

DETERMINANTS OF PRIVATE SAVING IN TANZANIA

DAVID MODEST TESHA

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Supervisors:

Prof. F.M. Mwega

Mr. R. Kabando

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DECLARATION

I hereby declare that this paper is my original work and has not been presented for the award of a degree in any other university.

CANDIDATE: DAVID MODEST TESHA

SIGNATURE:

DATE.....

This paper is submitted for the award of the degree of Master of Arts in Economics with our approval as university supervisors.

PROF. F.M. MWEGA

DATE

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MR. RAPHAEL KABANDO

DATE

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DEDICATION

I dedicate this work to my parents Mr. and Mrs. Tesha for their love, support and encouragement.

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Foremost, I am grateful to God for seeing me through my years of University education. He has been the wind beneath my wings. His Grace and Mercy has brought me thus far and I am grateful.

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The views expressed in this paper are my own and do not represent the views of any of the named person(s) or institution(s). I solely bear the responsibility for any errors and/or omissions.

ABSTRACT

Saving plays a key role in economic growth and development by accelerating investments in the economy. However, private saving rates in Tanzania continue to be a blessing in disguise as the country recorded an average of 14.2% with a minimum of 3.5% over the past thirty three years. This actually shows that the minimum rate is still very small however on average the figure is impressive.

This study empirically investigates the determinants of private saving in Tanzania using secondary annual time series data for the period 1980 – 2012, with the objective of establishing the factors that affect private saving in the country and suggest policy measures that can help accelerate the rate of private saving.

To be able to identify the factors that affect private saving in Tanzania, the study employed OLS and Error correction model fitted in annual time series data. The results indicate that real GDP per capita and external savings in the long-run are the only variables that affect private saving. However, in the short-run external savings only was found to be the key determinant of private saving. In addition, it was found that economic growth in Tanzania causes private savings. Therefore, the study recommends the improvement in economic base as well as export promotion as a measure of reducing the current account deficit that has an adverse effect on private saving in Tanzania.

TABLE OF CONTENTS

CHAPTER ONE.....	1
INTRODUCTION.....	1
1.1 Background.....	1
1.2 Statement of the problem.....	8
1.3 Research objectives	9
1.3.1 General objective	9
1.3.2 Specific objectives	9
1.4 Research justification	9
CHAPTER TWO.....	11
LITERATURE REVIEW	11
2.1 Theoretical Literature review.....	11
2.1.1 Theories of saving.....	11
2.1.1.1 The Keynesian theory of Absolute Income Hypothesis.....	11
2.1.1.2 Milton Friedman’s Permanent Income Hypothesis	12
2.1.1.3 Life-Cycle Hypothesis	13
2.1.1.4 Duesenberry relative income hypothesis	14
2.1.1.5 The McKinnon-Shaw Hypothesis.....	15
2.1.2 Other Determinants of Private Saving	15
2.1.2.1 External savings.....	15
2.1.2.2 Public savings	16
2.2 Empirical Review	16
2.3 Overview of the Literature.....	22
CHAPTER THREE	23

METHODOLOGY	23
3.1 Conceptual Framework	23
3.2 Analytical Framework	23
3.2.1 Model specification	23
3.3 Expected Results	25
3.4 Data Type and Estimation techniques	26
3.4.1 Data Type and Source	26
3.4.2 Estimation Techniques	27
3.4.3 Granger-Causality Test	27
CHAPTER FOUR	29
4.0 EMPIRICAL ESTIMATION AND RESULTS	29
4.1 Introduction	29
4.2 Descriptive Data Analysis and Statistical Tests	29
4.4 Time series properties of the data	36
4.4.1 Unit Root Test	36
4.6 Error-Correction Model (ECM)	41
4.7 Post-Estimation Diagnostics	43
4.7.1 Ramsey RESET Test	43
4.7.2 Breusch-Pagan/Cook-Weisberg Test for Heteroskedasticity	44
CHAPTER FIVE	47
SUMMARY, CONCLUSION AND POLICY RECOMMENDATIONS	47
5.1 Introduction	47
5.2 Summary of the Study	47
5.3 Conclusion	48

5.4 Policy Implications and Recommendations.....	49
5.5 Limitations of the Study	51
5.6 Areas for further Study.....	51
REFERENCES.....	52

LIST OF TABLES

Table 4. 1: Descriptive Data Analysis	30
Table 4. 2: ADF Unit Root Test Results.....	37
Table 4. 3: Phillips-Perron (PP) unit root tests results	38
Table 4. 4: Co-integration Test Results	39
Table 4. 5: Error-Correction Model Estimates.....	42
Table 4. 6: Ramsey RESET Test Results	44
Table 4. 7: Breusch-Pagan/Cook-Weisberg Test for Heteroskedasticity Results.....	44
Table 4. 8: Breusch-Godfrey Serial Correlation Test Results	45
Table 4. 9: Results of Granger Causality Wald Test.....	46
Table 4. 10: Data set used.....	59

LIST OF FIGURES

Figure 1: Relationship between GDS and GDP for the period 1990-2010	6
Figure 4.3.1: Trends in private saving as a percentage of GDP.....	32
Figure 4.3.2: Trends in Real deposit rate of interest	33
Figure 4.3.3: Trends in external saving as a percentage of GDP	33
Figure 4.3.4: Trends in real GDP growth rate.....	34
Figure 4.3.5: Trends in public saving as a percentage of GDP.....	35
Figure 4.3.6: Trends in real per capita GDP	35

ABBREVIATIONS

GDP	Gross Domestic Product
GDS	Gross Domestic Savings
SSA	Sub-Saharan Africa
SMEs	Small and Medium Enterprises
TOT	Terms of Trade
LDCs	Less Developed Countries
MPS	Marginal Propensity to Save
DCs	Developed Countries
GNP	Gross National Product
ECM	Error Correction Method
URT	United Republic of Tanzania

CHAPTER ONE

INTRODUCTION

1.1 Background

There is no doubt that in developed and developing countries, savings play a key role in economic growth and development by accelerating the pace of investments in the economy. This argument has been supported empirically and theoretically by the work of various scholars. Harrod (1939) and Domar (1946) argued that national savings accelerate growth via investment.

The empirical evidence for example by Levine and Renelt (1992), found that higher rates of savings have translated into higher investment and higher growth rates. This result is consistent with the work of Romme (2003) who did a study on South Africa and found that private savings rate has a direct effect on economic growth through private investment. However, the extent to which the higher rate of savings in a country is translated into higher investment depends on well connected financial structure in form of financial institutions, assets and markets that link savers and investors by bridging the information gap and the transaction costs that may be involved.

In Sub-Saharan African Countries, the rate of economic growth has been impeded by the low level of savings mobilization making them depend much on foreign assistance in form of loans and aid to cover their current account deficits. This scenario is evident in the work of Mwega and Elbadawi (1998) who revealed that the rate of private savings in SSA declined from 11.4% to 7.5% of disposable income during the 1970s to 1980s. However, the decline was later recovered though partially to less than 9% in the 1990s.

This trend shows that private savings rate is still very low in the region leading to low levels of gross domestic investment (as a ratio of GDP) as the region recorded a declining rate from 21.4% to 17.2% from 1970s to 1990s.

In addition, in 2003, gross national savings as a ratio of GNI was approximately 17 per cent, compared to 23.1 per cent in all low-income countries. Gross domestic savings as a percentage of GDP was about 16 per cent while in East African Countries it ranges between 10 and 15 percent of the GDP (Osoro, 2010).

1.1.1 Evolution of financial system and savings in Tanzania

Soon after independence in 1961, the financial system inherited from the colonial government was dominated by private banks and non-bank financial intermediaries (NBFIs) that worked under the East African Currency Board (EACB) as the leading monetary institution equivalent to a central bank. In the early post-colonial years, the banks and the NBFIs functioned under fairly open market regime characterized by lack of government intervention in pricing of financial products and directed lending to potential borrowers. By then, banks and NBFIs were mostly branches of foreign banks, their deposit and lending interest rates in the domestic economy were determined in the foreign money markets, among others, the London stock exchange. Socio-political and economic developments in the early post-colonial period prompted the government to promulgate the Arusha Declaration of 1967 that, among others, advocated the *ujamaa* and self-reliance policy and a vision to the development of a socialist state in Tanzania.

Following the Arusha Declaration, first, in 1967 the government nationalized all, except one, (branch of) foreign commercial banks in mainland Tanzania (Nyagetera, 1997).

From these, the government established a state-owned commercial bank, namely, National Bank of Commerce (NBC), which started its operation in February 1967. In addition, the government also nationalized the NBFIs that operated in the country, including insurance companies and established a state-owned National Insurance Company (NIC). To this stand therefore, the nationalization led to almost total government ownership and control of the financial system in Tanzania.

In line with nationalization, the government further instituted several other measures targeted to provide for effective financial support of the goal of building *Ujamaa* and self-reliance by the state owned financial intermediaries. Among others, between 1972 and 1975, the measures adopted by the government included: Establishment of three development finance institutions for serving agriculture and housing sectors, namely, Tanzania Housing Bank (THB), Tanzania Rural Development Bank (TRDB), and Tanzania Investment Bank (TIB). In addition, the government innovated Annual Finance and Credit Plan (AFCP) that replaced the indirect monetary policy instruments preserved in the Bank of Tanzania Act of 1965. On the basis of the AFCP, the Government assumed the role of setting nominal interest rates and by annual credit plan (allocations), guaranteed cheap lending to the state-owned enterprises (SOEs) in the key sectors of the economy, namely, agriculture, industry, trade, mining, etc. To also guaranteed access to credit by the SOEs, the government dictated upon the branching by the banks and the NBFIs.

The interest rate ceiling set for lending by financial intermediaries led to very low nominal deposit rates that remained virtually constant for an extended period. It is on

record that prior to the launch of economic reforms in mid-1986, the Government had only increased interest rates two times, in 1979 and in 1981.

Thus, while government control of commodity prices may have underestimated official inflation, both lending and deposit rates prior to the launch of economic reforms in 1986 turned out to be very negative in real terms for a prolonged period.

In theory, and as established by some studies in Tanzania, the negative deposit interest rates during the period 1967-1988 taxed depositors and, as a result, undermined saving in general. On this account and an appreciation of growth implications of poor saving, the government brokered with the International Monetary Fund and the World Bank implementation of an economic reforms programme (ERP) that encapsulated liberalization of the financial sector since the mid-1986.

Like most other SSA countries, the liberalization of the financial sector in Tanzania was guided by policy prescription of the financial repression hypothesis (FRH) innovated by McKinnon (1973) and Shaw (1973) which maintains that positive real interest rates are a necessary condition for capital formation, quality investment, and attainment of both economic growth and development (Agénor and Montiel, 2008: 73; Collier and Mayer, 1983). Following this argument, the Government initiated deregulation of interest rates in order to encourage savings and reduce excess demand for loanable funds (URT, 1986:14-15).

In addition, in 1991 the government liberalized the financial sector by enacting a Banking and Financial Institutions Act (BFIA) No. 12 that allowed entry and exit of private

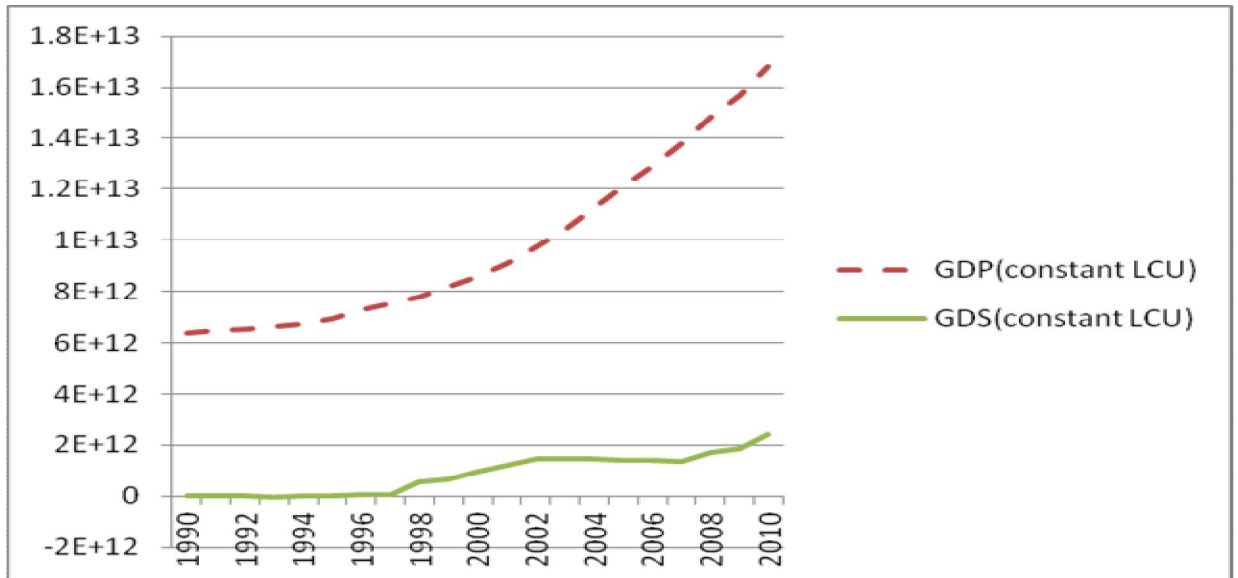
institutions in the financial sector. However, between 1986 and 1993 deregulation of interest rate was managed upward by BOT until 1994 when they become fully liberalized. As a result, the commercial banks and other financial institutions were empowered to set own interest rates, but on the basis of the discount rates that turn out in the Treasury Bills (TBs) markets introduced by the BOT in August 1993 to serve as one of the monetary policy instruments for mopping excess liquidity in the economy. Owing to its goal of mobilization of domestic resources in form of savings, the Central Bank of Tanzania has continued to sensitize the banks on the importance of maintaining lending and deposit rates that are consistent with the developments in the Treasury Bills market (Bank of Tanzania, 1996a: 7)

During the period 1980-2012, the level of savings as a percentage of GDP stood at an average of 14.2% with a minimum of 3.5%. Furthermore, gross domestic savings rate between the year 2000 and 2005 averaged at 16.3% which was to some extent lower than that of SSA which stood at 17.6% in 2005. The rate achieved by Tanzania is more promising as compared to other East African countries which grew from 5.3% in 2000 to 7.5% in 2005. Private savings rate was estimated at an average of 14.1% during the year 2000-2005 which is small compared to Mauritius which recorded a remarkable 30% of GDP (Osoro, 2010).

Higher savings rate as the one achieved by Mauritius is viewed as essential for growth to take place especially when the country cannot rely on external finance to fund its long term development projects. However, from the empirical point of view, there has been no consensus on the direction of causality between growth and savings. Some studies

revealed that growth drives savings while others favor savings to be the source of higher growth. The two scenarios are evident in the writing of Carrol and Weil (1993) and Sajid and Safraz (2008). The relationship between GDS and GDP for the case of Tanzania is depicted below.

Figure 1: Relationship between GDS and GDP for the period 1990-2010



Source: World Bank (2013)

From Figure 1, the correlation between domestic savings and the level of GDP can be observed. However, the direction of causality between savings and growth remain a question of empirical investigation. Following the study by Sajid and Safraz (2008), savings need to be considered seriously if the growth is to be sustainable.

That being the case, Tanzania like any other SSA country, her private savings represent the biggest proportion of its national savings as it covers the household and business savings. This savings are linked with the economy through private investments.

The low rate of private savings in the economy imply a widening private saving-investment gap that would result in poor performance of the private sector investments especially when savings is the only source of finance available. That being the case, the effect of low private saving in Tanzania has been witnessed during the year 1992 to 2000 when the average private capital flow was very low as it stood at 2.2% of GDP with a slight increase to an average of 4.4% of GDP in the next ten years i.e. from 2000 to 2010. (World Bank Databases, 2013).

Furthermore, World Bank (2003) in Turkey pointed out that poor performance by private sector is associated with low levels of private savings in the economy which affects much the small and medium entrepreneurs (SMEs) who do not have access to external funds to finance their businesses. That being the case, the low levels of private savings in Tanzania would reduce even the already low rate of private investment in the economy since SMEs covers the bigger part of investments in many SSA with no exception to Tanzania. If this disease of low private savings will not be addressed with short term and long term policies, it could increase the external debt of the country and therefore jeopardize the sustainability of the growth by exposing the economy to external shocks. To this stand, it is imperative to take a thorough research on private savings by exploring more on the determinants of private savings in the economy since very little has been done on the subject.

1.2 Statement of the problem

Savings play a key role in economic growth and development. Tanzania has had ups and downs in terms of savings rate since independence to date even though much emphasis has been put by the World Bank on the importance of savings by countries in order to fight against three major problems of poverty, unemployment and diseases.

The trend of saving rate in Tanzania has not been promising especially in 1990s as it reached its lowest point in 1992 when a 0% rate was recorded followed by -5% in 1993. These statistics clearly support the need for improvement in domestic resource mobilization in the form of private savings in order to reduce foreign dependence since we know that private savings cover the biggest proportion of the total savings.

Despite the fact that private savings play the key role in growth and development, little is known about the subject with reference to Tanzania. Previous studies focused on analyzing total savings without separating public from private savings. This scenario is evident in some of the previous works like that of Odhiambo (2008), Ndanshau (1998, 2012), Lipumba et al. (1990) and Mduma (1999).

One of the areas that little have been documented by previous researchers is on the determinants of private savings. This study therefore will seek to fill this gap by focusing on determinants of private savings with reference to Tanzania. Policies required to increase private savings will also be the target of this research since previous studies have pointed out general policies to increase savings without separating private from public savings. So for policy purposes especially to a resource constrained country like Tanzania, it is better to have a target policy and not general policy as far as savings is

concerned. The data from 1980 to 2012 will be used during the analysis to help achieve the objectives of the study.

1.3 Research objectives

1.3.1 General objective

To establish the factors that determines private savings in Tanzania.

1.3.2 Specific objectives

- ✓ To determine the effect of income, real deposit rate, public savings, external savings and GDP growth rate on private savings in Tanzania
- ✓ To determine the direction of causality between private savings and real GDP growth rate
- ✓ To suggest policies that could be used to increase the rate of private savings in Tanzania

1.4 Research justification

Most countries in developing world with no exception to Tanzania do not have sufficient domestic savings to raise the necessary capital for development. Instead they fund their budget with money borrowed from international donors in the form of aid and loans. To pay these debts, the countries rely much on money raised from exports. But since most of these countries have only raw materials to export, it means that they do not generate the necessary cash inflows to cover the cost of imported intermediate products needed to run the firms nor the countries budget as a whole leading to a worsening national debt over time.

This is evident in the 1970s when the growth of African external debt reached a proportion of 400%. In Tanzania, the government debt as a proportion of GDP in 2012 reached 46.80% that represent 6.86% increase from 39.94% recorded in 2010. Between 2002 and 2012, the all time higher government debt as a proportion of GDP stood at 66.56% that was recorded in 2002 with 35.02% recorded in 2008 being the lowest debt achieved in that period of time (IMF 2011).

The debt trend of African countries including Tanzania shows clearly that something is wrong with the mobilization of domestic resources with no exception to private savings. Therefore, this study will seek to address the problem of low private savings in Tanzania by solely focusing on determinants of private savings from which the key factors behind low private savings will be identified. The short term and long term measures will be suggested to curb the problem. The policy implications of the study will help the policy makers to know where to concentrate when making decisions as far as private savings is concerned to avoid jeopardizing future consumption with current accumulation of external debt.

CHAPTER TWO

LITERATURE REVIEW

2.1 Theoretical Literature review

There are a number of theories from the literature that explain the saving behavior of economic agents and these are discussed below.

2.1.1 Theories of saving

2.1.1.1 The Keynesian theory of Absolute Income Hypothesis

This theory focuses on current income to explain changes in savings and consumption behavior of economic agents. The income that is considered in this theory is the absolute/disposable income. Keynes postulates that consumption will increase at a decreasing rate as the income increases other things being constant. This implies that part of the income will be saved at an increasing rate as the disposable income increases. Therefore consumption and savings are functions of disposable income. However, other things being constant, it is assumed that rich people will save more than poor people (Keynes 1936).

Generally, the Keynesian saving function takes the linear form with constant MPS. Therefore we can express the saving function as follows.

$$S = a + bY + cY^2 \dots\dots\dots 1$$

Where; b is the constant MPS, this function assumes that $a < 0$, $0 < b < 1$ and $c > 0$ implying that as the level of income rises, the average propensity to save also rises. However with $Y=0$, savings is negative (low) (See, Mikesell and Zinser 1973).

2.1.1.2 Milton Friedman's Permanent Income Hypothesis

In this hypothesis, income and consumption is divided into two major components, the transitory and permanent components. Friedman argued that, permanent income should be considered when studying the saving and consumption behavior of economic agents, not absolute income as Keynes suggested.

The permanent income is defined as the lifetime income an individual is expected to earn out of the physical and human assets that he/she possesses while transitory income has been defined as the difference between actual income and permanent income over a specified period of time.

That being the case, permanent income is related to permanent savings implying that the higher the permanent income, the higher the savings rate other things being constant. It further assumes that economic agents are rational and they seek to maximize utility through consumption decisions. Friedman hypothesizes that individuals consume virtually no transitory income implying that $MPS_T=1$. This shows that past behavior will determine the consumption spending. However, changes in transitory income will lead to changes in savings, that is, the higher the transitory income, the higher the saving rate (Mikesell and Zinser 1973).

According to Friedman's hypothesis, the saving function at time t in its simplest form given the transitory and permanent income can be expressed as follows;

$$S_t = \theta_0 + \theta_1 Y_p + \theta_2 Y_{tr} \dots \dots \dots 2$$

Where, θ_1 is the marginal propensity to save given permanent income, θ_2 is the marginal propensity to save given transitory income, Y_p is permanent income and Y_{tr} is transitory income.

2.1.1.3 Life-Cycle Hypothesis

Ando and Modigliani (1963) hypothesis explains the consumption pattern of an individual in a specified period of time. According to this hypothesis, individuals seek to maintain their standard of consumption throughout their lifetime period. To be able to achieve that, a proportion of their income earned during their working years has to be saved in order to meet their consumption needs after retirement and to repay youth obligations.

Furthermore, other things being equal, if there is no change in population and income, then the total savings will be zero since savings accumulated during the earning years will be offset by dissavings that occur after retirement. However, with an upward change in population and income, the total savings will be positive since the working class is assumed to be larger than the dependent class, *ceteris paribus*.

2.1.1.4 Duesenberry Relative Income Hypothesis

According to Duesenberry (1949) relative income hypothesis, the proportion of income an individual is expected to use for consumption purposes will be the same at higher as well as at lower levels of absolute income implying that individuals care about status. Two key assumptions have been put in place in an effort to explain in detail the core of the hypothesis.

Below are the two assumptions:

- The consumption behavior of individuals in the society is interdependent
- The consumption relations are irreversible over time.

From assumption one, the consumption and saving behavior of an individual in the society does not depend on his/her absolute income but rather on his/her percentile position in the income distribution. This implies that the MPS of an individual would be higher if his/her percentile position in the income distribution is higher.

Assumption two focuses on the status that members of the society seek to maintain by ensuring that their consumption standards do not change over time. This implies that if a person has attained a certain standard of living he will not change his consumption pattern due to downward change in his current income as compared to previous peak income rather his consumption pattern will be maintained by consuming more of his disposable income even to a point of dissaving. On the other hand, if there is an upward change in income of a person, he would not aspire for a similar upward change in consumption level than the one already achieved meaning that his saving rate will increase due to increase in income.

2.1.1.5 The McKinnon-Shaw Hypothesis

The McKinnon-Shaw hypothesis (1973), postulates that oppressive regulations in the financial systems of many LDCs leads to financial repression that kills the incentive of potential savers and investors in the economy. The financial repression in many LDCs takes the form of higher reserve requirements, deposit interest rate control, lending rates control, quantity restriction on credit supply, mandatory credit allocations, among others. All these cause real interest rates to be unstable and negative especially in the presence of moderate and high inflation as is the case in many LDCs.

These regulations do impact negatively on the amount of domestic savings which affects capital formation and ultimately economic growth and development. Therefore to raise the level of savings in an economy, McKinnon-Shaw (1973) advocates for financial liberalization especially interest rate decontrol so as to motivate potential savers to save more.

2.1.2 Other Determinants of Private Saving

2.1.2.1 External savings

From the literature, it is viewed that when a country rely much on external capital inflow to fund its short and long term development projects, then the rate of domestic savings will go down. That is the case, because the government will not put much effort to mobilize domestic savings due to external finances. Therefore, a negative relationship between domestic savings and external savings is observed.

2.1.2.2 Public savings

According to Mwega and Elbadawi (1998), public savings may or may not affect private savings depending on the assumption made, this may have some impact (Keynesian) or is fully crowded-out (Ricardo equivalence). With idle resources in the Keynesian model, budget deficit would have a positive but less than a coefficient of one that may lead to an increase in output.

They further stressed that, with borrowing constraints, government dissaving is directly offset by private savings since individuals will save more as they fear that the government dissaving will result to future increase in taxes.

2.2 Empirical Review

There are a number of empirical studies that have been done in developed and developing countries trying to point out the key variables that should be considered when studying the private saving behavior. Time series or pooled/cross sectional data have been vastly applied by many scholars to arrive at their conclusion. Following below are some of the reviewed studies on private savings behavior.

Mwega et al. (1990) did a study on real interest rates and the mobilization of private savings in Africa. The aim of the paper was to test the McKinnon-Shaw hypothesis that higher real deposit rate of interest would translate into higher private savings citing Kenya as a case study. The study revealed that real deposit rate of interest does not affect private savings in Kenya. Oshikoya (1992) also shed light on the same as his study concluded that real deposit rate of interest have little or no influence on savings in Kenya. In Pakistan, Mahmood (1994) concluded that real interest rate influence private

savings in the short run, while factors like per capita income, TOT and expected inflation also play part on private savings. Thanoon and Baharumshah (2007), support the former researchers as their study on the determinants of private saving rate in Malaysia concluded that interest rate specifically have little or no influence on saving rate in Malaysia.

Furthermore, Odhiambo (2008) focused on interest rate reforms, financial deepening and savings in Tanzania. The aim of the paper was to uncover the relationship that exists between the three variables of interest. He deployed savings model and financial deepening model to arrive at the conclusion that real interest rate does not affect the rate of savings in Tanzania.

On the same note, Ndanshau (2012) and Lipumba et al (1990) in their studies came to the same conclusion that there is no strong evidence on real interest rate to influence national savings in Tanzania. However, the interesting thing is that the interest rate reform has had a positive impact on financial deepening which ultimately affects saving rate.

However, the debate on the effect of real deposit rate on savings has gained a different view from the one discussed earlier. Some scholars have portrayed the positive relationship between real deposit rate and savings. Below are some of those writers.

Azam (1996) assessed the impact of interest rate on savings in Kenya and obtained different result from other studies that have been done in Kenya and other parts of the world. According to him, there is a positive and statistically significant relationship between real rate of interest and the national savings rate in Kenya. He also stressed that

it is difficult to capture the effect of real interest rate on savings if the role of financial repression in enhancing the relationship between the two is not properly considered. The results have been supported by Frimpong-Ansah (1987) for the case of Ghana, Senegal and Cote d' Ivoire and Yona (1979) for the case of Tanzania when he concluded that higher interest rates on deposits motivates larger savers to save more.

To add on that, Loayza and Shankar (2000) did a study on private saving behavior in India and found that it is possible for interest rate to affect positively the saving behavior once inflation is considered. In Nigeria, Nwanchuku and Odigie (2011) shed light on the same as their study found that private savings fluctuates in relation to interest rate on deposit. Growth rate of real per capita and degree of financial depth impact positively on private savings while fiscal balance negatively influences private savings in Nigeria

Dosh (1994) used cross-country data to analyze the determinants of the saving rate. The study found a positive and statistically significant relationship between life expectancy and saving rate. The results were supported by Bloom et al. (2001) who concluded that higher life expectancy of East Asia explain the increased rate of savings while low life expectancy of African countries plays part on poor savings.

Efforts to increase savings by African countries should be given first priority to ensure sustainability on growth given the limited external sources of funding to finance development projects

Ahmad et al. (2003) deployed unrestricted error correction model which fitted in well with the time series data spanning 1972-2000 to analyze the impact of foreign capital

inflow on domestic savings in Pakistan. The paper found that foreign capital inflow is inversely related to savings in Pakistan, the view that support the substitution doctrine.

Ogaki et al. (1996) got a positive relationship between saving and income in his study of saving behavior in low and middle income developing countries. However, Morss (1969) pointed out that, an upward change in income does not necessarily lead to the same change in savings especially to developing countries. That is the case because an upward change of income of the poor will result to change in their consumption pattern leading to less effect on savings rate. However, an upward change of income to rich people could lead to the same upward change in their saving rates.

Chaundry (1973) focused on the determinants of personal savings from 14 developed and developing countries covering 17 years over 1951-1968. According to him, real personal income affects positively the rate of personal savings in 5 DCs and 5 LDCs out of the countries studied. Other factors like the lagged consumption was found to be negatively and statistically significant to personal savings in 3 DCs and 6 LDCs. USA's lagged consumption coefficient turned out to be positive and statistically significant to personal savings basically due to the presence of high multicollinearity standing at 0.94 between income and lagged consumption variables.

Dayal-Gulat and Thimann (1997) attempted to compare the saving behavior in South East Asia and Latin America by using cross-country data covering the period of 1975-1995. In their study, they concluded that per capita income and financial deepening measured as a ratio of M2 to GDP affect private saving rate positively. They also found that government savings partially crowds out private saving.

Bayoumi (1993) did a study on financial deregulation and household savings by using regional data from UK. The study revealed that financial liberalization attracts household savings as compared to other factors like wealth, income and real interest rate. This follows the McKinnon-Shaw hypothesis that market determined interest rate acts as a catalyst to higher saving rate.

Edwards (1996) utilized the panel data for 36 countries over the course of 22 years spanning from 1970-1992. He observed that government savings has a negative relationship with private savings. Foreign savings was found to be negatively related with the domestic savings while financial intermediation positively affected the saving rate. The Ricardian equivalence that the low public savings by the government is offset by higher private savings proves to be valid as far as the Edward's study is concerned. This justifies the need to embark on the factors that influence private savings as its contribution to development is feasible.

Carrol and Weil (1993) by using cross-country and household data arrived at the conclusion that rich households save more than poor households at the micro level. At macro level, he attempted to find the direction of causality between savings and growth. The study found that growth Granger causes savings and not otherwise.

Sajid and Sarfraz (2008) adopted co-integration and vector error correction model for the time series data running over 1973-2003. The aim of the paper was to investigate the causal relationship between savings and economic growth in Pakistan. From the study, it comes out clearly that the direction of causality between public savings and output level (ie GDP and GNP) is not certain as it may take any direction. Private savings influence

on GNP is not clearly observed as well. However, in the long-run the view that savings drives economic growth holds while Keynesian view that growth is the main engine towards increased savings holds in the short-run for the case of Pakistan. Therefore, improvements on policies geared to increase further the rate of savings in Pakistan would result to an increase in growth rate as the empirical results supports the capital fundamental view that savings precede growth in the long-run for the case of Pakistan.

Other variables that emerged as the key positive determinants of private savings from the empirical review include: GNP, income growth, size of working class and share of agriculture in GDP. This has been witnessed from a number of previous studies including the works of Nwanchuku and Odigie (2011), Loayza and Shankar (2000), Ndanshau (1998), Yasin (2008) and Uremadu (2009), among others. These studies have arrived at these conclusions by basically focusing on time series as well as cross sectional data. However, they differ in methodology and time periods covered.

All in all, dependency ratio, tax and domestic inflation impact negatively the saving behavior of economic agents as revealed by Uremadu (2009), Nwanchuku and Odigie (2011), Loayza and Shankar (2000), Thanoon and Baharumshah (2007) and Leff (1969), among others.

However, Hope (1993) suggested that taxation cannot be used to mobilize much savings due to the existence of non-monetized sector in the economy.

2.3 Overview of the Literature

From the reviewed literature, there has been little empirical study done on the determinants of private savings with reference to Tanzania. Most of the previous studies have focused on factors that affect total savings in general without separating public savings from private savings. Factors like public savings, GDP growth rate, real deposit rate of interest, real GDP per capita and external savings from the empirical literature seems to play an important role in explaining the private saving behavior of both developed and developing countries.

Furthermore, there has been no consensus on the influence of real deposit rate of interest on private savings as well as the direction of causality between private saving and economic growth from the empirical literature reviewed. This divergence in views from empirical findings generates the need to establish the relationship between real deposit rate of interest and private savings in Tanzania since little has been done. The inconclusive result on the direction of causality between growth and savings is of paramount importance in this study as well. Other variables like public savings, real GDP growth rate, real GDP per capita and external savings will join the real deposit rate of interest in the private saving model of Tanzania that will be estimated by using annual time series data spanning from 1980 to 2012.

CHAPTER THREE

METHODOLOGY

3.1 Conceptual Framework

The theoretical framework for this study is derived from Life-Cycle model. This model incorporates the issue of time in explaining the private saving behavior. Due to its flexibility, it can be modified to accommodate the distinctive features of the developing countries like Tanzania without altering its fundamental structure. In Africa, the model has been applied by Nwanchuku and Odigie (2011), among others, when examining the private saving behavior in Nigeria.

3.2 Analytical Framework

3.2.1 Model specification

The general estimable equation is given as:

$$\frac{S_p}{GDP} = f \left(RGDP, PGDP, RDR, \frac{EXTS}{GDP}, \frac{S_g}{GDP} \right) \dots\dots\dots 2$$

Where;

RGDP- real GDP growth rate

PGDP- real GDP per capita

RDR-real deposit rate, is the difference between nominal rate and expected inflation

EXTS/GDP-external savings, will be measured by the current account balance that is given by import (M) minus export (X) divide by income (Y) deficit as a percentage of GDP on the balance of payment

S_g/GDP -public savings, is the difference between tax revenue and government consumption expenditure as a percentage of GDP

S_p/GDP -private savings, is the difference between total savings and public savings as a percentage of GDP

Equation 2 simply states that private saving in Tanzania is a function of real GDP growth rate, real deposit rate, external savings and public savings as a percentage of GDP respectively.

Equation 2 is a general equation from which the specific equation estimated is given below:

$$\frac{S_p}{GDP} = \beta_0 + \beta_1 RGDP + \beta_2 PGDP + \beta_3 RDR + \beta_4 \frac{EKTS}{GDP} + \beta_5 \frac{S_g}{GDP} + e \dots \dots \dots 3$$

Where;

β_0 is the intercept and β_i for $i=1, 2, 3, 4$ and 5 are slope coefficients and e is the error term that captures the potential dependent variables excluded from the model

The reason for including different variables in the private saving model is explained below;

Real GDP growth rate has been included to capture the non-Keynesian theories of savings.

Real GDP per capita has been included in the saving model to capture the Keynesian theory of absolute income hypothesis

The real deposit rate has been included in the model to capture the effect of interest rate liberalization on private savings in Tanzania. The reason for doing that is to see whether the reforms on interest rate that have been adopted by Tanzania in 1980s have had any impact on private savings

External savings is included to see whether the foreign savings act as a compliment or substitute to private savings. Therefore knowing the role of foreign saving on private saving is crucial.

Public savings, according to Mwega and Elbadawi (1998), may or may not influence private savings. So, since the private saving in Tanzania has been performing poorly, it is important to know whether public saving is the reason behind the poor performance.

From the saving theories and findings in the empirical literature review, the expected results of the relationship between the dependent variable (private saving) and the explanatory variables is explained below.

3.3 Expected Results

Real GDP growth rate, there is a general belief from the literature that higher income growth would result to higher saving rates especially to rich people. This has been documented by the non-Keynesian theories. That being the case, a positive relationship between real GDP growth rate and private savings is expected.

Real GDP per capita, according to Keynes (1936) in his absolute income hypothesis, higher incomes would automatically turn into higher savings. Therefore a positive relationship between real per capita GDP and private saving is expected.

Real deposit rate, a positive relationship between real interest rate and private savings is expected as Mackinnon-Shaw (1973) revealed that below market interest rate will hinder efforts to mobilize savings for investments.

External savings, the expected sign is negative because the increase in external savings would reduce the government efforts to mobilize domestic savings for short- term and long-term development projects.

For public savings, Mwega and Elbadawi (1998) stressed that, with borrowing constraints, government dissaving is directly offset by private savings since individuals will save more as they fear that the government dissaving will result to future increase in taxes. This implies that, private savings and public savings moves in opposite direction and are substitutes, so a negative relationship between private and public savings is expected.

3.4 Data Type and Estimation techniques

3.4.1 Data Type and Source

This study uses time series data from 1980 to 2012. Other periods were not covered in this study due to data problem. The data used in this study was obtained from different sources, including various series of Tanzania Economic survey, the International Financial Statistics published by the International Monetary Fund, World Bank data bases and Bank of Tanzania (BOT).

3.4.2 Estimation Techniques

The co-integration and Error-Correction Methodology was used. The error correction modeling procedure involves first estimating the general saving function after which variables whose coefficient are statistically insignificant will be dropped to eventually come up with a parsimonious model. The ECM helps to minimize the possibility of estimating spurious relations, while at the same time retaining long-run information. It achieves this by specifying the relationship being investigated as a dynamic representation with both lagged dependent and independent variables. A major advantage of this method is that it yields an equation with stationary dependent variable and retains long-run information in the data.

3.4.3 Granger-Causality Test

If there is a lagged relationship between two variables, one of the tests, which is applied to determine the direction of causality in statistical terms, is referred as the Granger Causality test. This test also gives information about the short-term relationship between the variables. In the Granger Causality test, there are three possible outcomes; One directional causality, opposite direction causality and independency direction where one variable does not affect the other variable. The direction of causality can be either negative or positive (Engle and Granger, 1987). This test is used to determine the direction of causality between variables in the short-run using the F-statistic and in the long-run using the t-statistic.

In testing for the direction of causality between private saving and real GDP growth rate, the VAR model is applied simply because it is more suitable for the analysis as the

direction of the causal relationship between private saving and real GDP growth rate is unknown and it is also expected that past values of both variables could have a significant impact on their current values. The optimal lag length for the VAR model is determined by using the Akaike Information Criterion (AIC) and the Schwartz Bayesian Information Criterion (SBIC). Basing on these two criteria, VAR (3) model was chosen to estimate the casual relationship between private saving and real GDP growth rate in Tanzania. The VAR (3) model was estimated basing on the following pair of regression equations 4 and 5 with stationary variables.

$$\Delta PS_t/GDP = \beta_1 + \sum_{i=1}^3 \theta_i \Delta PS_{t-1}/GDP + \sum_{j=1}^3 \alpha_j \Delta RGDP_{t-1} + u_t \dots \dots \dots 4$$

$$\Delta RGDP_t = \Omega + \sum_{i=1}^3 \alpha_i \Delta RGDP_{t-1} + \sum_{j=1}^3 \lambda_j \Delta PS_{t-1}/GDP + e_t \dots \dots \dots 5$$

Where;

PS/GDP-private saving, **RGDP**-real GDP growth rate, **t**-time, β_1 and Ω are intercepts, θ_i , α_i , α_j and λ_j for $i=1, 2$ and 3 shows the contributions of each lagged observation to the predicted values of private saving (PS_t/GDP) and real GDP growth rate ($RGDP_t$), u_t and e_t are residuals (predicted errors) for each series. If the variance of u_t or e_t is reduced by the inclusion of the $RGDP_t$ or PS_t/GDP terms in equation 4 or 5, then it is said that $RGDP_t$ or PS_t/GDP Granger causes PS_t/GDP or $RGDP_t$. In other words, the null hypothesis of economic growth does not cause private saving in equation (4) is rejected when the α_j 's are jointly statistically significant. The null hypothesis of private saving does not cause economic growth in equation (5) is rejected when the λ_j 's are jointly statistically significant.

CHAPTER FOUR

4.0 EMPIRICAL ESTIMATION AND RESULTS

4.1 Introduction

In this section, the results from the empirical estimation and their economic interpretations are presented. The descriptive statistics and the time series properties of the data are presented. Finally, the model is estimated by using error correction methodology and post- estimation tests are also conducted on the model.

4.2 Descriptive Data Analysis and Statistical Tests

Descriptive analysis was conducted to ascertain the statistical properties of the variables used in the saving model. Jarque-Bera statistical test basically shows whether the series is normally distributed or not as it measures the skewness and kurtosis of the series with those from the normal distribution. According to (Mukherjee et al 1998: 6), the necessary condition for normal distribution requires skewness of zero and kurtosis of at least 3. The below table gives the mean, standard deviation, skewness, kurtosis and Jarque-Bera statistics of all the variables in the model.

Table 4.1: Descriptive Data Analysis

Variables	Mean	Median	Standard Deviation	Kurtosis	Skewness	JB Statistic	Probability
Sp/GDP	14.23988	13.741	5.254307	2.048037	0.0234006	2.52	0.2836
RGDP	4.693939	4.9	2.391365	3.943321	-1.032147	7.50	0.0235
RDR	-7.157576	-4.7	9.620032	2.780129	-0.617333	2.80	0.2460
EXTS/GDP	8.057856	7.863966	5.679313	7.763761	1.882574	19.20	0.0001
Sg/GDP	-1.453015	-1.745023	2.04012	2.310298	0.276503	1.24	0.5389
In PGDP	12.56483	12.48419	0.169764	2.542459	1.024422	5.85	0.0536

Note: Sp/GDP is private savings as a percentage of GDP, RGDP is real GDP growth rate, RDR is real deposit rate, EXTS/GDP is external saving as a percentage of GDP, In PGDP is real per capita GDP and Sg/GDP is public saving as a percentage of GDP

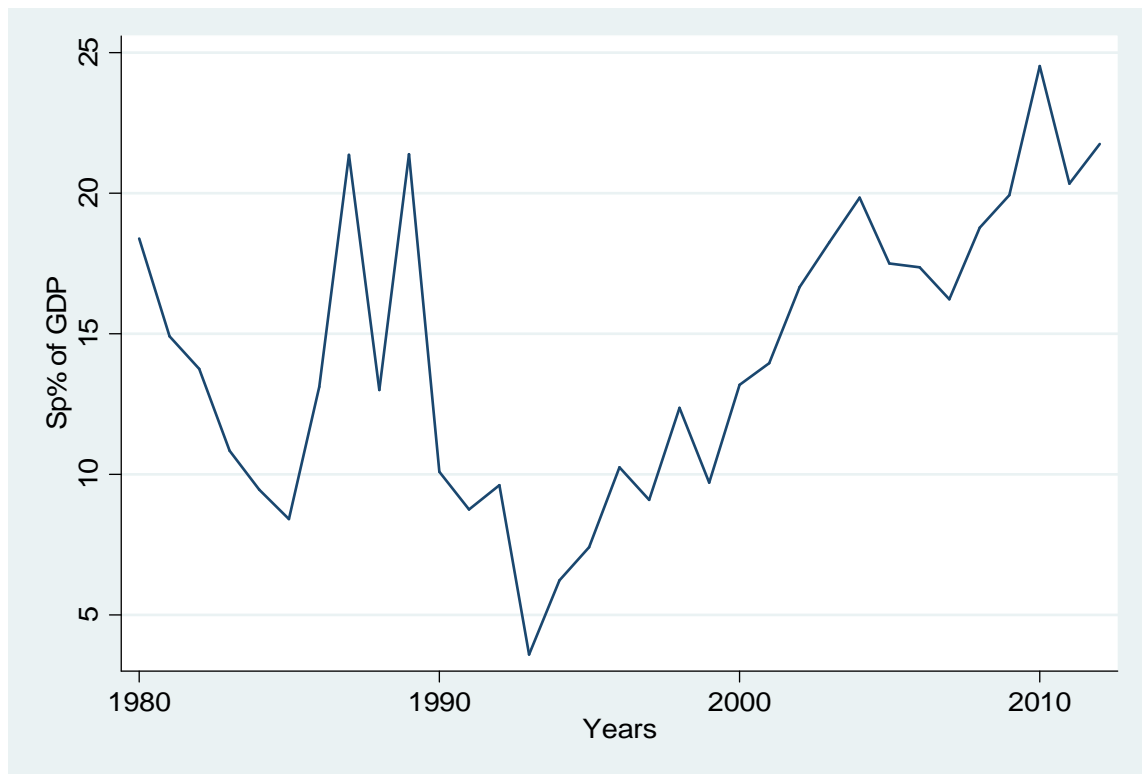
From Table 4.1, the necessary condition for skewness has actually been met in some variables while for kurtosis at least two variables meet the requirement. Skewness is a measure of asymmetry of the distribution of the series around its mean. The statistics for skewness shows that all variables except real GDP growth rate and real deposit rate are positively skewed implying that they have long right tail. The real GDP growth rate and real deposit rate are negatively skewed implying that they have long left tail. Kurtosis measures the peakedness or flatness of the distribution of the series. The statistic for kurtosis shows that real deposit rate (RDR) is normally distributed. However, RGDP and external saving (EXTS/GDP) are leptokurtic since their distributions are peaked relative to the normal. Private saving (Sp/GDP), public saving (Sg/GDP) and InPGDP are platykurtic suggesting that their distributions are flat relative to the normal.

Furthermore, it is evident that all the variables are not detached significantly from their mean values as indicated by their relatively small standard deviation values and that private savings (S_p/GDP), real deposit rate (RDR) and public savings (S_g/GDP) are normally distributed at 1%, 5% and 10% levels of significance while real GDP growth rate (RGDP) and real GDP per capita ($\ln PGDP$) are normally distributed at 1% level of significance. The private saving rate as a percentage of GDP is averaged at 14.2% with a minimum of 3.5% and a maximum of 24.5%, this actually shows that the minimum rate is still very small however on average the figure is impressive.

4.3 Graphical Data Analysis

A trend analysis was conducted to detect the movements in the value of each variable over time and to analyze the causes of such movements. Figure 4.3.1 shows the movements in private saving as a percentage of GDP over time, Figure 4.3.2 shows the movements in real deposit rate over time, Figure 4.3.3 shows the movements in external saving as a percentage of GDP over time, Figure 4.3.4 shows movement in real GDP growth rate over time and finally, Figure 4.3.5 shows the movement in public saving as a percentage of GDP over time and Figure 4.3.6 shows the movement in real per capita GDP

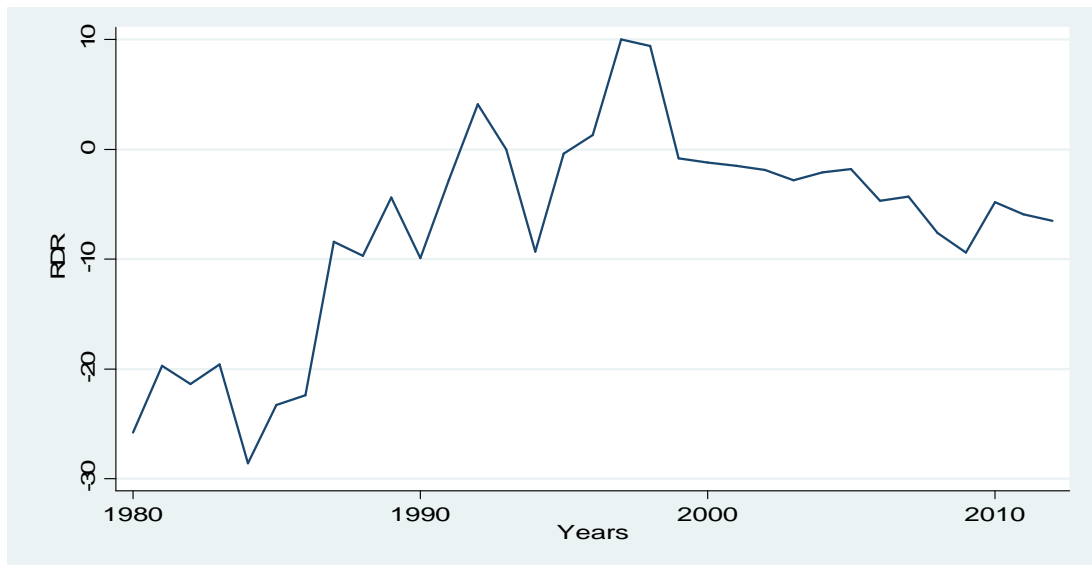
Figure 4.3.1: Trends in private saving as a percentage of GDP



Source: STATA

Figure 4.3.1 shows that private saving as a percentage of GDP has had ups and downs from 1980 to early 1990s. This could have been caused by the poor performance of many African countries in 1980s including Tanzania. In this period, Tanzania suffered a serious macroeconomic imbalances including high inflation, persistent government budget deficits, declining per capita income and generally a very poor state of the economy. All these contributed to the decline of private saving as shown in the figure. However, after that the rate has been on the rise with a slight decrease in mid- 2000s thereafter, the trend has been on the rise. From mid-1990s private savings has been impressive and this could be due to interest rate liberalization that started to take its course in 1990s.

Figure 4.3.2: Trends in Real deposit rate of interest



Source: STATA

Figure 4.3.2 above shows that trends in real deposit rate of interest have been a mixture of high and low movements for the entire study period. The sharpest increase occurred in mid-1990s where interest liberalization was already in place. However, real deposit rate remain negative in large part of the study period as observed from the figure.

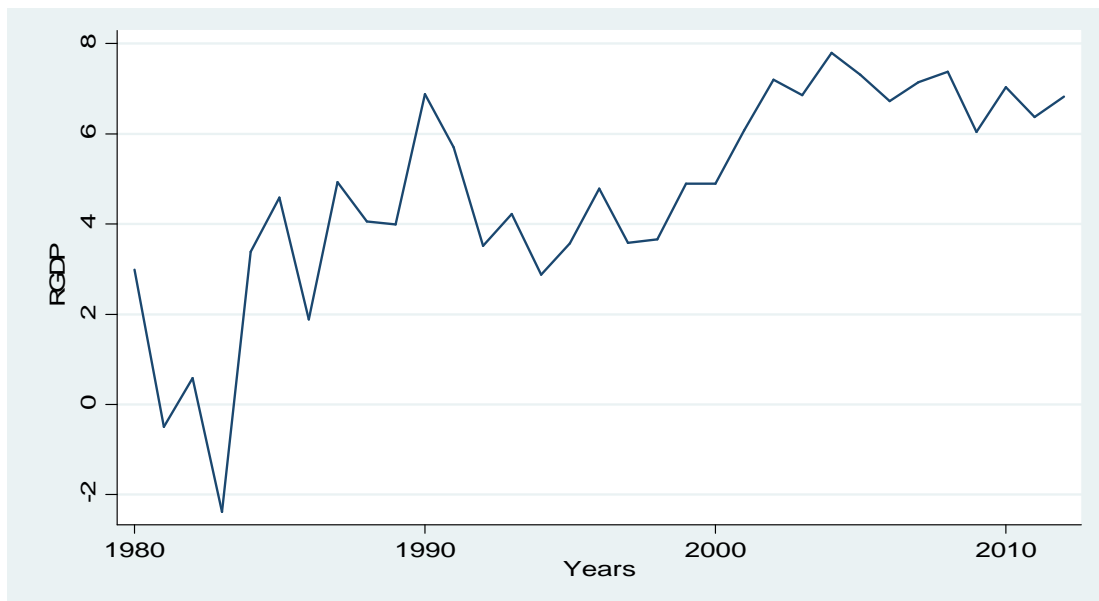
Figure 4.3.3: Trends in external saving as a percentage of GDP



Source: STATA

From Figure 4.3.3, in mid-1990s there was a sharp increase in external saving as a percentage of GDP. This could be explained basing on the economic hardship that Tanzania faced in mid-1980s which as a result forced the country to rely on external assistance as one of the measures of Economic Reforms Programme (ERP). However, in other years, external savings has been a mixture of ups and downs.

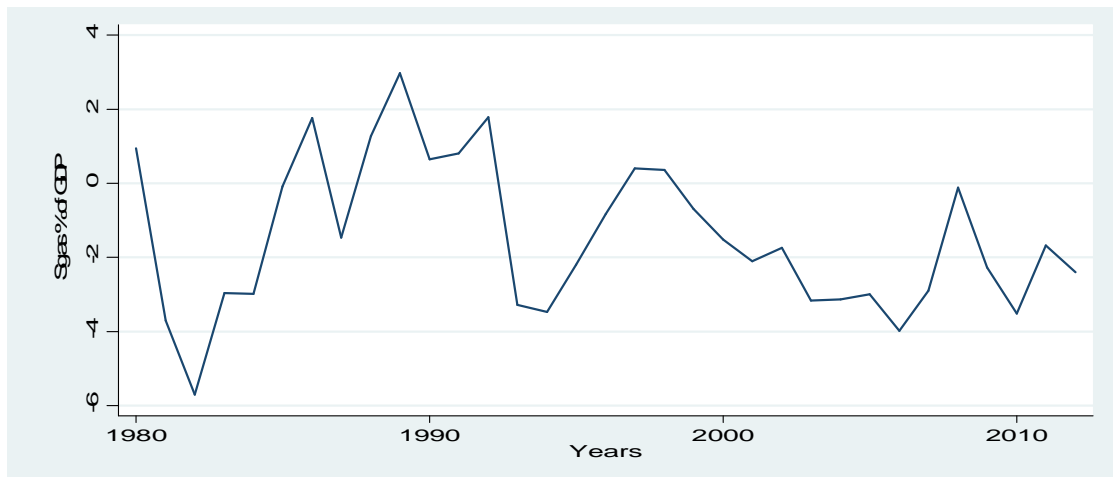
Figure 4.3.4: Trends in real GDP growth rate



Source: STATA

From Figure 4.3.4, real GDP growth rate from 1980 to 2012 has been a mixture of ups and downs. The highest rate recorded in that period is 7.8% and the lowest -0.5%. The negative rate reflects the economic hardship that was encountered by many SSA countries in 1980s that led to the introduction of SAPs to help boost the economic growth of African countries.

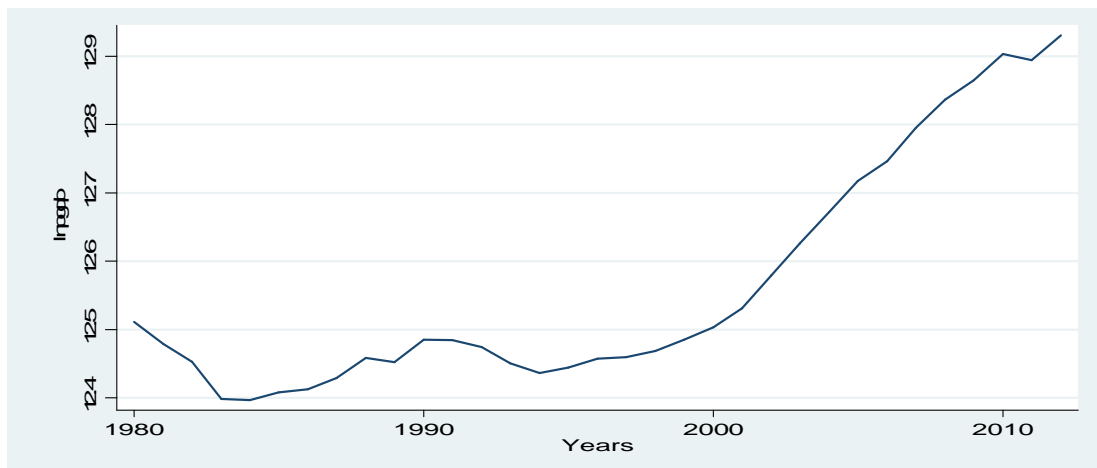
Figure 4.3.5: Trends in public saving as a percentage of GDP



Source: STATA

From Figure 4.3.5, it is clearly evident that public savings has been negative in large part of the study period. However in early 1980s to mid-1990s a positive sign was recorded. This could be due to the introduction of SAPs in LDCs in 1980s that directed governments to cut unnecessary expenditures. From mid-1990s onward, a negative sign has been recorded reflecting the ever increasing government expenditures.

Figure 4.3.6: Trends in real per capita GDP



Source: STATA

From Figure 4.3.6, it is clearly evident that real per capita GDP has had ups and downs from 1980 to mid-1990. However, an increasing trend has been witnessed from there onwards. This is an indication of the good policies that have been adopted by the government to steer economic growth and thereby create employment opportunities to majority.

4.4 Time series properties of the data

4.4.1 Unit Root Test

A basic assumption of the Classical Linear Regression model requires all variables to be stationary. The violation of this assumption leads to spurious regression. To avoid this shortfall, the unit root test with and without trend was conducted on all variables to find out whether they are stationary or non-stationary.

The Augmented Dickey-Fuller (ADF) and PP tests were employed by the study to test for stationary. If a variable is stationary without differencing, it is said to be integrated of order zero or $I(0)$ and if it is stationary after differencing, then the variable is said to be an $I(d)$ variable, where d represents the number of times it has been differenced. The lag length selection of the ADF test was based on the Akaike Information Criterion (AIC) and the Schwartz-Bayesian Information Criterion (SBIC). Whenever there was conflict between the two information criteria, the SBIC was preferred because it penalizes more. The DF and ADF test results are as shown in Table 4.2 and PP results are shown in table 4.3.

Table 4.2: ADF Unit Root Test Results

Variables	ADF value before differencing	ADF value after differencing	Critical value	Level of integration
Sp/GDP	-1.525	-3.874 **	-2.986	I(1)
RGDP	-4.073 **	n.a	-2.989	I(0)
RDR	-1.833	-6.553**	-2.983	I(1)
EXTS/GDP	-2.416	-6.274**	-2.983	I(1)
Sg/GDP	-1.864	-3.253**	-2.994	I(1)
lnPGDP	-2.098	-4.927**	-2.989	I(1)

Source: STATA

Where; Sp/GDP,EXTS/GDP and Sg/GDP are private saving, external saving and public saving as a percentage of GDP respectively, RDR=real deposit rate, PGDP=real per capita GDP and RGDP=real GDP growth rate, n.a=not applicable, ** denotes significant at 5% and the null hypothesis is that there is unit root

The results from Table 4.2 clearly demonstrate that, the null hypothesis of real GDP growth rate (RGDP) has a unit root that can be rejected at levels since its ADF statistic is greater than the critical value indicating stationarity at levels. The remaining variables have a unit root that cannot be rejected at levels since their ADF values are less than critical values at the 1%, 5% and 10% level of significance. It is therefore concluded that Sp/GDP, lnPGDP, RDR, EXTS/GDP and Sg/GDP are non-stationary at their levels.

However, the results indicate that the null hypothesis is rejected for the first differences, indicating that all variables except RGDP are stationary in their first differences. This

shows that all the variables except RGDP are individually integrated of order I(1) while RGDP is integrated of order I(0).

Table 4.3: Phillips-Perron (PP) unit root tests results

Variable	PP value before differencing	PP value after differencing	Critical value	Level of Integration
Sp/GDP	-2.184	-8.459**	-2.983	I(1)
RGDP	-4.376**	n.a	-3.785	I(0)
RDR	-2.265	-6.553**	-2.983	I(1)
EXTS/GDP	-2.647	-6.274**	-2.983	I(1)
Sg/GDP	-3.417	-7.023**	-2.983	I(1)
lnPGDP	-2.675	-8.533**	-2.986	I(1)

Source: STATA

Where; Sp/GDP,EXTS/GDP and Sg/GDP are private saving, external saving and public saving as a percentage of GDP respectively, RDR=real deposit rate, PGDP=real per capita GDP and RGDP=real GDP growth rate, n.a=not applicable, ** denotes significant at 5% and the null hypothesis is that there is unit root.

The results for unit root test in Table 4.3 concurs with those obtained from ADF test where the null hypothesis in PP case can be rejected at levels in real GDP growth rate (RGDP) while for other variables, the null hypothesis cannot be rejected at levels indicating the presence of unit root. However, all other variables become stationary after first difference.

4.4.2 Testing for Co-integration

To test for co-integration, the Johansen (1991) test was deployed. This is the powerful method particularly when the multivariate model is involved. Trace and Maximum Eigen value are used to determine the presence of co-integration between variables.

Table 4.4: Co-integration Test Results

Maximum Rank	Eigen Value	Trace Statistic	5% Critical value
0	-	82.6021	68.52
1	0.65724	48.3389	47.21
2	0.54163	23.3768*	29.68
3	0.39443	7.3260	15.41
4	0.15592	1.9018	3.76
5	0.05770	-	-

Source: STATA, Note: * represent 5% level of significance, null hypothesis there is no co-integration

The results presented in Table 4.4 show that trace statistics reject the null hypothesis of no co-integration at the 5% level. The implication is that a linear combination of all the five series was found to be stationary and thus, they are said to be co-integrated. In other words, there is a stable long-run relationship between the series so we can avoid both the spurious and inconsistent regression problems which otherwise would have occurred with the regression of non stationary variables.

4.5 Long-run model

The long-run relationship between dependent variable (private saving) and independent variables (real per capita GDP, real deposit rate, external saving and public saving) is presented below.

$$\frac{S_p}{GDP} = -252.3 + 0.45 \ln PGDP - 0.047 RDR - 0.381 \frac{EXTS}{GDP} + 0.19 \frac{S_g}{GDP}$$

(-5.60) (4.27) (-0.77) (-3.73) (0.65)

Note: Values in bracket from long-run model represent the t-statistic for the respective coefficients of each variable and constant

The result for real per capita GDP (lnPGDP) records the expected sign as its coefficient is positive and statistically significant implying that real per capita GDP is an important determinant of private saving. The coefficient of real per capita GDP is significant at the 5% level implying that an increase in real per capita GDP by 1% leads to an increase in private saving in the long-run by approximately 0.5%. This result is consistent with the Keynesian theory of absolute income hypothesis where per capita income is treated as an important driver of private saving.

Previous studies that have been done on private saving also found the same result including the work of Ndanshau (2012), Edwards (1995), Ziorklui and Barbee Jr (2003) and Lipumba et al. (1990). Thus, as the real per capita income of private agents grows faster, private saving also increases.

External saving as a percentage of GDP from our modified version of life-cycle model is an important determinant of private saving. The coefficient of external saving is negative and statistically significant at the 5% level. An increase in external saving by 1% will reduce private saving by 0.38%. This indicates the substitutability between private saving and external saving in Tanzania context. Thus, in Tanzania policies geared towards improvement in current account deficit would have a substantial effect on improving private saving. Edwards (1996) supports the view that external saving is a key determinant of private saving.

Real deposit rate and public savings both have unexpected signs however their coefficients are statistically insignificant at 5% levels. Therefore, there is no empirical evidence that supports real deposit rate and public savings to influence private saving in Tanzania in the long run. The general implication is that the two variables would not bring about automatic improvement in private saving in the long-run when policies are formulated basing on those variables. However, McKinnon-Shaw (1973) hypothesis stress that interest rate is the key determinant of savings. Furthermore, the insignificant of real deposit rate on private saving could be explained partially with the theory of reciprocity in banking especially between 1967-1993 when the government owned and controlled the financial systems in Tanzania.

Generally, in Tanzania it is clearly evident from the empirical findings that private savings in the long-run is responsive to real per capita GDP and external savings and nonresponsive to public savings and real deposit rate.

4.6 Error-Correction Model (ECM)

Estimating a model with non-stationary variables could lead to spurious regression results. To avoid that, the variables are differenced and then the short-run dynamics is established. However, estimating a model with differenced variables leads to loss of long-run information, it is then curbed by an error-correction model. This model is used to bridge both the long-run and short-run relationships by using a single equation. This study's error correction model estimates are presented in Table 4.5.

Table 4.5: Error-Correction Model Estimates

Variable	Coefficients	t-statistic	probability
constant	-0.5813605	-0.45	0.658
DRGDP(-3)	0.1344365	0.52	0.605
DlnPGDP(-1)	-0.466231	-0.05	0.961
DEXTS/GDP	-0.3663958	-3.05	0.006
DSg/GDP	-0.3824328	-1.04	0.311
DRDR	0.1663345	1.51	0.144
DSp(-1)	-0.0040315	-0.02	0.981
ECM(-1)	-0.970977	-3.51	0.002

Source: STATA

The results from Table 4.5 show that the coefficient of the error- correction term for the estimated saving equation is both statistically significant and negative. Therefore, it will rightly act to correct past deviations from the long-run equilibrium.

Specifically, if the actual equilibrium value is too high, the error- correction term will reduce it and if it is too low, then the error-correction term will increase it.

The coefficient of (-0.970977) denotes that 97% of any past deviations will be corrected in the current period. Therefore, for any equilibrium to be corrected it will require at least one year.

Furthermore, it is only the external saving variable that is statistically significant at the 1% level indicating that, in the short-run external saving is the only variable that has relationship with private saving in Tanzania. The implication is that short-run changes in private saving that correct for past deviations basically arise from changes in external saving.

The coefficient estimate of external savings shows that a percentage change in external savings would reduce private saving by approximately 0.37%. Therefore, there is a need for the government to embark on policies that increase exports in order to improve the current account position and thereby increase private saving. This is because foreign saving substitutes private saving rather than complementing it.

Real GDP growth rate (RGDP), public savings as a percentage of GDP and real deposit rate all have the expected signs but are statistically insignificant at least at 10% level. This implies that private saving in Tanzania in the short-run is nonresponsive to real GDP growth rate, real deposit rate and public saving. This result contradicts with saving theories from the literature that pointed out that returns on savings and real GDP growth rate are key determinants of private savings. The theories include the Mackinnon and Shaw (1973) and non-Keynesian theories of saving. Real per capita GDP has unexpected negative sign though it is statistically insignificant at least at 10% level. The implication is that, in the short-run, Keynesian absolute income hypothesis does not hold in Tanzania. However, in the long-run the absolute income hypothesis holds as the real per capita GDP turned out to be the key determinant of private saving. The lagged dependent variable has a negative coefficient but is insignificant at least at the 10% level.

4.7 Post-Estimation Diagnostics

4.7.1 Ramsey RESET Test

This was carried out to ascertain if the estimated model was properly specified. The Ramsey RESET test is based on the null hypothesis of a properly formulated model. The results from the test are as shown in Table 4.6.

Table 4.6: Ramsey RESET Test Results

F-statistic	Probability Value
1.01	0.4113

Source: STATA

Table 4.6 indicates that the model is not misspecified as indicated by the probability value of the F-statistics.

4.7.2 Breusch-Pagan/Cook-Weisberg Test for Heteroskedasticity

This was conducted based on the null hypothesis of homoscedasticity, against the alternative of heteroskedasticity. The results are shown below

Table 4.7: Breusch-Pagan/Cook-Weisberg Test for Heteroskedasticity Results

F-statistic	Probability Value
2.38	0.1228

Source: STATA

Table 4.7 shows that the residuals of the model are homoskedastic at the levels of significance, as indicated by the probability value.

4.7.3 Breusch-Godfrey Test for Serial Correlation

A test for serial correlation was conducted using the Breusch-Godfrey LM Test and the null hypothesis of no serial correlation was tested against the alternative hypothesis of serial correlation

Table 4.8: Breusch-Godfrey Serial Correlation Test Results

F-statistic	Probability Value
1.211	0.2712

Source: STATA

Table 4.8 indicates that the residuals of the model have no serial correlation, as indicated by the given probability value at all levels of significance.

4.7.4 Autoregressive Conditional Heteroskedasticity (ARCH)

This was conducted to ascertain the stability of the coefficients of the saving model. The F-statistic of 0.276, with a probability value of 0.5996, shows that the coefficient stability of the model is satisfactory. In addition, the F-statistic of 5.68 relative to the probability value of 0.0008 indicates that in general the coefficients of the explanatory variables are statistically different from zero.

4.8 Causality between Private Savings and Economic growth (real GDP growth rate)

The literature reviewed has had a contradicting result on the relationship between savings and economic growth. Therefore it was important to determine the direction of causality between savings and growth in Tanzania for policy purposes. The VAR (3) model was used to determine the direction of causality and the results are presented in Table 4.9.

Table 4.9: Results of Granger Causality Wald Test

Causality Direction	Probability Value	Results
RGDP→ DSp/GDP	0.001	Reject H ₀
DSp/GDP → RGDP	0.243	Do not Reject H ₀

Source: STATA, **Note:** For F-statistics, probabilities that are less than 5% level null hypotheses are rejected at that level.

According to the results from Table 4.9, we fail to reject the null hypothesis that private saving (DSp/GDP) does not Granger cause real GDP growth rate (RGDP) at 5% level of significance but we reject the null hypothesis that real GDP growth rate does not Granger cause private saving (DSp/GDP). That means real GDP growth rate causes private saving but private saving does not cause real GDP growth rate. This is consistent with other studies that have been done in DCs and LDCs, among others, the work of Carol and Weil (1993).

CHAPTER FIVE

SUMMARY, CONCLUSION AND POLICY RECOMMENDATIONS

5.1 Introduction

In this chapter, a brief summary of the study, conclusion, policy implications and its recommendations are given as well as the study's limitations and areas for further research.

5.2 Summary of the Study

The study seeks to establish the determinants of private saving as well as the direction of causality between economic growth and private saving in Tanzania for the period 1980 to 2012. The private saving as a percentage of GDP was the dependent variable and the independent variables included real GDP growth rate, real per capita GDP, real deposit rate, external saving as a percentage of GDP and public saving as a percentage of GDP.

Descriptive statistics and graphical analyses were used by the study. In addition, time series properties of the variables were established using the ADF as well as PP unit root tests. The ADF and PP tests showed that five variables were non-stationary at levels but real GDP growth rate (RGDP) was stationary at all levels. However, all variables become stationary after first difference at all levels. Co-integration test was also carried out to determine the long-run relationship of the variables and it showed that private saving and other independent variables are co-integrated an indication of the existence of long-run relationship.

The empirical model was then estimated using the error-correction model. The findings reveal that external savings is the key determinant of private saving in Tanzania. This is because the variable was statistically significant at 5% with the expected sign.

In addition, in the long-run, real per capita GDP also turned out to be the key determinant of private saving

Post- estimation diagnostic tests were then conducted and they reveal that the model was well specified as reported by the Ramsey RESET error specification tests. The residuals from the model had no serial correlation as reported from Breusch-Godfrey Serial correlation LM test and the residuals from the model were homoskedastic, as reported by Breusch-Pagan-Godfrey test

5.3 Conclusion

The long-run model estimates found that private saving in Tanzania is responsive to real per capita GDP and external savings and nonresponsive to real deposit rate and public saving. This implies that there is no clear role for real deposit rate and public saving in mobilizing private saving in the economy. However, the ECM revealed that external savings is the only key determinant of private saving in Tanzania in the short-run. This is consistent with the long-run result. Furthermore, the study intended to establish the direction of causality between private saving and economic growth in Tanzania. The results showed that economic growth (real GDP growth rate) causes private saving and not otherwise. The general implication is that, policies geared towards real per capita GDP, external savings and real GDP growth rate should be given first priority if the private saving trend is to be improved over time.

5.4 Policy Implications and Recommendations

Savings play crucial role in investment as revealed by the investment-saving identity especially when the country cannot generate enough capital to cover the saving-investment gap. Therefore, there is a need to put in place some major recommendations for policy purposes in order to overcome the problem of low private saving in Tanzania.

The recommendations will be derived from the long-run and short-run findings and they will be given basing on the prevailing economic condition of Tanzania. Here are some of the policies that can be to improve private savings. They can also be used by other African countries facing a similar problem.

First, in the long-run, real GDP per capita in our modified version of life cycle model is a key determinant of private saving. Therefore policies geared towards improvement in real per capita income as suggested by Keynes (1936) would automatically improve private saving rates. That can be achieved by improving the economic base by focusing on key sectors. Specifically, the agricultural sector should be given the first priority since the large part of population in Tanzania engage in agriculture. Furthermore, the government can give subsidies to farmers in form of reduced price to farm inputs and marketing their farm output at a competitive price. However, if the price of farm inputs increases over time, the budget of the country could suffer because the cost of the subsidies will start consuming ever-larger amounts of the budget. This could lead to money being taken away from other areas of public funding such as social programs and infrastructure.

It is therefore advised that the government should start removing the subsidies slowly over time when the farmers become more competitive in order to reduce the government expenditure.

Second, foreign saving has been shown to be a substitute rather than a complement for private saving in Tanzania. Therefore there is a need for the government of Tanzania to put in place policy measures that will reduce the current account deficit that actually reflects the reliance on foreign savings. The government can reduce reliance on external saving by focusing on the diversification of the economic base by developing productive capacities into the production of higher value - added goods and services thereby leading to transformation of the exports sector. This requires, in particular efforts to develop, upgrade and improve energy efficiency, storage and port facilities, road networks at national as well as regional level, functional railway systems and air freight capacity to speedily move goods and reach markets in an acceptable conditions. By doing this, the level of exports in the country will rise so does the revenues collected and thereby reducing the current account deficit and ultimately an increase in private saving in the economy

Third, Economic growth causes private saving in Tanzania according to the results. This calls for policies geared towards improvement in economic growth in order to achieve higher saving rates. Higher growth can be achieved by involving all stakeholders in key sectors of the economy. The growing tourism sector in Tanzania as well as the recent discovery of natural resource (gas) in Mtwara region could act as the key stimuli to the growth of the economy.

5.5 Limitations of the Study

Generally, the number of observations used in this study is very small this can be defended on the basis of inaccessibility of data for other years. This makes the results of this study indicative rather than conclusive. The problem of data arises as the key limitation upon the completion of this work. An extension of the number of observations could produce conclusive results concerning the major drivers of private saving in Tanzania

5.6 Areas for further Study

The key role played by saving in economic growth and development requires great attention from both public and private sector. However, the focus of this study on the key determinants of private saving in Tanzania is narrow simply because only income growth, external saving, public saving and real deposit rate were measured. Therefore, there is a need to study the effect of other variables like terms of trade, capital flight, share of agricultural output in GDP, gender, dependency ratio and tax on private saving.

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Appendix 1

Table 4.10: Data set used

Years	Real Deposit Rate	External Saving as a % of GDP	Private Saving as a % of GDP	Public Saving as % of GDP	Real GDP growth rate	Real GDP per capita
1980	-25.8	10.11887847	18.397	0.940135	2.99	271326
1981	-19.7	6.382238711	14.906	-3.7022	-0.5	262702
1982	-21.4	8.183829347	13.741	-5.69865	0.59	255999
1983	-19.6	3.998734214	10.838	-2.96309	-2.38	242385
1984	-28.6	3.302417088	9.44	-2.98154	3.38	241985
1985	-23.3	5.174088564	8.392	-0.09001	4.59	244737
1986	-22.4	4.473317115	13.114	1.764932	1.89	245887
1987	-8.4	4.771371166	21.37	-1.46865	4.93	249875
1988	-9.7	2.288982003	12.997	1.271657	4.06	257467
1989	-4.4	4.694580846	21.394	2.97435	3.99	255848
1990	-9.9	11.52688177	10.09107	0.652227	6.88	264280
1991	-2.8	8.317246217	8.73522	0.811214	5.7	264127
1992	4.1	8.97002206	9.611063	1.787537	3.52	261504
1993	0	29.59771897	3.581121	-3.28304	4.22	255298
1994	-9.3	20.02735262	6.211353	-3.47628	2.88	251724
1995	-0.4	16.19431094	7.404199	-2.19944	3.57	253775
1996	1.3	9.402618402	10.24508	-0.83331	4.79	257125
1997	10	8.111366647	9.081459	0.400563	3.58	257705
1998	9.4	11.85893631	12.35047	0.356017	3.66	259962
1999	-0.8	10.80101643	9.70598	-0.69331	4.9	264391
2000	-1.2	6.031886757	13.18647	-1.51798	4.9	269134
2001	-1.5	3.928200404	13.9474	-2.09877	6.08	276741
2002	-1.9	0.331178868	16.66533	-1.74502	7.2	290376
2003	-2.8	0.999813332	18.24608	-3.16258	6.86	304347
2004	-2.1	2.893593149	19.8445	-3.13004	7.8	318694
2005	-1.8	6.120012956	17.49709	-2.99279	7.31	333397
2006	-4.7	8.19031297	17.36967	-3.98763	6.72	343258
2007	-4.3	9.667596141	16.23115	-2.90251	7.14	360444
2008	-7.6	12.51164823	18.76497	-0.11749	7.38	375642
2009	-9.4	8.305938571	19.93095	-2.27305	6.04	386431
2010	-4.8	7.863965354	24.53781	-3.51343	7.03	401499
2011	-5.9	6.400251	20.34248	-1.67401	6.37	397978
2012	-6.5	4.468931	21.74601	-2.40329	6.83	412582