spread and savings. This means an increase in interest rate spread leads to an increase in savings. The intuition is based on the notion that people consider some other reasons for financial savings other than spread and or yields, meaning that changes in interest rate spread may not be of main importance in influencing the saving decision of people as there may be other factors that influence their saving behaviour. Conversely, Tiriongo (2005) found a negative and statistically significant relationship between interest rate spread and savings. By intuition, banks makes abnormal profits by charging high rates on credits whilst paying considerably lower rates on deposits. Therefore high interest rate spread is a signal to economic agents that the deposits rates are low whereas the lending rates are high, hence lower their savings.

3.3.3.3. Urbanization

Cảrdenas & Escobar (1998); Narayan & Siyabi (2005); Paiva & Jahan (2003) obtained a negative and statistically significant relationship between urbanization and savings. By intuition, lower variability or urban income relative to rural income may act to reduce precautionary saving, thus, if economic agents residing in the urban area earn income that does not differ much from income of those in the rural areas, they will be discouraged to save.

Conversely, Tedla (2016) discovered a positive and statistically significant relationship between urbanisation and savings. By intuition, urbanization brings more opportunities for higher income, opportunities for investments, improved banking facilities, all these encourages savings, which simply means that urbanization leads to an increase in savings. Therefore as urbanization proceeds, savings in an economy increase.

3.3.3.4. Current Account Balance

Touny (2008); Mahmoud (2008); Arok (2014) observed that current account deficit had a negative effect on savings. By intuition, an increase in current account deficit increases foreign savings, making domestic savings low, therefore this implies that persistent current account deficit has a negative impact on gross domestic savings. An increase in foreign saving is associated with a partial decline in private saving due to the fact that foreign saving could act as a substitute to domestic saving. On the other hand, Tiriongo (2005) obtained a positive and statistically significant relationship between current account deficit and saving. By intuition, an increase in the deficit in real values means more funds are flowing into the country through foreign exchange earnings and net capital inflow. These funds flowing into a country due to a deficit may be saved while awaiting investment in the economy, hence increasing savings. A study by Narayan & Siyabi (2005) observed a positive and statistically significant relationship between current account surplus and savings.

3.3.3.5. Domestic credit

Narayan & Siyabi (2005); Kivindu (2015) obtained a positive and statistically significant relationship between domestic credit and savings, this means that an increase in domestic credit provided by financial institutions leads increase in savings. By intuition, an increase in the domestic credit provided by the financial institutions shows the development and growth of the financial sector. Growth in the financial sector leads to the creation of various financial institutions where people are able to deposit their funds as savings.

3.3.3.6. Other Factors

Sinning (2007) employed double hurdle model to analyse the determinants of savings and remittances in Germany. The study observed that return intentions positively affect financial transfer of immigrants to their country. This means that if immigrants working abroad have an intention of coming back to their home countries, they tend to transfer money home, resulting in increase in savings. Moreover, the study also found that household size on migrants' transfers abroad has a negative and significant relationship with savings. Thus, if the migrant working abroad has moved with their relatives, such that there seems to be no need to send money back home, then savings will be low, as most income will be saved abroad.

Mirach and Hailu (2014), analysed the determinants of household saving in Ethiopia. The study observed that income, age, sex, marital status, forms of institutions used for saving and frequency of getting money are significant determinants of household savings in Ethiopia. These findings lead the researcher in believing, amongst other reasons, that the government policy intervention should focus on increasing the availability and accessibility of financial institutions so as to increase savings in Ethiopia.

Kwakwa (2013), observed that political instability also has an effect on savings, in his study, political instability was found to have a negative and statistically insignificant relationship with savings. This findings for Ghana were due to the military takeover, thus, military taking over from the government, which was reported to have created uncomfortable feeling to the people, discouraging them from putting their money in the banks, leading to a fall in savings. A study

by Edwards (1996) provides a useful summary of how government behaviour may influence savings. As the author puts it, the authorities' incentive to increase government savings depends on probability that the party in power will still be in power in the subsequent period, such that if the probability of this happening is low, then the incumbent party has little incentive to save.

On the other hand, African Economic Outlook (2015), assert the point that Lesotho's economy is highly influenced by external factors, in particular, the mountain kingdom's economy highly influenced by the South African economy due to the fact that it is landlocked by it and the fact that Lesotho is small in size relative to South Africa (both geographically and economically). These makes Lesotho sensitive to developments that happen in its larger neighbour country, South Africa. To be more specific in terms of the dominance of South Africa to Lesotho, Lesotho Financial Sector Review (2004) reported that Lesotho's GDP is less than 1 percent of South Africa's GDP, about 90 percent of kingdom of Lesotho imports come from South Africa with South Africa receiving only 50 percent of Lesotho exports. In addition, it is estimated that over 10% of Lesotho's male population work in South African mines, with few saving remittances in Lesotho.

According to the review, the free flow of funds between both countries has important implications for the financial system in Lesotho. In the first place, it implies that interest rates in Lesotho has to be aligned with interest rates prevailing in South Africa, otherwise funds will flow into South Africa. If for instance the deposit rate in Lesotho is lower than that of South Africa, Basotho will resort to depositing their savings in South Africa where they will enjoy high returns on their savings. The evidence shows that since South Africa is more developed as compared to Lesotho, deposit rate in South Africa is higher than that of Lesotho (World Bank, 2016), and an anecdotal evidence suggests that roughly 25 percent of deposits mobilized within Lesotho ends up in South Africa. In addition, implementing monetary policy in Lesotho is complicated given the fact that the Rand circulates as legal tender in Lesotho and the Central Bank is unable to determine exact amount of Rand in circulation in the country. Also the fact that there is no stock market in Lesotho, Basotho are encouraged to invest in Johannesburg stock exchange. Hence factors such as South African deposit rate and stock exchange end up having an impact on Lesotho's savings.

3.4. Conclusion

The reviewed literature has established a range of variables which are said to have an influence on savings in an economy. According to empirical studies; GDP per capita income, deposit rate, inflation, money supply, budget deficit and terms of trade were identified as key variables that have an impact on savings. Most studies emphasize on a positive relationship between GDP per capita income and national savings, which is supported by theories such as Keynes' absolute income hypothesis, Modigliani's life cycle hypothesis and Friedman's permanent income hypothesis. Budget deficit and deposit rate are also shown by most studies to have a positive relationship with national savings. While inflation, money supply and terms of trade are said to have a negative effect on national savings.

Most studies adopted Error Correction Model (ECM) to investigate the determinants of savings (see Kwakwa, 2013; Ahmad & Mahmood, 2013; Hasnain et al., 2006; Nwachukwu & Egwaikhide, 2007; Ehikioya & Mohammed, 2014; Chaudhry et al, 2014; Nwachukwu & Odigie, 2009; Johnson, 2015). However, this study employed ARDL modelling to examine the determinants of savings in Lesotho. ARDL has an advantage of providing consistent estimates of the long-run and short-run coefficients that are asymptotically normal irrespective of whether the underlying regressors are I(1) or I(0) (Pesaran & Shin, 1998).

Very little has been done to assess the determinants of national savings in Lesotho, the aim of this study is thus to contribute to the above literature by considering the subject in the case of Lesotho.

CHAPTER FOUR

METHODOLOGY

4.1 Introduction

This chapter determines the model that will be employed to capture the determinants of savings in Lesotho. Section 4.2 presents the theoretical framework of the econometric method to be used in the study. Section 4.3 specifies the econometric model to be estimated, it is followed by Section 4. 4 which entails specific and priori expectations of the variables to be captured in the study. Section 4.5 entails data analysis procedure. Section 4.6 states the data to be employed and its sources.

4.2 Conceptual Framework: Life Cycle-Permanent Income Hypothesis

The conceptual framework for this study is derived from Life-Cycle model, the best thing about this model is that it incorporates the issue of time in explaining the saving behaviour of economies. However, the problem with the general life-cycle framework is that it does not include every variable that affects consumption and savings decisions. Given this problem, this study therefore adopted the theoretical framework that combines both the life cycle hypothesis and permanent income hypothesis variables, thus the life cycle/permanent-income hypothesis developed by Hall (1978), also known as the random-walk hypothesis.

The random walk hypothesis assumes that economic agents are rational and that their objective is to maximize the present value of lifetime utility subject to the budget constraint, which is their current income plus the present value of their expected income. According to Kudaisi (2013), income of an individual fluctuates over the course of their life, which implies that stages in the life cycle are important in determining the saving behaviour. The basic idea behind the lifecycle/permanent-income hypothesis is that saving is a future consumption, hence anything that affect consumption will similarly determine savings. This therefore implies that any variable that affect consumption and both current and future income will have an impact on saving function.

The life cycle hypothesis clearly indicates that there is no relationship between current income and current savings, and therefore economic agents make forecasts and base their decisions to save on lifetime income instead of current income. The life cycle model assumes a positive relationship between rate of growth of income and saving rate, thus as the rate of growth of income increases, the saving rate also increases.

The life cycle hypothesis clearly indicate that individuals borrows when young, thus when they reach those years where they just started to work, so that they can be able to finance their consumption needs. The money they borrowed when young will be paid back when there are in the middle of their life time. Since their income would have increased, they will also save part of their income for future consumption within the course of their working life, which they will use to finance consumption upon retirement. Moreover, since the life cycle hypothesis brings in an element of borrowing, it does not ignore that borrowing goes hand in hand with interest rate. The theory therefore predicts that a higher interest rate leads to an increase in the current price of consumption in comparison with the future price, resulting in an increase in savings. This means that according to life cycle hypothesis, there is a positive relationship between interest rate and savings.

The life cycle/permanent hypothesis does not ignore the fact that in the course of life time of an individual, uncertainties happen. In order to capture the saving behaviour under uncertainty, Hall (1978) developed the following simple equation following Keynesian consumption function.

$$Y_t = C_t + S_t \ldots\ldots\ldots\ldots\ (1)$$

Where: Y_t=Income at time t, C_t=consumption in period t and S_t= savings at time t

Equation (1) can be rearranged to make savings a subject of the formula, such that we have:

$$S_t = A_o + Y_t - C_t \ldots\ldots\ldots\ (2)$$

Equation (2) shows that an individual's saving in period *t* is the difference between income and consumption (saving) in period t.

Any change in income will result in a change in both consumption and savings, such that we will have the following equation:

$$S_t = Y_t - \frac{1}{T} \left(\sum_{t=1}^{T} Y_t \right) - \frac{1}{T} A_0 \ldots\ldots\ldots \text{ (3)}$$

The equation (3) above brings in the element of permanent income hypothesis, thus, equation (3) means that savings is high when transitory income is high. The permanent income hypothesis states that individuals do not consume transitory income, thus they adjust their consumption patterns based on income that they consider as permanent, which therefore means any transitory income is saved. Therefore, higher levels of transitory income leads to higher levels of saving rate as transitory income is not consumed.

Given this framework, the life cycle/permanent theory states that consumption follows a random walk, that is, it will have a time trend around which it will fluctuate. This can be explained intuitively as follows. So the fact that economic agents are faced at some point with uncertainty, thus their earnings fluctuate over their lifetime, economic agents resort to borrowing so as to smooth out their consumption stream evenly over their lifetime.

Therefore, to describe the saving behaviour, we assume an individual consumption optimality given the information available, and assume that he/she will chose consumption in each future period.

$$S_t = E_1[C_t] \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{ (4)}$$

$$\sum_{t=1}^{T} E_1[C_t] = A_0 \sum_{t=1}^{T} E_1[Y_t] \ldots\ldots\ldots \text{ (5)}$$

$$S_t = \frac{1}{T} \left(A_0 + \sum_{t=1}^{T} E_1[Y_t] \right) \ldots\ldots\ldots\ldots \text{ (6)}$$

Equation (7) implies that an individual consumes 1/T of his or her expected lifetime income. More generally, expected next period consumption (saving) equals current consumption (saving). This implies that changes in consumption (saving) are unpredictable. Hence, we can write:

$$C_t = E_{t-1}[C_t] + e_t \ldots\ldots\ldots\ldots \text{ (8)}$$

And since, $E_{t-1}[C_t] = C_{t-1}$, we can write equation (8) as:

$$C_t = C_{t-1} + e_t \ldots\ldots\ldots\ldots \text{ (9)}$$

Equation (9) is the Hall's equation, which according to life-cycle/permanent-income hypothesis implies that consumption (saving) follows a random walk (Hall, 1978). The intuition for this result is that if consumption (saving) is expected to change, an individual can smooth consumption across his or her lifetime, thereby increasing their saving.

Hall (1978) developed the framework below which captures all variables that affect savings decisions.

$$S_t = Y_t - C_1 f(Z_t) + \frac{1}{T-1} \left(\sum_{t=2}^{T} E_2 [Y_t] - \sum_{t=2}^{T} E_1[Y_{t]} \right) \ldots\ldots\ldots \text{(10)}$$

The equation (10) above indicate that changes in savings between each period equals the change in income, consumption and other variables. The life cycle/permanent income hypothesis simply emphasize on the fact that people save for future consumption. Therefore an individual decision to consume is in fact a decision to save, therefore anything that affect consumption will equally affect saving. In conclusion, saving function shows the relationship between savings and its determinants. This theoretical model was modified to capture a number of variables that determine savings in Lesotho.

4.3 Model Specification

The objective of this section is to empirically explore the main determinants of savings in Lesotho. The model that will help to establish the short- run and long- run behaviour of such determinants is estimated. The empirical literature has demonstrated that country's savings can be affected by changes in per capita income, money supply, terms of trade, interest rate, inflation, dependency ratio, population growth, fiscal policy, budget deficit financial deepening and other factors. This study seeks to develop a model that integrates all the theoretical background simultaneously and uses it to analyse Lesotho's savings. An Autoregressive Distributed Lag (ARDL) modelling approach will be employed, adopted from Narayan & Siyabi (2005).

The baseline model for general approach to National Savings is presented by;

NSAV= f (PCY, TOT, INF, DR, BDEF, M2)………………1

$$NSAV_t = \beta_0 + \beta_1 PCY_t + \beta_2 TOT_t + \beta_3 INF_t + \beta_4 DR_t + \beta_5 BDEF_t + \beta_6 M2_t + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots.2$$

Where; $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ are coefficients, and β_0 is the intercept term.

- ➢ NSAV=National Savings,
- ➢ PCY=GDP Per capita income,
- ➢ DR=Deposit rate,
- ➢ INF=Inflation,
- ➢ TOT=Terms of Trade,
- ➢ BDEF=Budget Deficit,
- ➢ M2= Money Supply,
- ➢ ε_t= Error term of the model,
- ➢ t = Time trend.

4.3.1 Autoregressive Distributed Lag Model

The basic form of the ARDL regression model can be expressed from equation (2) as follows:

$$NSAV_t = \beta_0 + \beta_1 NSAV_{t-1} + \beta_2 PCY_t + \beta_3 TOT_t + \beta_4 INF_t + \beta_5 DR_t + \beta_6 BDEF_t + \beta_7 M2_t + \sum_{i=2}^{p} \alpha_{1i} NSAV_{t-i} + \sum_{i=1}^{p} \alpha_{2i} PCY_{t-i} + \sum_{i=1}^{p} \alpha_{3i} TOT_{t-i} + \sum_{i=1}^{p} \alpha_{4i} INF_{t-i} + \sum_{i=1}^{p} \alpha_{5i} DR_{t-i} + \sum_{i=1}^{p} \alpha_{6i} BDEF_{t-i} + \sum_{i=1}^{p} \alpha_{7i} M2_{t-i} + \varepsilon_t \ldots\ldots\ldots (3)$$

4.4 A Priori Expectation

The table below presents the variables considered in the model, their measurement and expected signs.

Table 1: A Priori Expectation

Variable	Measurement	Expected Signs
Dependent Variable		
National Savings (NSAV)	National savings of a country are the sum of private and public savings. Thus, nation's income minus consumption and government purchases. It is measured as a percentage of GDP.	
Independent Variables		
Inflation (INF)	CPI is used as a measure for inflation. CPI is weighted average of prices of a basket of consumer goods and services, purchases by a consumer, considering price changes for each item in the predetermined basket of goods and services during a month. It is computed using 2000 & 2005 base prices.	Negative
Budget Deficit (BDEF)	The amount by which a government's spending exceeds its income over a particular period of time. It is measured as a percentage of GDP.	Positive
Terms of trade (TOT)	The terms of trade effect equals capacity to import less exports of goods and services in constant prices.	Negative
Money Supply (M2)	Money Supply as a % of GDP is the sum of currency outside banks, time, savings, demand deposits & foreign currency deposits of resident sectors besides from central government.	Negative
Deposit Rate (DR)	Deposit interest rate is the rate paid by commercial or similar banks for demand, time, or savings deposits.	Positive
GDP Per capita income (PCY)	GDP per capita is Gross Domestic Product (GDP) divided by midyear population of a country.	Positive

(www.unctad.org, data.worldbank.org/indicator)

The definition of variables is according to the UNCTAD, IMF and World Development Indicators.

4.5 Econometric Methodology (Data analysis procedure)

From the theoretical and as well as the empirical literature, the study will adopt the use of ARDL testing model adopted by Pesaran and Shin (1998) because of the benefits highlighted above.

4.5.1 Econometric issues associated with the use of Time Series Data

Before checking any possible relationship between variables, it is imperative to test time series data in order to check whether series are stationary or non-stationary. Time series data can be stationary or non-stationary, but usually exhibit non-stationary characteristics. In the classical linear regression, the use of non-stationary variables is likely to give misleading results. Therefore it is important to determine the stationarity conditions of the variables in the model. A series is considered stationary when it has no trend, thus, when its mean and variance are constant overtime (Greene, 2002).

4.5.2 Unit Root Test

Autoregressive Distributed Lag (ARDL) cointegration requires that all variables should be integrated of either order 0 (I(0)) or order 1 (I(1)) series or both, but none of the variable should be integrated of order 2 (I(2)) or higher order**.** Employing ARDL approach in the presence of variables integrated of I(2) or higher order, leads to the calculated F-Statistic being invalid (Narayan, 2004). Therefore it is a prerequisite to do the unit root test before estimating the ARDL model. Augmented Dickey-Fuller (ADF) and Phillips-Peron (PP) tests will be used to determine the order of integration of the variables to be used in the estimation (Greene, 2002).

4.5.2.1 Augmented Dickey-Fuller (ADF) Test

The Augmented Dickey Fuller (ADF) test, which is a modified version of the Dickey Fuller (DF) test, ensures that the unit root tests are valid even with the presence of serial correlation. This may be done by augmenting the equation with lagged values of the differenced variables. With ADF, the error term is assumed to be independently and identically distributed. ADF test is thus specified as follows:

$$\Delta Y_t = \alpha_0 + \alpha_2 t + \rho Y_{t-1} + \sum \beta_i \Delta Y_{t-i} + U_t$$

The above equation, which is considered more general, allows for the presence of a non-zero mean and a constant deterministic drift. The researcher begins by including a generous number of lags and if the past differences do not enter significantly, lags are dropped sequentially using appropriate criterion.

4.5.2.2 Phillips-Peron (PP) Unit Test

Phillips Peron (1988) unit root test is an improvement to the Augmented Dickey Fuller (ADF), the assumptions of autocorrelation and heteroscedasticity are relaxed for PP test. A non-parametric correction is made to the t-ratio of the coefficient from equation to account for the autocorrelation of disturbance term. The model is given as follows:

$$\Delta Y_t = a + \beta Y_{t-1} + \varepsilon_t$$

Where: Y_t= variable of interest

   a = constant

   β= slope

The non-parametric correction is made to the t-ratio of the β coefficient from equation to account for the autocorrelation of the error term. This correction is based on an estimate of the spectrum of error term at zero frequency that is robust to heteroscedasticity and autocorrelation.

Having determined unit roots, the next step is to test for the long-run relationship among the variables using the Cointegration test.

4.5.3 Cointegration Test

 Cointegration can be viewed as the statistical expression of the nature of long-run equilibrium relationships. If for instance two variables are linked by some long-run relationship, from which they can deviate in the short run but must return to in the long run, residuals will be stationary. If variables diverge without bound (i.e. non-stationary residuals) we must assume no equilibrium relationship exists. If a linear combination of I (1) variables is a stationary process of I (0), then the variables are said to be cointegrated. The concept of cointegration links relationships between integrated processes and the concept of (steady state) equilibrium (Mills, 1990).

It is vital to undertake the cointegration test since it helps us to model empirically meaningful relationships. The Autoregressive Distributed Lag (ARDL) bounds approach model by Pesaran and Shin (1999) and Pesaran, Shin and Smith (2001) will be adopted for this study. The advantage of this model is that it is applicable in the presence of both I (0) and I (1) variables. Furthermore, this method takes care of problems associated with omitted variables and autocorrelation, since it estimates the long-run and short-run components of the model simultaneously. Unlike other cointegration techniques which are sensitive to the size of the sample, the ARDL test is suitable even if the sample size is small. Also, the ARDL technique generally provides unbiased estimates of the long-run model and valid t-statistics even when some of the regressors are endogenous. Hence, ARDL modelling approach for cointegration analysis is adopted in this study.

However, the main disadvantage of the ARDL procedure is that it assumes that only a single cointegrating relationship exists amongst variables. There are several alternative methods for conducting cointegration analysis, methods such as maximum likelihood based Johansen (1988) procedure and the residual based Engle-Granger (1987) two-step estimation procedures. However, the major disadvantage of the Johannsen (1998) procedure is that it requires all variables to follow I (1) processes. Therefore ARDL will be adopted for this study since it is able to provide consistent estimates of the long-run and short-run coefficients that are asymptotically normal irrespective of whether the underlying regressors are I(1) or I(0) (Pesaran & Shin, 1998).

In addition, the ARDL approach allows for sufficient numbers of lags to capture the data generating process. It is important to determine the optimum lag length suitable for our model before employing the cointegration test. The Akaike's information criterion (AIC), Schwarz's Bayesian criterion (SBC) and other diagnostic tests will be used to determine the orders of the lags.

4.5.3.1 ARDL Bounds Test

To determine the long-run equilibrium relationship between the variables, we use the ARDL unrestricted error correction model (UECM) presented by:

$$
\begin{aligned}
\Delta NSAV_t = a_0 &+ \sum_{i=1}^{n} b_{1i}\,\Delta(NSAV_{t-i}) + \sum_{i=1}^{n} c_{2i}\,\Delta(PCY_{t-i}) + \sum_{i-1}^{n} c_{3i}\,\Delta(TOT_{t-i}) + \sum_{i=1}^{n} d_{4i}\,\Delta(INF_{t-i}) \\
&+ \sum_{i=1}^{n} e_{5i}\,\Delta(DR_{t-i}) + \sum_{i=1}^{n} f_{6i}\,\Delta(BDEF_{t-i}) + \sum_{i=1}^{n} g_{7i}\,\Delta(M2_{t-i}) + \sum_{t=1}^{n} \alpha_{1i}\,NSAV_{t-i} \\
&+ \sum_{t=1}^{n} \alpha_{2i}\,PCY_{t-i} + \sum_{t=1}^{n} \alpha_{3i}\,TOT_{t-i} + \sum_{t=1}^{n} \alpha_{4i}\,INF_{t-i} + \sum_{t=1}^{n} \alpha_{5i}\,DR_{t-i} + \sum_{t=1}^{n} \alpha_{6i}\,BDEF_{t-i} \\
&+ \sum_{t=1}^{n} \alpha_{7i}\,M2_{t-i} + \varepsilon_{it}
\end{aligned}
$$

Where: Δ=First-difference operator, a_0= the drift component, n= lag length. Other variables are defined as before. The short run effects are obtained by testing the coefficients of the first differenced variables. On the other hand, the long run effects are represented by coefficients of the one lagged explanatory variables.

To test for the existence of the long –run relationship, the F test is used. The null hypothesis states no cointegration among variables from the UECM model above.

Thus, $H_0: \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = \alpha_6 = \alpha_7 = 0$

$\quad H_0 = \alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq \alpha_5 \neq \alpha_6 \neq 0$

Pesaran et al. (2001) generates two bounds of critical values for a given significance level.

The first critical value is obtained on the assumption that all variables included are I(0), while the upper bound critical values is obtained where I(1) variables are assumed. If the computed F-statistic exceeds the upper critical value, we reject the null hypothesis and conclude that there exists coitegration among the variables. However, for F-statistic lower than the critical value, null hypothesis is not rejected, concluding absence of cointegration.

If the long run relationship (cointegration) exists, the long run coefficients from UECM are derived from the following equation:

$$NSAV_t = \beta_0 + \sum_{i=1}^{m} \beta_1 NSAV_{t-i} + \sum_{i=1}^{n} \beta_2 PCY_{t-i} + \sum_{i=1}^{o} \beta_3 TOT_{t-i} + \sum_{i=1}^{p} \beta_4 INF_{t-i} + \sum_{i=1}^{q} \beta_5 DR_{t-i} + \sum_{i=1}^{r} \beta_6 BDEF_{t-i} + \sum_{i=1}^{s} \beta_7 M2_{t-i} + \varepsilon_t$$

On the other hand, the short run coefficients are derived from the following Error Correction Model:

$$\Delta NSAV_t = \lambda_0 + \sum_{i=1}^{n} \lambda_1 \Delta NSAV_{t-i} + \sum_{i=1}^{n} \lambda_2 \Delta PCY_{t-i} + \sum_{i=1}^{n} \lambda_3 \Delta TOT_{t-i} + \sum_{i=1}^{n} \lambda_4 \Delta INF_{t-i} + \sum_{i=1}^{n} \lambda_5 \Delta DR_{t-i} + \sum_{i=1}^{n} \lambda_6 \Delta BDEF_{t-i} + \sum_{i=1}^{n} \lambda_7 \Delta M2_{t-i} + \varepsilon_t$$

4.5.4 Diagnostic Tests

4.5.4.1 Stability tests

The AR roots graph was used to check for the stability of lags chosen, the lags of the model chosen are considered stable if all roots lie inside the unit circle. For stability of the model, the cumulative sum of recursive residuals (CUSUM) and the CUSUM of squares (CUSUMSQ) tests were carried out, the model is considered stable if plots of CUSUM stays within the critical 5 percent bounds. To check if the model was correctly specified, Ramsey-Reset test was conducted.

4.5.4.2 Residual Diagnostic tests

The residual diagnostic tests that were used in this study were normality test, autocorrelation test, heteroscedasticity test and multicollinearity test. These tests are employed to check if the model adheres to the classical linear regression assumptions. In testing for normality, autocorrelation, heteroscedasticity and multicollinearity, Jarque-Bera normality test, Breusch-Godfrey serial correlation LM test, Breusch-Pagan-Godfrey heteroscedasticity test and correlation matrix were used respectively.

4.6 Data Source

This study uses secondary, annual time series data covering the period from 1982 to 2014. The sample period was determined in accordance with the availability and accessibility of data on the variables under study. The study mainly uses data from, Central Bank of Lesotho (CBL) International Monetary Fund Database (World Economic Outlook) and World Bank Database (World Development Indicators).

CHAPTER FIVE

EMPIRICAL ANALYSIS

5.1 Introduction

This chapter presents the empirical results. The chapter starts with investigating the time series properties of the variables used, since it is mandatory when considering use of ARDL bounds approach to ensure that all variables are integrated of order 1 and 0 only (not order 2). The tests for equilibrium relationships will then follow. Results from estimates of the ARDL model, both the short run and the long run are then presented and discussed which will be followed by the diagnostic tests of the model. The econometric package E-views 9 was used for this study.

5.2 Unit root test

As mentioned earlier, ARDL approach requires that all variables should be integrated of either order 0 or order 1 only. Since employing ARDL approach in the presence of variables integrated of I(2) or higher order, leads to the calculated F-Statistic being invalid (Narayan, 2004). The study established the order of integration for each variable using Augmented Dickey-Fuller (ADF) and Phillips-Peron (PP). Table 5.2 presents the results from ADF unit root test and table 5.3 presents results for PP unit root test.

Table 2: ADF Unit root test results

VARIABLE	IN LEVELS			FIRST DIFFERENCE		
	t-statistic	probability	Order	t-statistic	probability	Order
NSAV	-3.127616	0.0344**	I(0)			
BDEF	-2.946684	0.0511**	I(0)			
DR	-1.329246	0.6037	I(1)	-4.929328	0.0004***	I(0)
INF	-1.989158	0.2898	I(1)	-6.587110	0.0000***	I(0)
M2	-1.724150	0.4099	I(1)	-5.688319	0.0001***	I(0)
PCY	-0.109365	0.9924	I(1)	-6.613467	0.0000***	I(0)
TOT	-3.514834	0.0140***	I(0)			

Source: E-views Simulations

Where: NSAV= National Savings, BDEF=Budget Deficit, DR= Deposit Rate, INF=Inflation, M2=Money supply, PCY= GDP Per capita Income and TOT= Terms of Trade

Table 3: PP Unit root test results

VARIABLE	IN LEVELS			FIRST DIFFERENCE		
	t-statistic	probability	Order	t-statistic	probability	Order
NSAV	-2.853013	0.0623**	I(0)			
BDEF	-3.058624	0.0401**	I(0)			
DR	-2.107605	0.5222	I(1)	-6.899423	0.0000***	I(0)
INF	-3.633195	0.0426**	I(0)			
M2	-1.746063	0.7068	I(1)	-10.29320	0.0000***	I(0)
PCY	1.418717	1.0000	I(1)	-5.417921	0.0006***	I(0)
TOT	-3.335269	0.0787**	I(0)			

Source: E-views Simulations

*, **, *** symbolises that the null hypothesis of no unit root is rejected at 10%, 5% and 1% significance level, respectively.*

> ➤ *I (0) mean the variable is stationary at levels i.e. integrated of order zero.*
>
> ➤ *I (1) mean the variables stationary at first difference i.e. integrated of order one*

N.B: The variables are defined as before.

The results from the ADF unit root test indicate that National savings (NSAV), Budget Deficit (BDEF) and Terms of Trade (TOT) are stationary at levels, whereas, Deposit rate (DR), Inflation (INF), Money Supply (M2) and Per Capita income (PCY) are stationary at first difference.

On the other hand, the PP unit root test report that National savings (NSAV), Budget Deficit (BDEF), Inflation (INF) and Terms of Trade (TOT) are stationary at levels, whereas, Deposit rate (DR), Money Supply (M2) and Per Capita income (PCY) are stationary at first difference.

From both unit root tests, thus ADF and PP, the results indicate that there is a mixture of I (1) and I (0) variables, which brings us to the conclusion that the ARDL modelling is suitable, since it suitable to use when there is a mixture of both I(0) and I(1) series. The next step is to establish whether there is a long-run relationship among variables using ARDL bounds test for cointegration procedure. However, before testing for cointegration, this approach requires that an appropriate lag length should be determined. The results of lag order selection criteria are shown below.

5.4 Optimum Lag Length criterion

Table 4: VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-104.9659	NA	103.0559	7.464392	7.791338	7.568985
1	-102.1906	4.070350*	91.96205*	7.346043*	7.719695*	7.465577*
2	-102.1374	0.074571	98.52600	7.409158	7.829518	7.543635
3	-101.7669	0.494010	103.5162	7.451125	7.918190	7.600543

Source: E-views Simulations

* indicates lag order selected by the criterion

Where: LR= sequential modified LR test statistic, FPE= Final prediction error, AIC= Akaike information criterion, SC= Schwarz information criterion and HQ= Hannan-Quinn information criterion. Each test is at 5% level.

Since the majority of criterions have selected lag 1, thus, lag p=1, then this means lag p=1 will be used for the model. To check the stability of the lags chosen, we validate for the inverse roots of the autoregressive characteristic of our unrestricted ECM. Appendix 1 confirms that the lags chosen are dynamically stable since all the roots are inside the unit circle.

Having established the optimal lag length, the next step is to apply a bounds F-test to equation (4) in order to establish long-run relationship between the variables under study (see appendix 2 for a selected ARDL model (1, 0, 2, 0, 0, 2, 2)). The results of the bounds test are reported below.

5.5 Results of cointegration (Bounds Test)

The F-test was used to test the null hypothesis of no cointegration among the variables in the model as mentioned earlier in chapter 4 above. The results of the F-test are reported in Table 5 below.

Table 5: ARDL Bounds Test Results

Test Statistic	Value	k
F-statistic	4.425161	6

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	1.99	2.94
5%	2.27	3.28
2.5%	2.55	3.61
1%	2.88	3.99

Source: E-views Simulations

The ARDL bounds test results show that our F-statistic value is 4.425161, and it is significantly above the upper bounds at 10 percent, 5 percent and 1 percent level of significance with the number of regressors (k) being six. Hence suggesting that we reject our null hypothesis of no long-run relationships exist, and conclude that cointegration exist.

Now that it is determined that there exists a long run relationship amongst the variables, it is imperative to determine the nature of the long run relationship among the variables. The ARDL cointegrating and long run form results follow.

5.6: Empirical Long-run and Short-run Results

Table 6: ARDL model (Long-run Results for determinants of savings)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BDEF	0.688934	0.228424	3.016034	0.0078***
DR	-2.966594	0.825796	-3.592405	0.0022***
INF	0.001700	0.602635	0.002820	0.9978
M2	0.440749	0.229570	1.919888	0.0718**
PCY	-0.008609	0.004264	-2.019112	0.0595**
TOT	0.898233	0.269004	3.339103	0.0039**
C	-24.774021	40.488002	-0.611885	0.5487

Source: E-views Simulations

- ➤ *, **, and *** indicate significance at the 10, 5 and 1 percent levels respectively.
- ➤ Where: BDEF= Budget deficit, DR=Deposit rate, INF=Inflation, M2=Money Supply, PCY= GDP Per capita income, TOT=Terms of Trade

5.6.1: Discussion of Long run results

The results indicate that there is positive and high statistically significant long-run relationship between budget deficit and national savings (at 1% level of significance). The intuition in this result is that when the government runs a budget deficit, savings increase as the private sector respond by saving more to offset any undesirable effect on future generations. These findings are also supported by Rational Expectations Hypothesis which states that economic agents are rational as they amass all efficient and relevant information before making an economic decision. These results are in line with our expectations. Similar results were obtained by Ang

& Sen (2011) and Hondroyiannis (2006). They observed that there is a positive and statistically significant relationship between government budget deficit and savings.

The results further indicate an inverse and highly significant relationship between deposit rate and national savings (at 1% level of significance). These results however do not meet our expectations as we expected a positive relationship between these two variables. The theory stipulate that as deposit rate increase, savings will also increase as more economic agents will want to earn more interest on their savings. However, an intuition about this negative relationship could be because the income effect outweighs the substitution effect in Lesotho. These findings are the same as of studies by Kwakwa (2013) and Nwachukwu & Egwaikhide (2007), who also obtained a negative and statistically significant relationship between deposit rate and savings.

Inflation was found to have a positive relationship with national savings, however this relationship was found to be statistically insignificant. The intuition is that during high inflation periods, individuals would increase their savings for future consumption. These results are contrary to our priori expectations and theory which assert to the point that inflation discourages savings. Inflation makes it difficult for economic agents to save as the consumption has become expensive due to high prices, leaving no room for savings. Chaudhry et al (2014) and Hondroyainnis (2006) found similar results for their studies as they obtained a positive relationship between these variables.

Moreover, money supply indicated a positive and significant relationship with national savings (at 5% level of significance). This result could be attributed to the fact that an increase in money supply leads to an increase in prices, hence rational economic agents resort to saving so as to maintain the consumption patterns in the future. This results are consistent with findings of Ahmad & Mahmood (2013), who discovered that money supply is positively related to national savings.

The results further revealed a negative and statistically significant relationship between GDP per capita income and national savings (at 1% level of significance). By implication, disequilibrium in income distribution, high inflation rates and economic downturn may have caused this negative relationship for Lesotho. These results are not in line with our expectations and theories such as Absolute Income Hypothesis, permanent income hypothesis and life cycle hypothesis. This theories all assert to the point that increase in income implies that more funds will be available for both consumption and savings, as not all funds will be used for

consumption, rather part of it will be saved for future consumption. Similar results were reported by Ahmad & Mahmood (2013), who established a negative and statistically significant relationship between GDP per capita income and national savings. This results are however inconsistent with our priori expectations.

Terms of trade had a positive and statistically significant relationship with national savings (at 1% level of significance). The intuition is that Harberger-Laursen-Metzler hypothesis holds for Lesotho, that is, an improved terms of trade has a positive impact on savings. This result is consistent to the findings by Kwakwa (2013) for Ghana.

Table 7: ARDL model (Short-run Results for determinants of savings)

Short run results				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(BDEF)	0.627192	0.187652	3.342320	0.0039***
D(DR)	-1.122819	0.732674	-1.532494	0.1438
D(DR(-1))	2.298960	0.668733	3.437783	0.0031***
D(INF)	0.171831	0.425718	0.403627	0.6915
D(M2)	0.363591	0.286056	1.271049	0.2208
D(PCY)	0.035015	0.016746	2.090958	0.0519**
D(PCY(-1))	0.071683	0.014363	4.990895	0.0001***
D(TOT)	0.163283	0.131446	1.242209	0.2310
D(TOT(-1))	-0.746054	0.143368	-5.203756	0.0001***
CointEq(-1)	-0.940379	0.134388	-6.997481	0.0000*

R-squared	0.803480	Prob(F-statistic)		0.000870
Adjusted R-squared	0.653200	Durbin-Watson stat		1.288459

Source: E-views Simulations

- All variables are in first difference form
- Where: D(BDEF)= Budget deficit at first difference, D(DR)= Deposit Rate at first difference, D(DR(-1))= first lag of Deposit rate at first difference, D(INF)=Inflation at first difference, D(M2)= Money supply at first difference, D(PCY)= GDP Per capita income at first difference, D(PCY(-1))= first lag of GDP per capita at first difference, D(TOT)= Terms of trade at first difference, D(TOT(-1))= first lag of terms of trade at first difference and CointEq(-1)= error correction term

5.6.2: Discussion of the Short run results

The error correction term CointEq(-1) is negative and statistically significant. The coefficient of -0.94 indicates the rate of convergence to equilibrium. It implies that the variables adjust to long run equilibrium at a speed of 94 percent. This implies that 94 percent of the disequilibrium in the long-run relationship will be corrected each year. This speed of adjustment of 94 percent, it being negative and significant confirms the results of the F-test that there is a long run relationship amongst the variables.

The results reveal that in the short run, budget deficit and national savings are positively related, and statistically significant (at 1 percent level of significance). These results are in line with theory and our priori expectations. Also the study observed that the lagged value of deposit rate has a positive and statistically significant relationship with national savings in the short run (at 1 percent level of significance). This is in line with McKinnon-Shaw hypothesis which stipulates that negative or lower deposit rates leads to lower savings, which by implication means that higher deposit rates leads to higher savings. These results further indicate that in Lesotho, in the short run, substitution effect dominates the income effect. Similar results were found by other studies (see Hasnain et al., 2006; Kazmi, 1993; Athukorala & Sen, 2004; Hondrayiannis, 2006 and Ahmed, 2007).

Moreover, inflation was found to have a positive relationship with national savings in the short run, however, this relationship was found to be insignificant. On the other hand, the coefficient of money supply was found to be positive, implying that an increase in money supply increases the national savings in Lesotho in the short run. The effect of money supply on national savings however was found to be insignificant.

The results further reveal that the lagged value of GDP per capita income has a positive relationship with national savings in short run. This relationship was found to be highly significant (at 1 percent level of significance). This is in line with our priori expectations and also with theories such as absolute income hypothesis, permanent income hypothesis and life cycle hypothesis. Higher levels of income encourages economic agents to save more so as to be able to maintain their consumption patterns in future. These results are in line with some findings of other researchers (see Kwack & Lee, 2005; Hondrayiannis, 2006; Epaphra, 2014; Nwachukwu & Odigie, 2009; Jain & Baliyan, 2014).

The coefficient of the lagged terms of trade was found to be negative, meaning that an increase in lagged terms of trade leads to a fall in national savings. This coefficient was found to be highly statistically significant (at 1 percent level of significance). These findings support our priori expectations. By intuition, Harberger-Laursen-Metzler hypothesis does not hold, that is terms of trade improvement will cause a decrease in savings. These findings are the same as of studies by Athukorala & Sen (2004) and Jain & Baliyan (2014). They also obtained an inverse relationship between terms of trade and savings.

5.7 Diagnostic Test Results

Diagnostic tests ensure the model framework satisfies the classical linear regression assumptions so as to have coefficient estimates that are reliable.

Normality Test

According to one of the assumptions of classical regression, the errors should be normally distributed. The Jarque-Bera normality test is used to assess the null hypothesis of normality of errors in the study.

The results for Jarque-Bera normality test shows the probability of 0.8034, which simply means that the error terms are normally distributed since we fail to reject the null hypothesis of normality of errors (Refer to appendix 3(a)).

Heteroscedasticity

The variance of the errors in the model are said to suffer from the problem of heteroscedasticity if they are not constant. The errors may be assumed to be homoscedastic whereas they are indeed heteroscedastic. The Breusch-Pagan-Godfrey heteroscedasticity test is used to assess the null hypothesis of homoscedasticity of errors in the study.

The test for heteroscedasticity reported the probability value of 0.9771, implying that we fail to reject the null hypothesis of homoscedasticity of errors. This results therefore indicate that the errors of the ARDL model are homoscedastic. Appendix 3(b) report fully the results for heteroscedasticity test.

Autocorrelation

Serial correlation refers to correlation between members of series of observations ordered in time or space (Gujarati and Porter, 2009). When series suffer from the problem of serial correlation, the standard errors and estimators tend to be inefficient. Breusch-Godfrey serial correlation LM test is used to test for serial correlation with null hypothesis of no seral correlation.

The results for serial autocorrelation indicate that there is no serial correlation in our model, since the probability value is 0.1190, meaning that we fail to reject the null hypothesis of no serial correlation (see appendix 3(c)).

Stability Tests

The Ramsey-Reset test was conducted to check whether our model is correctly specified. This test helps us to see whether our model does not suffer from the problem of omitted variable bias.

The Ramsey-Reset test shows the probability value of 0.2704. Since this value is statistically insignificant, we fail to reject the null hypothesis and conclude that our model is correctly specified. This results are fully stipulated in appendix 3(d).

Furthermore, we test for stability of the models used for the study using Cumulative sum proposed by Borensztein et al. (1998). Cumulative sum of recursive residuals (CUSUM) and the CUSUM of squares (CUSUMSQ) tests indicate that our model is stable since plots of CUSUM stays within the critical 5 percent bounds. The stability tests fully appear in appendix 3(e).

Multicollinearity Test (residual correlation matrix)

Multicollinearity test determines whether there exists a perfect or exact linear relationship amongst some or all independent variables of a regression model. The results for multicollinearity test indicate that the model does not suffer from the problem of high multicollinearity. Multicollinearity is considered to be high, hence problematic if pair wise correlation between two regressors is greater than 0.8. Hence given the fact that our residual correlation matrix (see appendix 3(f)), indicates that different relationships among variables are less than 0.8, this concludes that our model does not have a problem of multicollinearity among the variables.

5.8 Summary of Empirical Results

National savings in Lesotho is influenced by budget deficit, deposit rate, money supply, GDP per capita income and terms of trade in the long run. However, only the budget deficit carried the expected sign. In the short run, the budget deficit, the first lag of deposit rate, the first lag of GDP per capita income and the first lag of terms of trade all influence national savings in Lesotho. One important thing to note about short run results is that all the significant variable carry the correct sign as per our priori expectations.

An ARDL model used in this study is stable and valid as shown by the stability and residual diagnostic tests.

CHAPTER SIX

CONCLUSION, POLICY IMPLICATIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter marks the end of the study. This chapter discusses the results of the previous five chapters of the study and summarises the presentations made in the previous chapters. At the end of this chapter, policy recommendations drawn from the findings of the study are provided together with limitations and suggested areas of further study.

6.2 Conclusion

The main objective of this study was to provide an empirical investigation on the factors that determine national savings in Lesotho. The specific objectives of the study were to examine the key factors which influence savings in Lesotho and to also derive policy implications. These objectives were addressed using empirical analysis of secondary data on all the variables. The data of the variables was obtained from IMF database (world economic outlook database), the UNCTAD database and the World Bank database (world development indicators). This data is publicly available on line.

The time series techniques were used to fulfil this purpose, using the annual data from 1982 to 2014. The stationary test was carried out using the Augmented Dickey Fuller (ADF) test and Phillips-Peron (PP) test, for which a mixture of I (0) and I (1) series were obtained. ARDL bounds test was carried out to check whether variables were cointegrated, and in deed the results reflected the long relationship amongst the variables. Moreover, the diagnostic tests such as stability tests and residual tests were carried out. The AR Roots test, cumulative sum of recursive residuals (CUSUM) and the CUSUM of squares (CUSUMSQ) tests were carried out to ascertain the stability of the model. Residual tests such as autocorrelation, heteroscedasticity, and normality tests were carried out.

 The empirical results reveal that the long-run relationship between national savings and its determinants may differ from its short-run dynamics. Specifically, the results indicate that only

budget deficit's effect on national savings is the same both in the long run and in the short run. They further indicated that inflation does not have an impact at all both in the long run and in the short run.

The results are very interesting for Lesotho. It was observed that, in the long run, all variables were significant except inflation, this simply means that budget deficit, deposit rate (DR), money supply (M2), GDP per capita income(PCY) and terms of trade(TOT) have an influence on national savings in Lesotho. Inflation (INF) was the only variable found to have no impact on national savings. However, only the budget deficit (BDEF) had the expected sign. Budget deficit, money supply and terms of trade were found to have a positive effect on national savings in Lesotho.

On the other hand, deposit rate and GDP per capita income had a negative effect on national savings, of which these inverse relationship was not consistent with our priori expectations.

The interesting part is that, in the short run, most variables had expected signs. Just like in the long run, budget deficit had as expected, positive effect on national savings. Deposit rate had an expected positive effect for the first lag in the short run, and GDP per capita also had a positive effect on national savings as per our priori expectations. On the other hand, terms of trade was found to have a negative effect on national savings in Lesotho for the first lag, this sign is also in line with our expectations. Money supply and inflation were both found to have no impact at all to national savings in the short run.

6.2 Policy recommendations

The findings from this study have several policy implications;

Firstly, given the fact that budget deficit is shown to have a major effect on national savings in Lesotho, the government of Lesotho should implement its fiscal policy in a way that its expenditures are greater than its revenue. This has proven to have a positive effect on Lesotho's national savings, as rational economic agents are aware that this could have undesirable effect on future generations if they do not save more. Increase in savings by the private sector leads to increase in private investment and production capacity of the economy, hence leading to the rise in economic growth.

Secondly, the GDP per capita income was found to have a negative effect on national savings in the long run. GDP per capita income measures the overall level of economic activity, for which an increase in GDP per capita implies that economic agents have realised an increase in their incomes or that more people have been absorbed in the labour force. Therefore high GDP per capita income is expected to lead to an increase in savings. This inverse relationship therefore indicates that GDP per capita income is low, which implies that there is income disequilibrium, low income, and a problem of high unemployment rate in the kingdom of Lesotho. The government should therefore;

➢ To increase the productive base of the economy in order to promote real income growth.

➢ Address the problem of unemployment which is mostly realised amongst the youth, provision of training and financial assistance in entrepreneurship skills would help reduce the unemployment rate. A thorough investigation into the qualification held by all government employees would help identify those employees who are holding positions that they are not qualified for (this problem is mostly caused by the fact that people are not employed according to their qualification but their support for certain political parties).

➢ The government should also review salaries nationwide in order to minimise the income gap. Low income earners are not able to save as their income can only maintain their consumption.

Thirdly, it is no secret that Lesotho is landlocked by South Africa, which means that most of South African policies affect Lesotho, therefore aligning Lesotho's policies to that of South Africa would discourage many Basotho from resorting to use South Africa's facilities. The deposit rate in South Africa is higher than in Lesotho, which encourages Basotho to deposit their savings in South African banks, this is why even an increase in Lesotho's deposit rate has no impact on Basotho, because their savings are already tied up in South African banks. Lesotho's government may also limit the amount of money that is allowed to be kept in international banks as this would force them to save most of their money domestically.

Lastly, the government should resort to diversification, the mining industry is growing in Lesotho, and so the government should support the mining industry and limit spending most of its income in sectors such as agricultural sector which are not bringing more returns.

6.3 Limitations of the study and Recommendations for Future Research

The data unavailability was the biggest problem especially for earlier years, the intension was to cover the period from 1974 to 2014, the period would have incorporated that which was used by Matlanyane, (1997), but due to unavailability of data, given the fact that this study uses variables that are different from those used by Matlanyane, (1997), the period covered was reduced to 1982 to 2014. The study may not have covered all determinants of national savings in Lesotho, so given the fact that already there is few literature on the subject, it may be imperative to investigate this matter more, covering more variables which were not included in this study. There are so many econometric techniques that can be employed to see if different results can be obtained.

South Africa has a major influence on Lesotho's economy, which means that it also has a major effect on Lesotho's policies, so a study that capture how South Africa's influence is impacting Lesotho's economy could be useful. If for instance the same study can be undertaken but instead use South Africa's deposit rate to see whether they have an impact on Lesotho's national savings.

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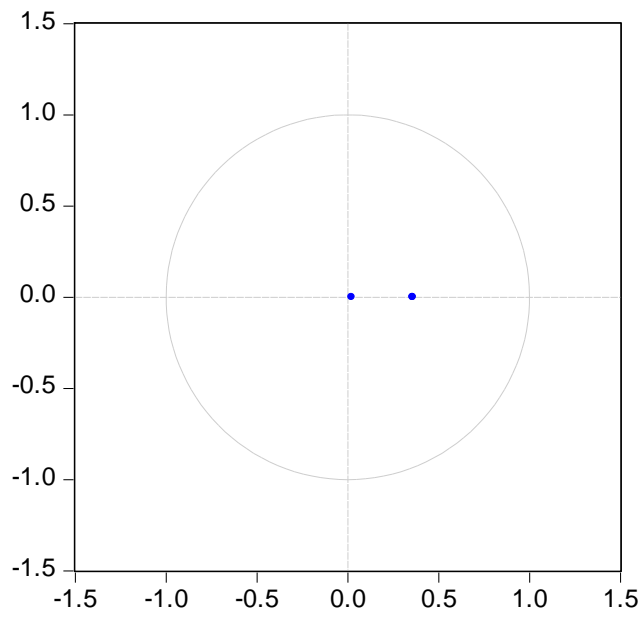
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Appendix 1

The inverse roots of ARDL model

Inverse Roots of AR Characteristic Polynomial

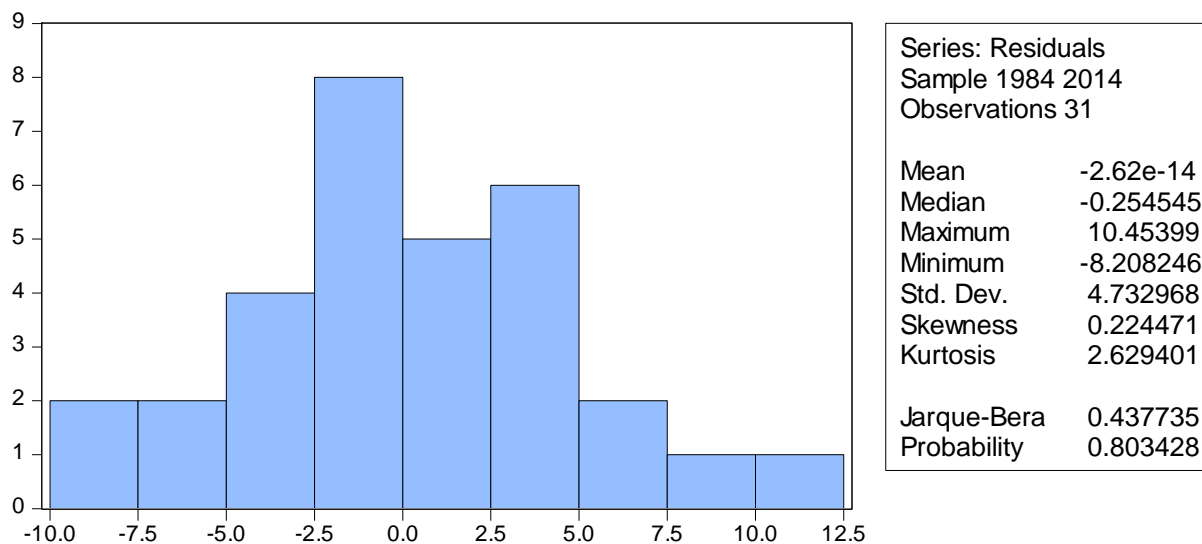**Source: E-views Results**

ARDL model (1, 0, 2, 0, 0, 2, 2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
NSAV(-1)	0.071757	0.141363	0.507609	0.6182
BDEF	0.639498	0.196596	3.252848	0.0047
DR	-1.001181	0.964305	-1.038241	0.3137
DR(-1)	0.556507	1.178132	0.472364	0.6427
DR(-2)	-2.309046	0.891371	-2.590443	0.0191
INF	0.001578	0.559462	0.002820	0.9978
M2	0.409122	0.215978	1.894278	0.0753
PCY	0.032272	0.020367	1.584528	0.1315
PCY(-1)	0.032871	0.028035	1.172508	0.2572
PCY(-2)	-0.073135	0.022667	-3.226484	0.0050
TOT	0.165286	0.182262	0.906860	0.3772
TOT(-1)	-0.081427	0.184362	-0.441670	0.6643
TOT(-2)	0.749920	0.183560	4.085416	0.0008
C	-22.99631	37.41682	-0.614598	0.5470

R-squared	0.803480	Mean dependent var	32.24755
Adjusted R-squared	0.653200	S.D. dependent var	10.67654
S.E. of regression	6.287381	Sum squared resid	672.029
Log likelihood	-91.66998	F-statistic	5.346560
Durbin-Watson stat	1.288459	Prob(F-statistic)	0.000870

Source: E-views Results

Appendix 3

Diagnostic tests

Appendix 3(a): Normality Test

Series: Residuals	
Sample 1984 2014	
Observations 31	
Mean	-2.62e-14
Median	-0.254545
Maximum	10.45399
Minimum	-8.208246
Std. Dev.	4.732968
Skewness	0.224471
Kurtosis	2.629401
Jarque-Bera	0.437735
Probability	0.803428

Source: E-views Simulations

Appendix 3(b): Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.246295	Prob. F(13,17)	0.9930
Obs*R-squared	4.913254	Prob. Chi-Square(13)	0.9771
Scaled explained SS	1.203765	Prob. Chi-Square(13)	1.0000

Source: E-views Simulations

Appendix 3(c): Serial Autocorrelation Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	3.278381	Prob. F(2,15)	0.1659
Obs*R-squared	9.429043	Prob. Chi-Square(2)	0.1190

Source: E-views Simulations

Appendix 3(d): Ramsey Reset test

Ramsey RESET Test

Specification: NSAV NSAV(-1) BDEF DR DR(-1) DR(-2) INF M2 PCY PCY(

 -1) PCY(-2) TOT TOT(-1) TOT(-2) C

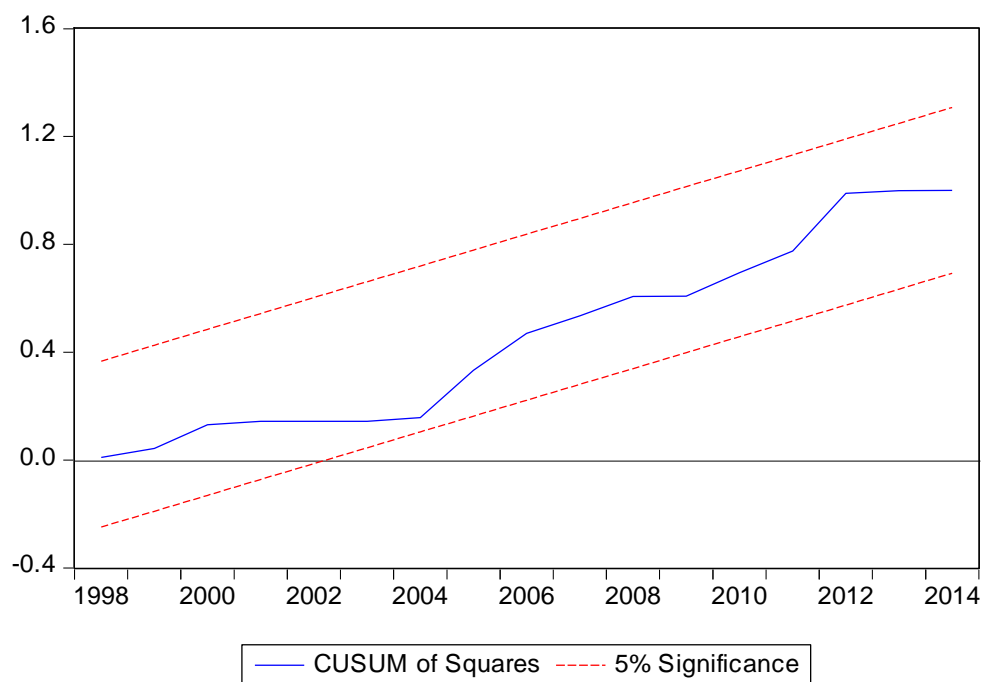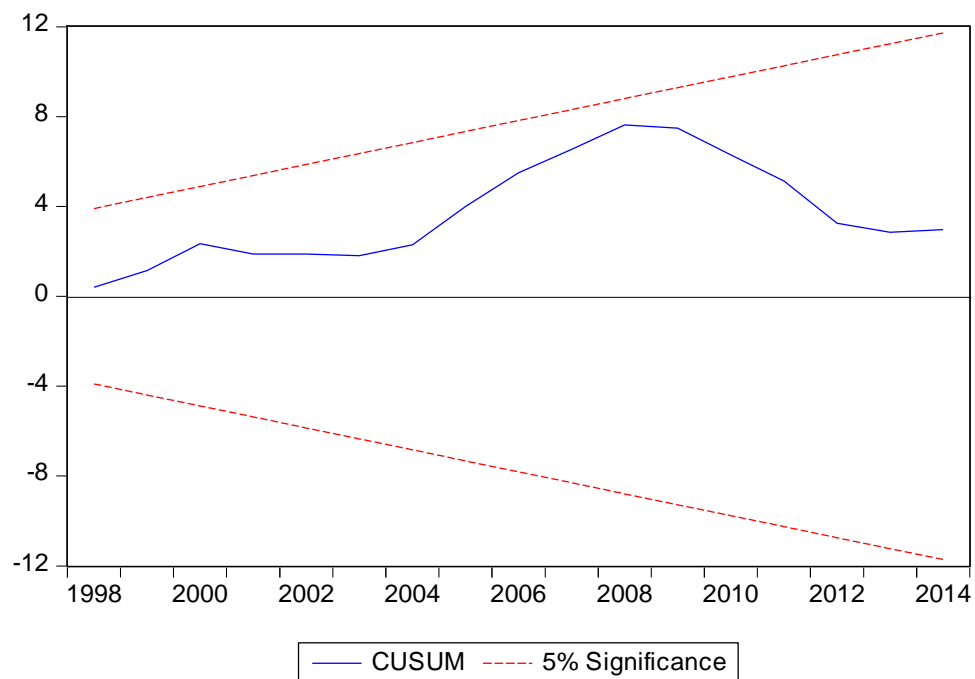Omitted Variables: Squares of fitted values

	Value	Df	Probability
t-statistic	1.141685	16	0.2704
F-statistic	1.303445	(1, 16)	0.2704

F-test summary:

	Sum of Sq.	Df	Mean Squares
Test SSR	50.62309	1	50.62309
Restricted SSR	672.0296	17	39.53115
Unrestricted SSR	621.4065	16	38.83791

Source: E-views Results

Appendix 3(e): Stability Test

Appendix 3(f): Multicollinearity Test (residual correlation matrix)

	NSAV	BDEF	DR	INF	M2	PCY	TOT
NSAV	1.000000	0.493648	0.110054	0.288693	0.252046	-0.256747	0.167720
BDEF	0.493648	1.000000	0.196860	0.217459	0.075238	-0.106949	-0.004669
DR	0.110054	0.196860	1.000000	0.739002	0.508274	-0.791942	0.627501
INF	0.288693	0.217459	0.739002	1.000000	0.620037	-0.748749	0.453186
M2	0.252046	0.075238	0.508274	0.620037	1.000000	-0.565431	0.228555
PCY	-0.256747	-0.106949	-0.791942	-0.748749	-0.565431	1.000000	-0.712382
TOT	0.167720	-0.004669	0.627501	0.453186	0.228555	-0.712382	1.000000

Source: E-views Results