EFFECTS OF FINANCIAL LIBERALIZATION ON PRIVATE DOMESTIC SAVINGS IN KENYA

JUSTUS BUNDI

A Research Project presented to the School of Economics in Partial Fulfillment of the Requirements for the Award of the Degree of Master of Arts (Economic Policy and Management) of the University of Nairobi.

November, 2013

DECLARATION

This research project is my original work and has not been presented for the award of a degree in any other university.

Signature .... Date ......1/(11) 2013......

JUSTUS BUNDI

X50/73246/2012

This research project has been submitted for examination with our approval as the university supervisors

Signature .... Date ..1/11/2013..........

PROF. NELSON H. WAWIRE

Signature .... Date 12.11.2013

DR. THOMAS N. ONGORO

ii

DEDICATION

This paper is dedicated to my loving mother who struggled to take me to school and my fiancée for her unrewardable and priceless gift of encouragement and support.

ACKNOWLEDGEMENTS

ABSTRACT

Kenya has encountered low levels of private domestic savings rate averaging 8% over the past one decade and half. This has happened despite Kenya implementing financial liberalization policies since 1991. This study determines the effects that interest rate liberalization, opening of financial sector to foreign investors and credit control elimination has had on private domestic savings in Kenya using annual time series data for the period 1975-2011.

Error correction model (ECM) was utilized to capture the short run dynamics toward the long run equilibrium. The results indicate that interest rate liberalization together with credit control elimination have a negative effect on private domestic saving. Opening of financial sector to foreign investors was found to positively affect private domestic savings. This implies that financial liberalization has worked only through financial intermediation. The results of the study therefore suggest the need to formulate policies to change the negative influence of real deposit interest rate to positive influence and promote financial deepening.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS AND ACRONYMS

ADF	Augmented Dickey Fuller
CBK	Central Bank of Kenya
CMA	Capital Markets Authority
DFIs	Development Finance Institutions
ECM	Error Correction Model
ERS	Economic Recovery Strategy
GDP	Gross Domestic Product
IFS	International Financial Statistics
KNBS	Kenya National Bureau of Statistics
LDCs	Less Developing Countries
MFIs	Micro-Finance Institutions
NBFIs	Non Bank Financial Institutions
OLS	Ordinary Least Square
ROSCAs	Rotating Savings and Credit Associations
SACCOs	Savings and Credit Cooperative Societies
SAPs	Structural Adjustment Programmes
SSA	Sub-Saharan Africa
UNDP	United Nation Development Programme

CHAPTER ONE

INTRODUCTION

1.1   Background of the Study

In any economy, financial systems play a very crucial role in the economic development process. They intermediate between savers and borrowers (investors) in the economy. Economies with well developed financial systems boast of liquidity availability created by financial institutions through mobilization of savings. The savings are allocated to economy's different sectors for productive investments. It is therefore prudent to have a healthy and developed financial system in an economy because it does not only benefit the economy through savings but also in the efficiency role of financial intermediation (Ogwumike & Ofoegbu, 2012).

The efficiency in financial intermediation role increases the ratio of private domestic savings to income. This in turn will make the process of domestic savings mobilization more effective. Thus efficient resource allocation and financial deepening will be achieved hence benefit to the economy (Shaw, 1973). Theoretical interrelations between savings, investment, financial systems and economic growth have been explained by Levine (1997) that economic growth is realizable the moment accumulation of capital and technological innovations that result from financial functions of mobilizing savings and efficient allocation of resources is achieved.

One of the major aims of financial sector reforms is to enhance mobilization and efficient allocation of private domestic savings in an economy by removing price distortions and decreasing the problem of incentives for both borrowers and lenders. Financial reforms therefore, entail usage of indirect monetary policy instruments, money and capital markets development, liberalization of interest rate and credit control relaxation. These efforts work towards enhancement of the major objective of the financial sector of promoting savings mobilization and allocation of investment resources efficiently (Ngugi, 2000).

Kasekende and Atingi-Ego (2008) observed that most of the developing countries in the periods from 1970 to mid 1980s were majorly characterized by financial repression. The wisdom behind financial restriction was to persuade financial institutions and other instrument from which the government obtains revenue disregarding other sectors. This wisdom was based on Keynes argument that capital formation could only be promoted by keeping interest rates low (San & Vaidya, 1997). This theoretical argument came under sharp criticism in the works of McKinnon (1973) and Shaw (1973) who termed the position as financially repressing Less Developing Countries (LDCs). With financial repression savings intermediation efficiency is lost and financial systems depth is decreased (San & Vaidya, 1997).

McKinnon (1973) and Shaw (1973) argued that LDCs underdevelopment was mainly as a result of financial repression which according to them interferes with financial deepening and financial intermediation. They contend that when interest rates are controlled, savings mobilization through financial institutions will not be allocated efficiently among competitive uses. This implies that the returns on the savings will be unpredictable and unstable. Therefore capital investments are discouraged making the economy to register falling growth because economic growth is positively related to capital investment. Capital investment impacts directly on various sectors of the economy for instance creating employment, thus it is positively related to economic growth. Savings therefore ought to be attractive in order to achieve productive and profitable investment. This can only be achieved by embracing financial reforms in the financial sector.

One clear arguments of both Shaw and McKinnon hypothesis is the assumption that savings are always positively related to real interest rates and that nominal interest rates are administratively determined and are therefore always below the equilibrium market level of real interest rates. Some of the benefits of financial reforms include but not limited to increase in the size of

domestic savings channeled through formal financial sector, improvement in the financial intermediation efficiency and enhancing the effectiveness of monetary policy (Emenunga, 1996). Levine (1997) stressed theoretically that financial institutions mobilize savings. Savings bring about capital accumulation which is essential or important for economic growth of a country. There is therefore need for well functioning financial systems that can perform the role of mobilizing savings.

A large number of developing countries in the late 1980s including Asian, Latin America and Sub Saharan African (SSA) Countries widely adopted Structural Adjustment Programs (SAPs) in view of reviving their deteriorating economies (World Bank, 1994). SAPs were basically meant to encourage governments to pursue measures of economic liberalization in order to remove restriction in financial intermediation process (Serieux, 2008), improve resource mobilization, productivity and operational efficiency which had made process of economic development unachievable (Aryeetey, Hettige, Nissanke, & Steel, 1997). One of the major economic liberalization measures was reform of the financial sector which is best known as financial liberalization. It was argued that financial sector could play a greater role in increasing national savings and encouraging efficiency in capital accumulation if only price controls and directed credit programs were ended. This could encourage competition in financial system (Fry, 1995). Financial liberalization was therefore viewed as a process of delegating the authority to determine who is to receive and give credit to the market as well as the price at which it was given. The financial liberalization measures that were to be adopted included deregulation of interest rates; elimination or reduction of directed credit control; allowing free entry in the banking sector as well as giving autonomy to commercial banks; allowing private ownership of banks; and liberalizing international capital flows (Odhiambo, 2009).

1.2   Structure of Financial Sector in Kenya

The Republic of Kenya (2007) recognizes the major role that financial sector plays in its development agenda to achieve Vision 2030 goals. In this regard the government has endeavored to put in place mechanisms of a well developed financial system that enable the sector to reach its full potential in allocation of economic resources across the economy. To this end the financial sector in Kenya is comprised of banking, insurance, pension fund and capital markets. There are other parts of the sector which include Quasi-Banking composed of Savings and Credit Cooperative Societies (SACCOs), Microfinance institutions (MFIs), Building Societies, Development Finance Institutions (DFIs) and informal financial services such as Rotating Savings and Credit Associations (ROSCAs).

As of 2011 the financial sector in Kenya comprised 43 commercial banks, one mortgage finance company, 6 deposit taking microfinance institutions, 4 representative offices of foreign banks, 118 foreign exchange bureaus and 2 credit reference bureaus. In the same period Kenya had 43 registered insurance companies. When it comes to performance, the banking sub-sector led the other sub-sectors to record improved performance with the size of assets standing at Ksh. 2.3 trillion, loans & advances worth Ksh. 1.32 trillion, while the deposit base was Ksh. 1.72 trillion (Republic of Kenya, 2012).

1.3   Financial liberalization in Kenya

Kenya experienced an impressive economic performance in the period after independence in 1963 in which growth rate of Gross Domestic Product (GDP) averaged 6.6% and that of inflation averaged at 3%. This sterling economic performance was however unsustainable due to the two oil crisis of 1973/74 and 1979 which hit the world economy as well as the drought conditions experienced during 1979, 1984 and 1992. These two macroeconomic imbalances resulted into an increase in inflation rate with 1975 recording 19.1% and 22.3% in 1982. GDP growth rate also

plummeted consecutively with 1975 recording a growth rate of 3.1% while 1983 and 1984 reported a growth rate of 2.3% and 0.8% respectively. Terms of trade were not spared by the prevailing condition in the economy then to an extent of a 22% drop between the year 1972 and 1975. There was a coffee boom in 1976/77. Instead of the coffee boom improving the terms of trade, its impact was not felt since terms of trade had deteriorated by 1980 to record a drop of 28%. This led to an increase in current account deficit as a ratio of GDP from 4% in 1970s to 14% in 1980 (Republic of Kenya, 1978, 1980 & 1982)

The government in an attempt to contain the worsening state of the economy, it introduced a number of control measures. These measures included imposing controls on bank lending, import quotas, price controls on goods and interest rate controls. With these measures in place, the deteriorating economic performance still persisted. Government resources were squeezed further making revenues to fall short of expenditure. By early 1980s the situation was not any better since the overall deficit had reached 8.9% of GDP in 1981 compared to one that prevailed in 1960s of below 3%. The government went ahead and introduced budget rationalization so as to reduce spending. This still did not work out because fiscal deficit was reportedly high at 7.2% in 1987 (Republic of Kenya, 1988).

The measures that the government had resulted to in order to contain the dropping economic performance distorted the financial market rendering real interest rates to decline below zero from 1973 to 1978. Domestic savings also decreased rapidly in 1975 and 1979 as shown in figure 1.1. This implied that as the economy was deteriorating, the performance of the financial sector also went down. Domestic savings held as financial assets with financial sector averaged 30% in 1984 to 1987 which is similar to the 1970s level. The government took the largest share of domestic credit to finance its budget deficit and fund its parastatals. This made the government to have a rise in net domestic credit from 20% in 1978 to about 38% in 1986

(Republic of Kenya, 19879, 1987). This threatened fall of the sector with 1986 reporting institutional undercapitalization problems. A crisis was therefore looming in the financial sector.

This crisis created room for implementation of financial liberalization policies. Financial reforms in Kenya were initiated as from 1989. They were later intensified in the 1990s with the following reforms being initiated: interest rate were freed in July 1991; enforcement of credit guidelines were relaxed from 1991; exchange rate were allowed to float from 1993; offshore borrowing was allowed from 1994; and foreign investors allowed to participate in local stock market from 1995 (Ndung'u, 1997). The share of government ownership in major banks was also reduced (Ngugi, 2000). Figure 1.1 shows the relationships between Gross Domestic Savings (% of GDP), Gross Capital Formation (% of GDP) and Real Interest Rates (%) over the period 1960 to 2011.
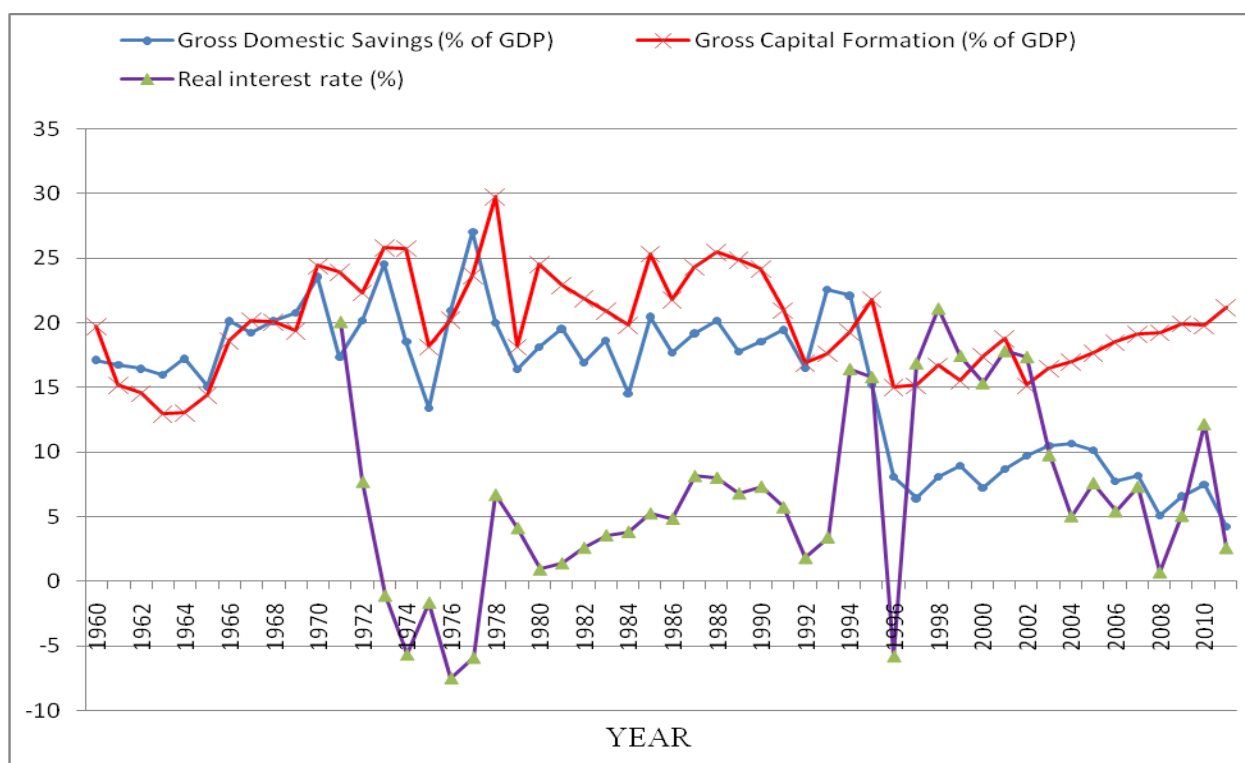
Source: World Development Indicator, 2012

Figure 1.1: The Gross Domestic Savings, Real Interest Rates and Gross Capital Formation for Kenya from 1960 to 2011.

It is evident from figure 1.1 that after liberalization in early 1990s, interest rates have been oscillating downwards. On the other hand, gross domestic savings and gross capital formation had a systematic relationship until 1992 when domestic savings started to decline gradually

while gross capital formation oscillated between 15% and 22.5% with the period between 2002 to 2011 recording gradual increase. The systematic relationship before 1992 is an indication of a positive relationship before financial liberalization. The gap between gross domestic savings and gross capital formation from 1995 to 2011 is a cause to worry since studies on impact of foreign aid on economic growth of developing countries exhibit mixed results (Brautigam & Knack, 2004; Ekanayake & Chatrna, 2010; Karas, 2006).

After initiating financial reforms, by 1996 Kenya's financial system had developed tremendously and by then, the sector comprised of 51 commercial banks, 23 Non-Bank Financial Institutions (NBFIs), 5 building societies, 39 insurance companies, 3 reinsurance companies, 10 development financial institutions, 1 Capital Market Authority (CMA), 20 security and brokerage firms, 1 stock exchange, 12 investment advisory firms, 57 hire purchase companies, several pension funds, 13 foreign exchange bureaus and 2670 SACCOS (Republic of Kenya, 1997).

Kenya Vision 2030 recognizes the critical role that financial services sector will play in the development process of the country in provision of intermediation services between savings and investments. Before and after the 8th National Development Plan (1997/2001), the government had undertaken numerous financial reforms due to the importance attached to domestic savings in the development process. For instance, to achieve higher investment levels for sustainable development, ERS aimed to increase domestic savings through measures of promoting savings and ensuring their efficient allocation (Republic of Kenya, 2003).

However, the Vision puts contribution of the financial sector to GDP at 4% in 2008, over a decade since financial reforms were first implemented in Kenya. In this regard the GoK has put numerous efforts in every budgetary speech geared towards encouraging savings mobilization as envisaged in Vision 2030. For instance, in the budget speech of financial year 2009/2010, the

government amended the Banking Act in order to allow for branchless banking which was meant to allow banks to extend their services especially savings through agencies which have wide distribution networks while in 2010/2011 budget speech, the Republic of Kenya amended the Micro Finance Act to facilitate use of third party agents by deposit taking MFIs.

Despite Kenya's financial system development and numerous efforts by the Republic of Kenya, domestic savings have still been decreasing with time. This is depicted in table 1.1, where Kenya's gross domestic savings is seen to be declining as compared with other middle income countries and developing countries.

Table 1.1: Gross Domestic Savings to GDP Ratios in Selected Countries and Years

Country	1980	1985	1990	1995	2000	2005	2010	2011
Angola	-	28.3	29.7	-	39.6	41.2	32.1	33.1
Argentina	23.8	23.1	19.7	17.5	15.6	27.0	25.3	24.9
Bangladesh	2.1	8.6	9.6	12.6	17.8	18.1	17.8	16.4
Botswana	26.7	38.0	42.6	37.5	43.8	43.1	22.5	26.2
Brazil	21.1	24.4	21.4	20.5	20.0	25.0	19.2	19.0
China	35.0	34.4	39.9	44.1	37.5	49.0	52.1	52.5
India	15.5	21.2	22.6	25.3	24.0	29.7	31.7	29.0
Indonesia	38.0	29.7	32.3	30.6	32.8	26.6	34.3	34.2
Ireland	12.7	19.6	25.6	29.9	38.7	38.8	30.6	32.8
Kenya	**18.1**	**20.5**	**18.5**	**15.3**	**9.4**	**9.3**	**7.5**	**4.3**
Malawi	10.8	12.9	13.4	-0.3	3.8	-5.5	10.4	5.6
Malaysia	29.8	29.9	34.5	39.7	47.3	43.5	40.3	39.5
Namibia	38.4	18.1	18.2	15.5	13.4	19.8	13.9	12.2
Nigeria	31.4	12.6	29.4	18.4	42.3	38.8	-	-
Pakistan	6.9	5.9	11.1	15.8	16.1	12.2	9.7	8.0
Poland	-	29.2	32.8	20.9	18.4	18.7	19.7	-
South Africa	37.9	29.4	23.2	18.9	18.9	17.5	19.1	19.1
Sri Lanka	11.2	10.2	13.8	15.3	17.4	14.6	19.3	15.4
Thailand	22.9	25.5	33.8	35.4	31.5	30.1	33.4	31.2
Zambia	19.3	14.1	16.6	12.2	3.5	21.6	34.4	34.0

Source: World Development Indicator, 2012

Table 1.1 shows Malaysia, China, Angola, Botswana, and Nigeria having fairly high saving to GDP ratio compared to other middle income countries. While South Africa, Thailand, Brazil, and Namibia have moderate savings rate, Kenya's saving rate is seen to be declining compared to other SSA countries like Zambia, Angola, Botswana, and South Africa.

1.4   The Statement of the Problem

Liberalization of financial sector creates a financial environment suitable to enhance positive returns on money capital as well as an appropriate institutional framework which eventually leads to increase in private domestic savings and investment hence promoting economic growth (Ngugi, 2000). Kenya initiated financial sector reforms in the early 1990s with liberalization of interest rates taking the lead in 1991 followed by removal of credit guidelines, free entry into the banking sector and opening of the financial sector to foreign investors (Ndung'u, 1996).

Despite implementation of financial reforms, private domestic savings in Kenya have been declining as illustrated in table 1.1. There is therefore a need to examine whether financial liberalization policies have lived up to their stated objectives of promoting private domestic savings because private domestic saving is a major component towards achievement of economic growth in developing countries (Maje, 1996).

Previous studies by Awan, Munir, Hassan and Sher (2010), Nyanzi and Kaberuka (2013), Odhiambo (2006), Shrestha and Chowdhury (2007) have found results that support financial liberalization objective of promoting private domestic savings. Studies on the effect of financial liberalization in Kenya were conducted in the 1990s (Jean-Azam, 1996; Kariuki, 1995; Mwega *et al*, 1990; Ndugu, 1997; Ngugi & Kabubo, 1998; Oshikoya, 1992) all of which found a negative relationship. The most recent study was by Ndiragu, (2008) who found a negative relationship between financial liberalization and private domestic savings. In addition, since 2000, Kenya has changed its government twice. There was also the Economic Recovery Strategy (ERS) from 2003-2007 which saw the economy grow from 0.6% in 2002 to more than 6% in 2007 (Republic of Kenya, 2007) and the implementation of the first phase of Vision 2030 (Republic of Kenya, 2012). The world also experienced a global financial crisis in 2008 which was followed by the Arab uprising as well as the current Euro Crisis. This study therefore seeks

to fill this gap of knowledge by examining the effects of financial sector reforms on private domestic savings in Kenya.

1.5   Research Questions

The research questions of the study are:

1. What is the effect of interest rate liberalization on private domestic savings?
2. What is the effect of opening financial sector to foreign investors on private domestic savings?
3. What is the effect of credit controls elimination on private domestic savings?

1.6   Objectives of the study

The main objective of this study is to examine the effect of financial liberalization policies on private domestic savings in Kenya.

The specific objectives of the study are:

1. To examine the effect of interest rates liberalization on private domestic savings.
2. To examine the effect of opening financial sector to foreign investors on private domestic savings.
3. To examine the effect of credit controls elimination on private domestic savings.
4. To draw policy implications based on the results of the study

1.7   Significance of the Study

This study contributes to the existing body of literature on financial liberalization by examining whether financial liberalization policies, have influenced savings mobilization in Kenya. Besides contributing to the existing body of literature, the study also acts as a basis for further research and a source of information to policy makers. This study results can as well be used to serve as an input in the design of interventions which are aimed at improving the mobilization of domestic savings services in Kenya.

1.8   Scope of the Study

This study has used time series data covering the period from 1975 to 2011. This period is important because it covers both pre reform period (1975 to 1990) and post reform period (1991 to 2011). This period is crucial in the sense that it captures recent financial trends in the world economy especially financial crisis experienced in 2008 as well as the Arab uprising of 2011 and the contemporary Euro crisis.

1.9   Organization of the Study

Following the introduction, the next chapter reviews literature (both theoretical and empirical) on the effects of financial liberalization on private domestic savings. This is then followed by chapter three which sets out the theoretical and analytical framework where the model to be estimated is specified, variables to be used are defined data sources and pre-estimation (diagnostic tests) tests are described.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The purpose of this chapter is to review both theoretical and empirical literature on domestic savings. The first section reviews theoretical literature that advocated for financial liberalization. The second section reviews empirical literature on financial liberalization and domestic savings mobilization. The last section concludes the chapter by giving an overview of the literature reviewed.

2.2 Theoretical Literature

The important role played by financial sector in economic development can be traced back to Schumpeter (1911), in which he argued for the key role of banks in facilitating financial intermediation between entrepreneurs who require credit to finance acquisition of new products. His line of argument was later supported by authors such as Gurley and Shaw (1955), Goldsmith (1969) and Hicks (1969). These authors were in argument with Schumpeter on the important role that financial sector plays. They therefore argued for formulation of policies which will aim at enlarging financial systems in order to enhance their performance in the process of economic development. This view, however, did not come to be then basically because of the dominant ideology of financial repression[1] propagated by Keynes. This Keynesian ideology was mainly pronounced in developing countries. The governments in these economies used the policy measure of keeping interest rates low in order to finance their fiscal deficits. This measure was preferred because no increase in taxes or inflation was desirable. Other policy measures included high reserve requirement, selected credit to priority sectors of the economy, weak monetary policy and accommodation of government borrowing. There was no incentive to hold money

---

[1] Financial repression refers to various restrictive measures imposed on the financial systems including interest rates controls, high reserve requirements and directed credit (Ang, 2007 pp. 540)

anymore and other financial assets in these economies limiting credit available to investors. These diminished the size of banking system and restrained financial intermediation process.

The Keynesian ideology was later in the 1970s challenged by McKinnon (1973) and Shaw (1973). McKinnon model argued that since investment is self finance, there is need therefore to have sufficient savings. On the other hand Shaw's model postulated on the role that financial intermediaries play in the process of economic growth by promoting investment through borrowing and lending.

McKinnon (1973) analyzed an open economy with little possibility of external finance for vast majority of investors. He argues that because of the lumpiness of physical capital, savers may find it convenient to accumulate funds in monetary assets until they have enough resources to invest in high yielding physical assets. In his words, McKinnon stipulated that deposits may serve as a conduit for capital formation making deposits and capital complementary assets. The availability of deposits generating real rates of returns may thus encourage both savings and capital accumulation. This however is in contrast with the neo-classical theory where two assets (money and physical assets) are considered substitutes.

Shaw (1973) also stressed on the importance of positive real interest as an inducement to save in financially repressed economies. However unlike McKinnon, Shaw hypothesized on external rather than internal financial possibilities as the effective constraint on capital formation. Focusing on the role of deposits as a source of funds for financial intermediaries, Shaw argues that deposit rates would stimulate investment spending by allowing the supply of credit to expand in line with financial needs.

One clear arguments of both Shaw and McKinnon hypothesis is the assumption that savings are always positively related to real interest rates and that nominal interest rates are administratively determined and are therefore always below the equilibrium market level of real interest rates.

Their framework therefore advocates that economies should implement financial liberalization policies in order to enhance mobilization of domestic savings, improve efficiency in resource allocation among the many investment alternatives projects so as to contribute to economic development. Other financial liberalization policies apart from interest rates liberalization include: adoption of measures that enhance security markets development; reserve requirement reduction; privatization of publicly owned financial institutions; removal of entry into the banking sector; directed credit elimination; openness of both the capital and current accounts and enhancing prudential regulation measures (Kargbo, 2010).

The McKinnon and Shaw school of thought came under sharp criticism in the 1980s by the Neo-Structuralists school lead by Wijnbergen (1983), Taylor (1983) and Buffie (1984) due to their failure of including informal financial market in the model. This school of thought contends that the benefits associated with financial liberalization will not be realized in the presence of an efficient curb market or informal financial market. This is because commercial banks were still subjected to reserve requirement which hinders efficiency of intermediation between savers and investors. The neo-structuralists school therefore saw households to be holding three types of financial assets which were substitutes. They are bank deposit, currency or gold and curb market loan. After financial liberalization, the neo-structuralists foresaw an increase in bank deposits rates. This will make households to demand more or want to hold more of bank deposits against curb market loans. This increases the cost of getting working capital from the informal sector since their rates will also increase as a result of financial liberalization. This implies that players in the curb market will disappear leading to a transfer of all the funds in this market to the banking system (Ang, 2007 & Kargbo, 2010).

In later years, Campbell and Mankiw (1990) examined the effect that liquidity constraint could have on private savings rate. They divided households into two types in both developing and

developed countries; those that are liquidity constrained and others who are not liquidity constrained. Those households that are liquidity constrained, their consumption is determined by current while those that are not liquidity can smooth out consumption since they can access capital market freely. Financial liberalization enables the liquidity constrained households to freely access the capital market hence smoothing their consumption path. This implies that the household consumption has been stimulated at the expense of savings. Therefore a fall in the saving rates will be expected. This, according to Serieux (2008), will mean that financial liberalization leads to a fall in private savings rates. This sentiment is further shared by a host of other authors who felt that easing credit constrained as a result of financial liberalization deludes the incentive of previously constrained households or individuals to save (Bayoumi, 1993; Jappelli and Pagano, 1994; Bandiera *et al.*, 2000).

Other critics of the McKinnon-Shaw framework are found in the works of Stiglitz (1994), Akyuz (1995) and Ogaki, Ostry and Reinhart (1996). According to Stiglitz (1994), financial markets experiences imperfections which call for some form of intervention from the government to correct the imperfections. The government according to the author should intervene and keep interest rates below their market clearing level. The wisdom behind the government intervention is due to the presence of a certain level of interest rates in which increase beyond that level will lead to lower lending. This is because the quality of borrowers will be changed in favour of the high risk category level.

Akyuz (1995) criticized the efficacy of the McKinnon-Shaw framework in an analysis in which households, private firms and governments were considered. According to the author rise in interest rates that result from financial liberalization tends to benefit deposit holding households though they are perceived to be low savers compared to firms. As a result, the profit of the firms falls due to high cost of debt. This further results to a fall in private savings rate since the profit

of higher saving firms will have declined as opposed to low saving households who end up getting highest share of total income. This also happens in the public sector savings too since financial liberalization makes interest payments on government debt high. This will reduce tax revenue from interest income leading to a fall in public sector savings. Thus overall savings decline as compared to financial savings.

Ogaki *et al*. (1996) on their part focused on subsistence level of households in a country. According to them countries with significant proportions of households near subsistence level of income, their elasticity of substitution will approach zero whenever there is a change in income. This implies that when interest rates rise as a result of financial liberalization private savings in these countries will not respond to the rise, thus no effect in the levels of savings. On the contrary, countries which have a significant proportion of its households just above the income subsistence level will have an increase in their levels of private savings as a result of interest rates from financial liberalization.

In summary, there exists a vast body of literature that supports the efficacy of financial liberalization theory. However some authors have argued that fall in savings rates are more pronounced after implementation of financial liberalization policies. The authors have attributed the decline in private savings rate to either income distribution effect (Akyuz, 1995), easing liquidity constraint (Campbell and Mankiw, 1990; 1991; Bayoumi, 1993; Jappelli and Pagano, 1994; Bandiera *et al*., 2000) or presence of subsistence consumption (Ogaki *et al*., 1996). These theoretical arguments against the McKinnon and Shaw hypothesis lead to the question whether financial liberalization has indeed promoted savings mobilization. According to Odhiambo (2009) demystifying this remains as an empirical issue.

2.3   Empirical Literature

The McKinnon (1973) and Shaw (1973) complimentary hypothesis has received considerable attention since developing countries started to implement financial liberalization policies in the 1980s and early 1990s. The empirical studies conducted so far tend to mirror the theoretical ambiguities associated with the hypothesis. Different authors from different countries have employed different estimation techniques to evaluate empirically the impact that these financial liberalization policies have on savings.

Most of the research studies have found negligible effect that a rise in real interest rate as a result of financial reforms have on private savings. While reviewing literature, Fry (1995) found the relationship between savings and real interest rates to be mixed and insignificant generally. For example, Giovannini (1985) examined the influence that reforms implemented in developing countries were having on savings. Using a sample of eighteen developing countries, the author found consumption growth response to real interest rate insignificantly different from zero. He concludes that there can only be a negligible response of aggregate savings on real interest rate. Gupta (1987) on the other hand considered the relationship between savings and nominal interest rates in 9 Asian countries and 13 Latin American countries. In the Asian countries the author finds a significant positive relationship while no significant relationship is found in Latin American countries.

Mwega *et al.* (1990) tested the McKinnon and Shaw hypothesis whether real interest rates significantly impact positively on both financial and non financial savings in Kenya over the period 1966 to 1985. To do this the authors examined the proposition that private financial and aggregate savings in Kenya rises significantly as real deposit rates rise. The rise in financial savings will be reflected by increase in credit flow to the private sector. Their results did not support the McKinnon and Shaw hypothesis. Their results instead showed rate of private savings

and demand for real money to be insignificantly responsive to a representative deposit interest rate. Nevertheless, the study does not fully capture the complementarity hypothesis since Kenya as a country embarked on full implementation of reforms as of 1991.

Oshikoya (1992) examined the effect that financial liberalization through higher deposit interest rate has on savings, investment, financial intermediation and economic growth in Kenya over the period 1970 to 1989. The study finds Kenya's experience with financial deregulation moderately in support of the financial liberalization theory. The study further finds increased real rates of deposit encouraging competition among non financial institution and banks. There is also evidence of a positive correlation between real interest rates, credit availability and investment in Kenya according to the findings of the author. The study therefore concluded that the findings do not support the McKinnon and Shaw hypothesis in Kenya.

Bayoumi (1993) studied the effects that financial reforms in eleven standard regions of the United Kingdom had on private savings. According to the author, exogenous short run fall in savings is expected as a result of financial reforms. Also savings sensitivity to demographic factors, real interest rates, wealth and current income will increase following deregulation of financial markets. The data of the model tested finds household savings exhibiting decline which is linked with financial innovations. The sensitivity of savings to current income, wealth and interest rates is also confirmed. Although author's results imply that the decline in savings is as a result of a rise in wealth, he argues that financial reforms also have played a significant direct role. According to the author the 2.25% fall in private savings rate is as a result of financial liberalization alone.

Japelli and Pagano (1994) investigated the role that capital market imperfections played on aggregate savings and growth. The study utilized a simple overlapping generational model as its analytical framework. The model proposed that households that are liquidity constrained are

more likely to lead to a rise in the rate of savings. This will further lead to growth effect being strengthened and hence welfare may increase. A panel of OECD countries over the period 1960 to 1987 was used by the study. The study found out that the financial liberalization of 1980s being responsible for the decline in national savings and rate of growth in the OECD countries. The authors therefore cautioned against further deregulation in European Union due to its implication on welfare.

Both Edwards (1995) and Masson, Bayoumi, and Samiei (1998) examined the impact of financial liberalization policies in a group of industrial and developing countries. Edwards (1995) used data from 36 Latin American countries who are both members of OECD and less developed to estimate a panel and cross country regression for a period from 1970 to 1992. The author found the relationship between rate of real interest rate and private savings to be insignificantly negative in 25 less developed countries. The results were still similar for a broader sample of 11 industrial countries and 25 developing countries. Masson *et al.* (1998) analyzed data from 1971 to 1993 for 21 industrial countries and data from 1982 to 1993 for 40 developing countries. Their results are slightly different from those of Edwards (1995) in that they finds a significant positive relationship between real rate interest and private savings for industrial countries while the relationship for developing countries is insignificantly negative.

Kariuki (1995) applied the McKinnon and Shaw hypothesis to investigate the effect of liberalizing interest rates in Kenya on financial savings. The results of the study failed to support the model which postulated a positive relationship between the two similar to Mwega *et al.* (1990) and Oshikoya (1992). The author therefore concluded that financial savings are not significantly responsive to real deposit interest rates in Kenya.

Azam (1996) conducted a study on the impact that interest rate have on savings in Kenya. His study yielded results which were contrary to previous studies (Mwega *et al.*, 1990; Oshikoya,

1992; and Kariuki, 1995). His study finds a significant positive relationship between real rate of interest and national savings rate in Kenya. The author therefore argues that the impact of interest rate on savings in Kenya cannot be captured unless there is consideration of the role that financial repression plays in shaping the relationship between them.

Ndung'u (1997) on his part, surveyed nine English speaking African countries consisting of Botswana, Ghana, Kenya, Malawi, Nigeria, Tanzania, Uganda, Zambia and Zimbabwe; to evaluate whether benefits associated with financial liberalization were achieved in these countries. The author observes that real interest rates in most of the countries after liberalization became negative while investment, savings and growth did not respond to reforms that were being initiated in most of the countries. The author found conclusions which contradicted the postulations of liberalization theory in countries where indicators worked. The author also found decline in investment, while few countries experienced rise of savings. There was also reduction in efficiency of intermediation which was measured by the rising spread between deposit and lending rates. According to the author financial liberalization did not bring its desired results. In fact in some countries liberalization was followed by financial crisis leading to a temptation to revert back to financial controls, the author noted.

Khan and Hassan (1998) tested the relationship that exists between financial liberalization, economic growth and savings in Pakistan. Using time series data for the period 1959-60 to 1994-95, the authors find strong support for McKinnon's complementarity hypothesis. The study finds the coefficients of savings ratio in the money demand function and real money balances in the savings function both statistically significant and positive. The results therefore indicate that an increase in real interest rates leads to accumulation of more money balances which improves available money for loanable funds for investment.

A study by Ngugi and Kabubo (1998) had results indicating that positive real interest rates have not been achieved with financial liberalization. In Kenya, according to the authors, it is not until 1996 that positive real interest rates were achieved when inflation rate took a downward trend. But they argued that prospects of keeping them positive were narrow with the upward trend in inflation rate beginning 1997. Also contrary to the expectation of theory that financial liberalization would narrow the spread between lending and deposit rate, the authors concluded from their study that the spread widened with liberalization.

Bandiera *et al*. (2000) analyzed the effects that different financial liberalization measures had on eight countries, namely Ghana, Korea, Mexico, Chile, Malaysia, Zimbabwe, Turkey and Indonesia; that had reformed their financial systems from 1970 to 1994. An econometric relationship that expresses private savings ratio as a function of real interest rate and financial liberalization index[2] together with inflation, income and public savings was estimated. They found no evidence of positive impact of reforms on savings. In Korea and Mexico the effects were significantly negative, positive in Ghana and Turkey while the results were insignificant in the others.

Due to the variations that savings rate portrayed across countries, Loayza, Schmidt-Hebbel and Serven (2000) sought to examine liberalization policy effects on private savings from a sample of 150 countries; both developed and developing; with data spanning from 1965 to 1994. The study utilized the panel instrumental variable technique. The authors found real interest rates to have a significant negative impact on private savings rate, while the national savings coefficient was insignificant. The results therefore indicate that private savings rate reduces by 0.25% in the short run for a 1% increase in real rate of interest.

---

[2] A financial liberalization index constructed by the authors was based on eight different components which are: interest rates; reserve requirement; security markets deregulation; pro-competition measures; prudential regulation; bank ownership; directed credit and capital account liberalization.

Reinhart and Tokatlidis (2002) while studying a sample of 50 countries consisting of 14 developed and 36 developing countries over the period 1970 to 1998, found financial liberalization leading to higher rates of real interest rates which is an implication of efficiency in resource allocation. They also found financial liberalization to further lead to lower investment, high gross capital flows and higher levels of FDI. This implies that financial liberalization enhances financial deepening. However, low income countries are not seen to be financially deepened by financial liberalization. On the other hand, the authors find financial liberalization painting mixed picture as regards its effects on savings. They found savings increasing in some regions after financial sector reforms while other regions were found to record decline in savings. According to the authors, financial liberalization only enhances greater access of international capital markets.

Habibullar and Hidthiir (2004) analyzed the effects of financial liberalization on national savings in three countries: Malaysia, the Philippines and Thailand. The study estimated an error correction model using annual data for sample period from 1971 to 1999. The model included money supply monetization and financial intermediation, inflation, growth and demographic factors to explain national savings. The results of the study clearly indicated that monetization and financial intermediation that result from financial reforms in the three countries played a positive role in enhancing higher savings. Therefore the study concluded that monetization and financial intermediation are very important for accumulation of savings in the three countries.

Hermes and Lensink, (2005) analyzed the relationship that exist between financial liberalization and savings in a sample of 25 emerging market economies over period 1973 to 1996. The study utilized a dataset constructed by Abiad and Mody (2005) to measure financial liberalization for 13 Asian, 7 Latin American and 5 African emerging market economies. The authors found no

evidence to support the argument that financial liberalization affects domestic savings. Their results show that financial liberalization reduces domestic savings rather than increase.

The controversy surrounding the role of financial liberalization on domestic savings led Odhiambo (2006) to examine the effect that financial liberalization has on domestic savings in South Africa over the period 1987 to 2000. In the study, the author utilized real deposit rates and financial depth (M2/GDP) as the proxies for financial liberalization. The study results indicate presence of a distinct positive relationship between financial depth and domestic savings in South Africa. However the empirical results of the study do not support the rate of interest elasticity to savings. Basing on the findings of the study, the author concludes that while financial liberalization might not considerably influence the domestic savings in South Africa via its effect on rate of interest, it does affect the structure in which savings take place by the use of its financial deepening.

Baliamoune-Lutz (2006) explored the long run linkages and short run dynamics between financial liberalization reforms and domestic savings mobilization in Morocco over the period 1960 to 1999 using a vector error correction model approach. Financial depth is found by the author to be positively related to private savings whereas increase in real rates of interest have negatively related. This implies that effectiveness of financial intermediation as a result of financial liberalization does not directly affect savings but instead influence the volume of intermediation significantly. The study found savings to have stable relationship with financial liberalization in the long run although the influence of interest rate is still negative. This implies that in the long run income effect is dominant.

Ahmed (2007) used vector error correction model approach on annual data for Botswana over the period 1971 to 2003 to explore the influence of financial reforms on savings. The author constructed a financial liberalization index composed of interest rate regulation, reserve

requirement, exchange rate and capital account liberalization and bank ownership. The study result in the short run show savings being positively related to real interest rates. However on further analysis the author finds a significant positive relation between the private savings and liberalization index. The author therefore concludes that financial liberalization has resulted to more private savings.

Shrestha and Chowdhury (2007) tested the efficacy of financial liberalization policy in promoting savings. The study employed autoregressive distributed lag modeling approach on Nepalese quarterly data over the period 1970 to 2003. A savings function was tested using interest rate as the proxy for financial liberalization. The study results indicate support for financial liberalization policy of promoting domestic savings.

Ndirangu (2008) studied effects of financial liberalization on savings in Kenya over the period 1971 – 2004. The study finds no a positive relation of interest rates on savings in the short run while in the long run, the relationship is negative. The study conclusion is therefore ambiguous since it does not explicitly indication whether the findings support or fail to support the complementarity hypothesis.

Robin (2008) was motivated by the controversy over the role of financial liberalization policies in developing countries to explore the influence that these policies had on the banking sector in Bangladesh. The study employed time series data over the period 1981 to 2008 to estimate a savings function with real deposit rate and bank branches as the explanatory variables. In examining financial liberalization policy efficacy of their stated objective of promoting domestic savings by raising real interest rates, the study found no significant positive correlation between domestic savings and real deposit interest rates.

Using a paired t-statistic, Wilcoxon singed rank test and discriminated analysis, Okpara (2010) investigated the effects that financial liberalization in Nigeria had on selected macroeconomic

24

variables. The macroeconomic variables of interest to the study were real GDP, financial deepening, foreign direct investment, savings and inflation rate. The study covered periods of both pre-liberalization (1965 to 1986) and post-liberalization (1987 to 2008). The results of the study indicate that in Nigeria financial liberalization has a significant negative effect on both savings and foreign direct investment while on growth of GDP the effect is significantly positive. Financial liberalization seemed to have no effect on financial deepening and inflation. The author therefore concluded that even though financial liberalization results to higher interest rates, it does not necessarily mean that it will lead to higher savings.

Awan *et al.* (2010) analyzed the long run relationship as well as short run dynamics that exist between real deposit interest rates, financial liberalization, terms of trade, economic growth, remittance of Pakistan emigrants and domestic savings in Pakistan. The study utilized annual time series data for the period 1973-2007. ARDL was used to test for co-integration. The study results found evidence of a positive influence of real interest rate, economic growth and financial liberalization on domestic savings in the long run. Terms of trade and remittance influenced domestic savings negatively. The study concluded that interest rates deregulation and liberalization be increased in Pakistan so as to encourage more savings mobilization.

Murshed and Robin (2012) were motivated by portfolio selection theory model on liberalization to explore the consequences of financial liberalization policy on the banking sector in Bangladesh. The study utilized time series approach on annual banking sector data over the period 1981 to 2008. The study uses two models of savings function. One model proxies' financial liberalization with financial deepening measured by broad money as a percentage of GDP (M2/GDP) while the second proxies' financial liberalization with financial deepening measured by expansion of banking institution (bank branches). The study results indicate failure of financial liberalization to promote domestic savings through raising of real interest rates.

Ogwumike and Ofoegbu (2012) investigated the impact of financial liberalization on domestic savings in Nigeria over the period 1970 to 2009. The study utilized autoregressive distributed lag estimation technique. The authors observed a significant positive effect on domestic savings in the short run while in the long run the effect turns significantly negative. The authors therefore concluded that financial liberalization has not worked to increase domestic savings in Nigeria through rise in interest rates.

Nyanzi and Kaberuka (2013) investigated the relationship that exists between financial sector liberalization and financial savings mobilization in Uganda over the period 1980 to 2007. The authors estimated a savings function to test the McKinnon Shaw hypothesis. Their results indicate support for the hypothesis. This implies that financial liberalization policies in Uganda have resulted in efficiency enhancing effects which further has stimulated financial savings. Therefore financial liberalization stimulates financial savings.

2.4 Overview of literature review

From the theoretical and empirical literature reviewed it is evident that most of the empirical analysis fails to support the financial liberalization hypothesis of savings mobilization. Some studies (Mwega *et al.*, 1990; Oshikoya, 1992; Bandiera *et al.*, 2000; Baliamoune-Lutz, 2006; Murshed & Robin, 2012; Ogwumike & Ofoegbu, 2012) found no significant positive correlation between financial liberalization policies and private domestic savings.

Few studies (Awan *et al.*, 2010; Azam, 1996; Khan & Hassan, 1998; Habibullar & Hidthiir, 2004; Ahmed, 2007; Shrestha & Chowdhury, 2007; Nyanzi & Kaberuka, 2013) among those reviewed found financial liberalization positively affecting private savings. However, the coefficients were insignificant and their magnitude not large enough.

The only recent study in Kenya by Ndiragu (2008) does not capture the recent trends in world economy since the paper studied the period from 1971 to 2004. In addition the study results

failed to support the McKinnon and Shaw hypothesis of savings mobilization. Other studies in Kenya which found negative association between financial liberalization and savings include; Kariuki, (1995); Mwega *et al.,* (1990); Ndungu, (1997); Ngugi and Kabubo, (1998); and Oshikoya (1992).

The only study that found positive correlation was by Azam (1996). However, Azam (1996) focused only on interest rates only leaving out other liberalization measures. This study fills this gap of knowledge by examining the effect of two more measures which are removal of credit guidelines and opening up of banks to foreign investors. In addition, the period of study is from 1975 to 2011 which captures pre reform period (1975-1989) and post reform period (1990-2011) as well as recent world financial trends such as financial crisis of 2008, Arab uprising in 2011 and the Euro crisis.

CHAPTER THREE

METHODOLOGY

3.1   Introduction

This chapter dwells on theoretical approach used in examining the effects that financial liberalization has on private domestic savings in Kenya. The data sources and estimation procedures are also explained in this chapter.

3.2   Theoretical Model

The theoretical thought dealing with financial liberalization emerged from the seminal works of both McKinnon (1973) and Shaw (1973). Both McKinnon (1973) and Shaw (1973) argued that nominal interest rates which are administratively determined; a situation largely evidenced in LDCs in the 1960s and early 1970s; would hold real interest rates below their equilibrium level. This according to McKinnon and Shaw (1973) is financially repressing. This is because interest rates will be fixed at very low levels leading to very low amount of savings that hinders investment levels. According to them, real interest rates at each rate of economic growth are assumed to be positively related to savings. McKinnon (1973) theory focuses on demand for real money and investment response to different rates of return. Since the McKinnon theory assumes these two as the only forms of asset held by private sector, then the McKinnon model can be summarized as follows:

$$\text{M/P} = l\left(y, d - \pi^e, \text{I}_p/\text{Y}\right) l_y > 0; l_{\text{I}_p}/\text{Y} > 0; l_{d-\pi}{}^e > 0 \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\text{3.1}$$

$$\text{I}_p/\text{Y} = f\left(y, d - \pi^e, \text{I}_g/\text{Y}\right) f_{\text{I}_g}/\text{Y} > 0; f_{d-\pi}{}^e > 0 \text{ or} < 0 \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\text{3.2}$$

Equation (3.1) represents the accustomed long-run real money balances demand function. Real income y is the scale variable. The opportunity cost variable represented by $d - \pi^e$ is real interest rate, while private sector investment to Gross Domestic Product (GDP) ratio represented by I_p/Y is the argument. Equation (3.2) on the other hand is a private sector investment function

which depends on real interest rate, real income and public sector investment to GDP ratio (I_g/Y).

McKinnon (1973) postulated under equilibrium condition that the ratio of actual investment to income (I/Y) must correspond to existing savings in the economy, thus;

$$I_p/Y = S/Y = f\left(y, d - \pi^e, I_g/Y\right)\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.3.3$$

Where S/Y is the actual savings to income ratio. Since real deposit rates are below equilibrium under a financially repressed economy, there is therefore a positive relationship between savings and the real deposit rate $(d - \pi^e)$. This is because a rise in interest rates towards equilibrium induces economic agents to shift from other assets to savings.

In order therefore to get the relationship between savings and growth in the demand for real money balances equation 3.1 and 3.3 are differentiated with respect to arguments and then dividing their differentials. Equation 3.4 is therefore obtained:

$$\frac{d[M/P]}{d[S/Y]} = \frac{d[M/P]/d(.)}{d[S/Y]/d(.)} = \frac{l(.)}{f(.)} > 0 \quad\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.3.4$$

Equation 3.4 above states that there is a positive relation between savings rate and the demand for real money balances. The complementarity hypothesis holds true on the assumption that investment opportunity are plentiful and that the binding constraint is the supply of savings and not the demand for investable funds (Nyagetera, 1997). Thus savings rate can be incorporated as one of the determinants of demand for real money balances.

$$M/P = l\left(y, S/Y, d - \pi^e, I_p/Y\right) l_y > 0;\ l_{s/y} > 0;\ l_{I_p}/Y > 0;\ l_{d-\pi}{}^e > 0 \ldots\ldots\ldots\ldots\ldots\ldots\ldots.3.5$$

Equation 3.4 and 3.5 exhibits a case where there is disequilibrium in the money market; that is supply of loanable funds is exceeded by its demand. Thus in the model a rise in real interest rates leads to an increase in savings and also growth in the demand for real money leading to an increase in savings. The problem now is to reverse the complementarity hypothesis. However,

since complementarity hypothesis works on both ways in that the conditions of money supply have first order impact on decision to save and invest, a savings function that must be determine simultaneously with demand for real money is specified as follows:

$$S/Y = f(y, r, M/P, S_f/Y, v) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots..\ldots.3.6$$

Using equation 3.5, and since complementarity hypothesis works on both ways, a savings function was estimated in order to examine the effects of financial liberalization on private domestic savings as specified in equation 3.6.

3.3   Empirical Model Specification

In order to test the effects of financial liberalization on private domestic savings in Kenya, equation 3.6 was re-specified to include financial intermediation and financial deepening proxies, real deposit interest rates, and public savings as a proportion of GDP. The equation therefore became;

$$S/Y = f(r, m2/y, fi, y, tot, s_g, v) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.3.7$$

Equation 3.7 can be re-written in linear form as follows;

$$PDSG_t = \beta_0 + \beta_1 RDR_t + \beta_2 \ln RMBP_t + \beta_3 FI_t + \beta_4 \ln PGDP_t + \beta_5 \ln TOT_t + \beta_6 PS_t + v_t \ldots..3.8$$

Where: PDSG is the ratio of private domestic savings to GDP; RDR is the real deposit rate; RMBP is per capita real money balances (M2/GDP); FI is financial intermediation (private domestic credit to GDP ratio); PGDP is per capita real GDP; TOT is terms of trade; PS is public savings and v is the error term. In order to deal with the problem of spurious association and heteroscedasticity which arise from variables trend movements, real money balances and real income have been expressed in per capita terms (Thornton, 1990). Per capita real money balances and terms of trade are expressed in logarithmic form so as to smooth them since they

are in ratios. Per capita Real GDP is also expressed in logarithmic form so as to smooth it out since it has large figures.

3.4   Definition and Measurement of Variables

Private Domestic Savings

Savings are obtained as residual in national accounts (Fry, 1995). This means that Gross Savings, $GS = Y - C$ (sum of government savings, S_g; Private savings, S_p; and foreign savings, S_f). Private domestic savings is therefore the savings referred to by the McKinnon and Shaw hypothesis.

Real Interest Rate

Real deposit interest rate is the interest rate on time deposit corrected for inflation. Its inclusion in the model was meant to capture the effect of interest rate liberalization on private domestic savings. This inclusion is standard in savings literature and backed by the life cycle model. Liberalization of interest rates was expected to increase return on savings since real deposit rates improves and provides incentive for savings in financial forms.

Real Money Balances

This variable measures financial deepening of an economy. Financial deepening implies a rise in the supply of financial assets in an economy. The sum of all financial assets gives the approximate financial deepening size. This study used the ratio of broad money (M2) to GDP as a proxy for financial deepening. Financial deepening enables interest rate to reflect relative scarcity, stimulate savings and discriminate more efficiently among alternative investments. This variable is the proxy for credit controls elimination. This study therefore expected a positive relation between financial deepening (PRMB) and private domestic savings.

Financial Intermediation

Financial intermediation is the process of pooling savings from surplus economic agents to deficit economic agents. Its development depends on the cost of savings mobilization from the

public in relation to the returns that these institutions expect from the lending of these funds. This study used private credit extended to the financial systems as a ratio of real GDP as a proxy for financial intermediation. Private credit is the credit to the private sector by commercial banks. Private credit is a broader measure of financial intermediation since it represents a more accurate role of financial intermediaries in channeling funds to private market participants. The rationale for the variable inclusion is to test whether liquidity and borrowing constraints are important in explaining savings behaviour. The coefficient of the variable (*fi*) was expected to be positive and statistically significant. The variable is the proxy for opening up of banks to foreign investors (Ngugi, 2000).

Real Income

Real income (real GDP per capita) is the income of individuals or a nation after adjusting for inflation expectations. It measures economic growth and development. Its inclusion is supported by the life cycle model which argues that in perfect markets individuals will save for future consumption and their lifetime resources are the only constraint. In this regard, consumption smoothing is achieved by economic agents through saving while working and consuming during retirement. Therefore a positive correlation was expected between real income and private savings. Hence the coefficient on per capita real GDP was expected to be positive and statistically significant.

Public Savings

According to Ricardian equivalence an increase in the volume of public savings may be offset by an equivalent reduction in private savings. This leaves the total volume of savings unchanged. This implies that a negative relationship was expected between public savings and private domestic savings. Since the Ricardian equivalence rest on assumptions; perfect information, well functioning capital markets and an independent banking sector free of government interference; none of which is applicable in the developing countries, the experience from empirical evidence

suggests weak relationship (Edwards, 1995). However, increased public savings may promote total volume of savings.

Terms of Trade

The effect of TOT on private domestic savings is not conclusive. Harberger-Laursen-Metzler hypothesis explains the impact of trade on private savings. The hypothesis argues that when terms of trade deteriorate[3] real income is expected to reduce and hence reduction in savings. However, if private agents are assumed to smooth their consumption in times of unstable and erratic income, the consequence is expected to be unclear depending on whether the terms of trade are considered to be short-term or long-term (Athukorala & Sen, 2001). When deterioration in terms of trade is considered to be short-term, consumers respond by raising absorption aiming to offset the reduced purchasing power of domestic goods and maintain constant real expenditure. Conversely, when terms of trade deterioration is alleged to be long-term, domestic residents may be encouraged to raise their savings in the present period so as to sustain their future real standard of living.

3.5   Data Type and Sources

This study will utilize time series data covering a 37 year period from 1975 to 2011. Various issues of Economic Surveys published by Kenya National Bureau of Statistics (KNBS); Central Bank of Kenya (CBK) annual reports; and International Financial Statistics (IFS) Yearbooks published by the International Monetary Fund are the sources of data used in the study.

3.6   Data Analysis

Most of the time series data are non-stationary making Ordinary Least Squares (OLS) regression approach in such series spurious. When two or more non-stationary variables are linearly combined, they may yield a stationary series. This is an implication that such variables are

---

[3] Reduction in the price of domestically produced goods relative to price of foreign goods

33

integrated and therefore a meaningful long-run relationship exists. Estimation procedure therefore considered the following time series data tests.

When examining time series data, it is usually advisable to first determine whether the series is stationary or not (i.e. if the series has constant mean and variance over time). This was the first test and it was done by testing for unit roots to correctly test the hypothesis concerning the variables having unit roots (integrated of at least order one). The test therefore was whether the time series is I(1) which was a necessary condition. The Augmented Dickey Fuller (ADF) was employed to carry out the test. The ADF equation to test unit root in time series was written as follows;

$$\Delta y_t = \alpha_1 + \alpha_2 T + \delta y_{t-1} + \sum_{i=1}^{k} \theta_i \Delta y_{t-i} + \varepsilon_t \quad \text{...3.9}$$

Whereby Δy_t and y_t are the level and first difference of the relevant time series, T is the time trend variable while δ, α_1, α_2 and θ are parameters. ε_t is a white noise error term. The null hypothesis in each equation was that $\delta = 0$, (i.e. there exists a unit root in y_t). Acceptance of the null hypothesis implied presence of unit root.

The second test considered was co integration test. Engle and Granger (1987) argued that when two or more non-stationary time series are linearly combined, they might yield a stationary time series. Existence of such a linear combination implies that the non-stationary series are cointegrated. The process of differencing until variables attain the I(1) status is one of the crucial position of determining whether there is a stable non-spurious (co integration) relationship in the long-run between the variables. Once the variables in the model have been differenced and attained the I(1) status, then the resultant linear combination is known as co integrating equation.

This equation is interpreted as a long-run relationship between the variables. Following Engle and Granger (1987) the co integrating regression was specified as follows;

$$y_t = \beta_0 + \beta_1 x_t + \varepsilon_t$$ ……………………………………………………………..3.10

The residual of equation (3.10) above is given as;

$$\varepsilon_t = y_t - \beta_0 - \beta_1 x_t$$ ………………………………………………………………3.11

The above equation is simply the I(1) series. If the residuals from the linear combination of non-stationary series are themselves stationary, then it is accepted that the I(1) series is co integrated and the residuals taken from the co integration regression as valid which are then built into an Error Correction Model (ECM).

An Error Correction Model (ECM) is a restricted auto regression mechanism used to show the speed with which an economy adjusts itself to long run equilibrium when there is digression at present. It therefore restricts the long run behaviour of the endogenous variables to converge to their co integrating relationships while allowing for shot run dynamics. The co integrating term is known as the error correcting term (ECT). ECT shows the speed with which short term deviations in the model were corrected gradually towards the long run equilibrium. ECM was used in the study to test short run dynamics which measure any dynamic adjustment between the variable's (both dependent and independent) first difference. This study applied ADF test to the residuals of the co integrating (long run) regression. This is because the variables do not retain their long run relationship in the process of differencing.

CHAPTER FOUR

EMPIRICAL RESULTS AND INTERPRETATION

4.1   Introduction

The following chapter is composed of three sections; descriptive statistics section, the analysis section and the results section. The analysis section outlines the tests for stationarity or non stationarity, co-integration and the error correction model. The section on the results discusses the results in line with the objectives of the study.

4.2   Descriptive Statistics

Table 4.1 shows the summary of descriptive statistic of the data used in this study.

Table 4.1: Summary Statistics

Variables	Observations	Mean	Std. Dev.	Minimum	Maximum
Private Domestic Savings/GDP	37	16.785	5.758	4.216	35.159
Real Deposit Interest Rate	37	-2.718	8.589	-25.698	11.469
Log of Per Capita Real Money Balances	37	-18.086	8.589	-18.338	-17.592
Financial Intermediation	37	43.348	6.544	30.204	53.252
Log of Real GDP Per Capita	37	10.399	0.052	10.290	10.519
Log of Terms of Trade	37	4.491	0.137	4.263	4.874
Public Savings	37	-3.50e+10	8.44e+10	-4.94e+11	1.75e+09

Source: Own Computation (With Stata 12)

It is observed from table 4.1 that in every variable data is not too much spread from the mean. For instance, the proxy for financial intermediation has a mean of 43.348 with a minimum observation of 30.204 and a maximum of 53.252. Time plots of the variables can also be used to show the trend of the variables over the sample period. Figure 4.1 plots private domestic savings expressed as a percentage of GDP.
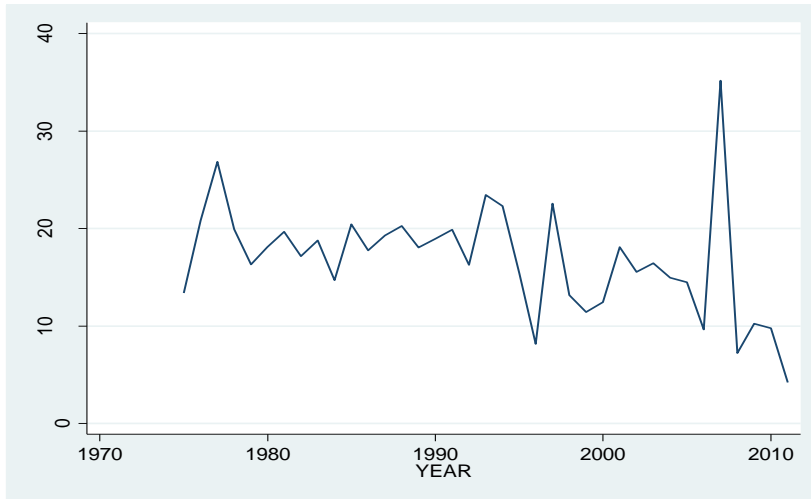
Figure 4.1: Private Domestic Savings as a percentage of GDP in Kenya (1975-2011)

The graph shows that private domestic savings in the period between 1975 and 1995 oscillated between 13 and 27 percent. 1996 saw a rapid fall from 22 percent in 1994 to 8 percent in 1996. They later shot up again to 22 percent in 1997 after which a gradual fall to 9 percent in 2006. 2007 saw a sharp rise to 35 percent but this was not sustained because the following year (2008) saw a sharp fall to 7 percent and gradually dropped with the year 2011 recording 4 percent. The sharp increase in private domestic savings towards the year 2007 can be attributed to the improved economic performance recorded from 2003 to 2007 following the Economic Recovery Strategy for Wealth Creation and Employment (Republic of Kenya, 2003).

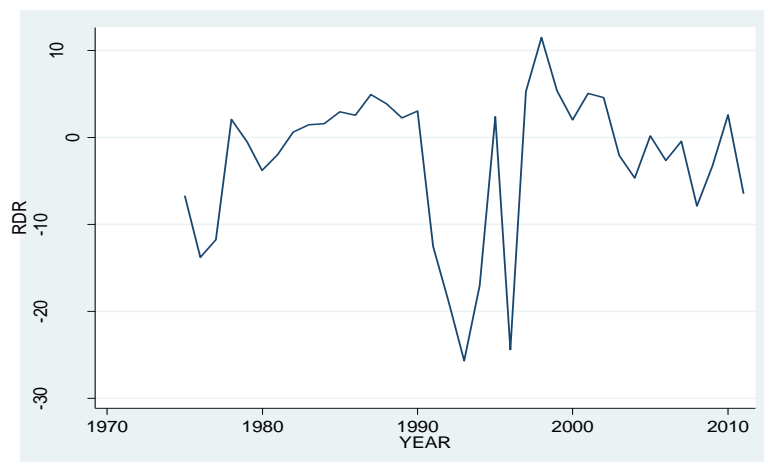The pattern of real deposit interest rates over the sample period is shown on figure 4.2.

Figure 4.2: Real Deposit Interest Rates in Kenya (1975-2011)

Figure 4.2 shows that real deposit interest rate increased steadily from 1976 to 1990. This steady increase was later disrupted from 1991 to 1997 which saw an oscillation in real deposit interest rates. This is the period between which financial liberalization policies were being implemented. Finally there was a gradual decline up to 2011. This gradual decline after implementation of the financial liberalization policies has informed the need to carry out this study.

Figure 4.3 shows per capita real money balances over the sample period.
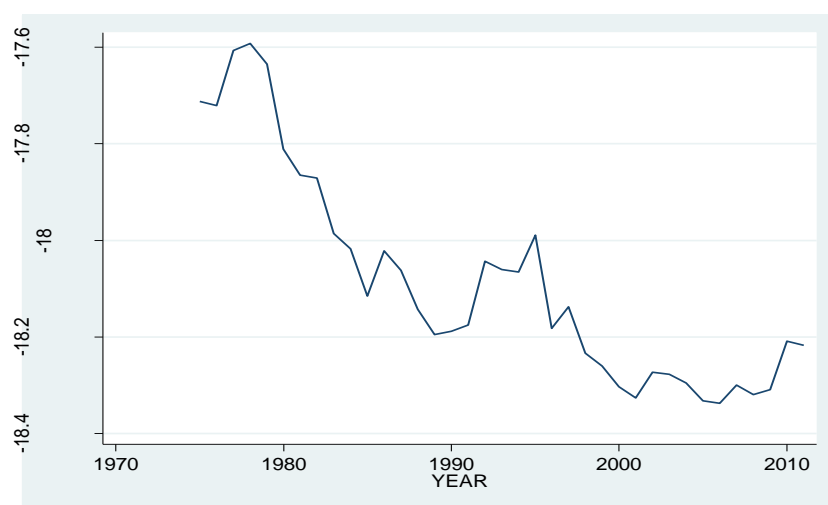
Figure 4.3: Natural Logarithm of Per Capita Real Money Balances in Kenya (1975-2011)

Figure 4.3 depicts a downward trend in per capita real money balances, although the year 1988 to 1995 saw a gradual increase which was not sustainable. This downward trend is attributed to the restrictive measures that the government had imposed on the financial sector. However there was a positive trend between the year 2001 and 2011. The positive trend could be explained by the implementation of financial reforms that enhanced the operations of financial institutions such as banks.

Financial intermediation over the sample period is plotted in figure 4.4.
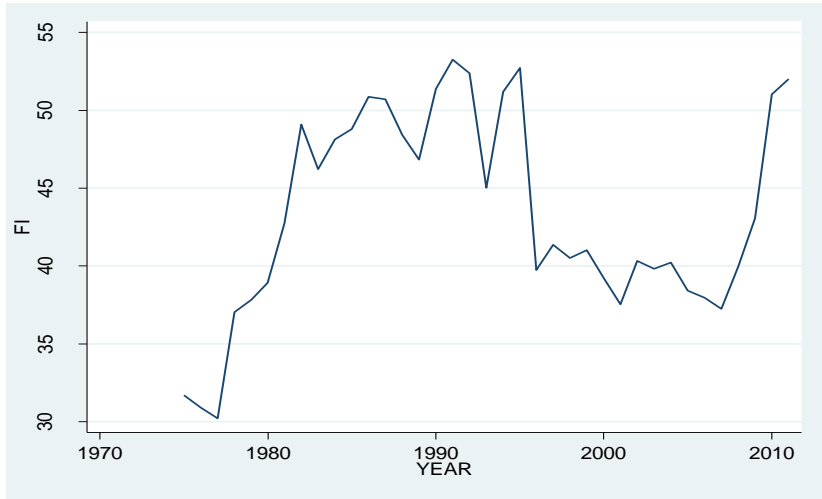
Figure 4.4: Financial Intermediation in Kenya (1975-2011)

Figure 4.4 show that financial intermediation has gradually been increasing every year reaching a pick in the 1995 after which it declined rapidly in 1996. The good performance could be attributed to the efforts made by the government to grow the economy in the first phase of SAPs from 1980 to 1985 and the second phase from 1986 to 1990. In the third phase of SAPs, that is from 1991 to 1995 high levels of inflation were reported. This high levels of inflation resulted in the oscillations between the years 1990 to 1995. Oscillation was experienced from 1996 to 2006 after which a steady increase was experienced to the end of the sample period (2011).

The pattern of per capita real GDP over the sample period is shown in figure 4.5.

Figure 4.5: Natural Logarithm of Per Capita Real GDP of Kenya (1975-2011)

39

Figure 4.5 shows that per capita real GDP has been increasing gradually from 1975 to 2011. It rose from 1976 to 1980 due to the coffee boom of the late 1970s. This trend later dropped from 1981 to 1985 due to the drought that hit the country in the early 1980s and the attempted 1982 coup. The trend would later rise up to 1990 and thereafter be follow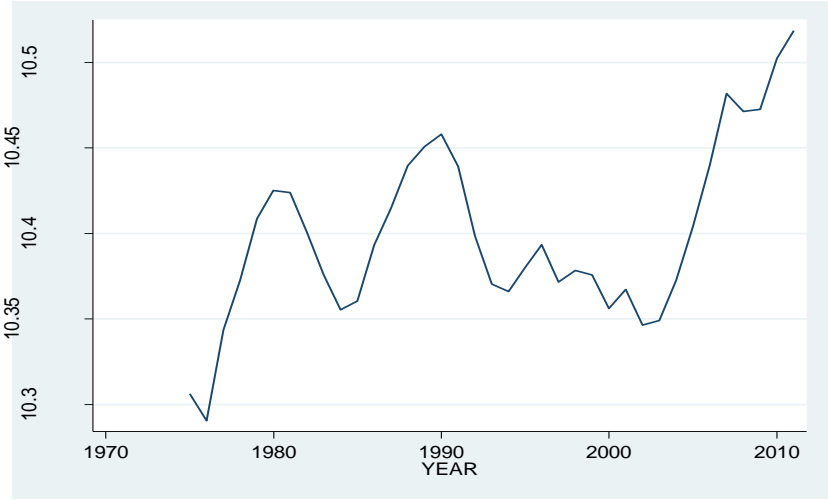ed by a decrease that went on to 2002. After 2002 per capita real GDP went on increasing sharply up to 2011. This gradual increase was as a result of the increased government expenditure annually that was initiated by the Kibaki government.

Terms of trade over the sample period is plotted in figure 4.6.
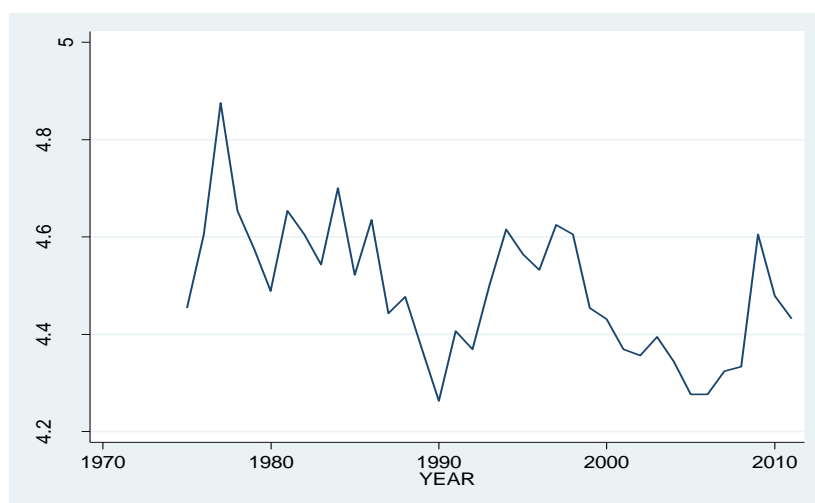
Figure 4.6: Natural Logarithm of Terms of Trade of Kenya (1975-2011)

The graph shows that terms of trade have been quite violent with some years recording very high ratios (e.g. 1977) while others very low (e.g. 1990, 2004 and 2005). The terms of trade are seen oscillating downwards over time. This could be explained by the poor policy environment in the country such as import substitution and increased government interference with the private sector operations along with other measures such as foreign exchange controls and import controls. This uneven trend could impact negatively on private domestic savings since savings decisions would be made difficult to make.

Figure 4.7 plots public savings of Kenya in the sample period of the data.
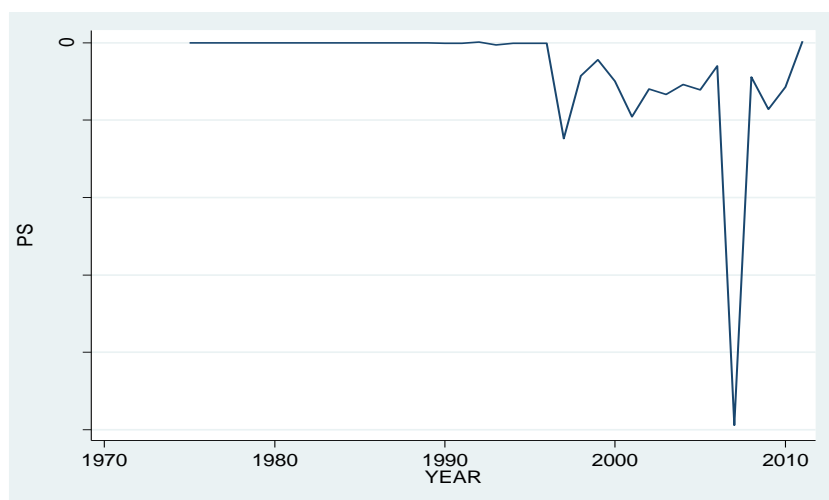
Figure 4.7: Kenya's Public Savings (1975-2011)

Figure 4.7 shows that public savings were steady for a long duration of time from 1975 to 1996. However, the steady pattern or trend of public savings was disrupted and started to oscillate. The worst years for government savings was in 2007, in which the government savings hit the lowest of -494.3 billion. This was mainly occasioned by the 2007/2008 Post Election Violence (PEV) that hit Kenya after the announcement of the 2007 general election results.

4.3   Stationarity Analysis

The use of OLS estimation technique is usually appropriate for stationary variables at levels, i.e. I(0). If the variables under investigation are not stationary, then both F-tests and the standard t-tests will give misleading (spurious) results. Since this study employs time series data, it was imperative or necessary to carry out a stationarity test for all the variables under investigation before proceeding to co-integration analysis. ADF unit root test was used to test stationarity or non-stationarity of all the variables.

The ADF test results (see Table A2, in the Appendix) show that at levels the ratio of Private Domestic Savings to GDP, Real Deposit Interest Rates and Public Savings were stationary, i.e. integrated of order zero, I(0). The other variables (Per Capita Real Money Balance, Financial

41

Intermediation, Terms of Trade and Per Capita Real GDP) of the model were all stationary at first difference, i.e. integrated of order one, I(1).

4.4 Co-integration Analysis

Given that the variables were integrated of order one, the next step was to establish whether there was a long run relationship among the variables, i.e. whether the variables at levels are co-integrated. The Engle and Granger two step procedure was used. The first step was to run a regression with the variables at levels (see table A3 in the appendix for the results of the regression) after which residuals are generated from the co integrating regression. The next step was to test the stationarity or non stationarity status of the residuals. The ADF unit root test for stationarity was applied. The results of the ADF unit root test (see Table A4 in the Appendix) indicated that the residuals were stationary at 5% level of significance. This implied that the variables under investigation were co integrated, thus a long run relationship exists between the dependent variable and the independent variables. This suggested a need to obtain short run dynamics with the use of Error Correction Model (ECM).

4.5 Error Correction Model (ECM) Results

When variables are co-integrated, then an ECM can be specified to link the short run and the long run relationship. ECM investigates the presence of equilibrium or disequilibrium between short run dynamics and long run equilibrium values of the same, even after co-integration is confirmed. This dynamic system works in a way that the deviation of the current status from its long run relationship is fed into its short run dynamics. Residuals from the co-integration regression are used to generate an error correction term (lagged residuals) which is then inserted into the short run model. Table 4.2 shows the results of ECM.

Table 4.2: ECM Estimation Results

Dependent Variable – Private Domestic Savings/GDP

Variable	Coefficient	t-statistic	P-value
First Lag of the First Difference of Real Deposit Interest Rates	-0.224*	-4.31	0.000
First Difference of Financial Intermediation	0.711***	1.80	0.084
First Difference of Log of Per Capita Real Money Balances	-16.314**	-2.09	0.046
First Lag of the First Difference of Log of Per Capita Real GDP	-31.597	-1.62	0.118
First Lag of the First Difference of Log of Terms of Trade	-5.511	-1.40	0.173
First Difference of Public Savings	-5.75e-11*	-14.73	0.000
First Lag of Error Correction Term	-0.496**	-2.70	0.012
Number of Obs = 34 F (7, 26) = 46.36 Prob > F = 0.0000 Adj R-squared = 0.9059 Root MSE = 2.4647			

Note: *, **, *** imply significant at 1%, 5%, 10% level respectively
Source: Own computation with Stata 12

The adjusted R-squared of 0.9059 indicates that the model explains 90.59 % of the variations in the ratio of private domestic savings to GDP. This implies that the overall goodness of fit of the model is satisfactory. The F-test statistic is significant at the 1% level. This indicates that Real Deposit Interest Rates, Per Capita Real Money Balance, Financial Intermediation, Per Capita Real GDP, Terms of Trade and Public Savings jointly explain the ratio of private domestic savings to GDP.

The error correction term with one lag (in table 4.2) has a coefficient of -0.496 which is significant at 5 percent level with the expected negative sign. The implication is that short run dynamics converges to the long run at the rate of 49.6%. This means that it takes about 2 years to restore the equilibrium ratio of private domestic savings to GDP whenever there is any deviation from the equilibrium rate.

Model diagnostic tests that were done include test for serial correlation, model specification problems and heteroscedasticity. Breusch-Godfrey LM test was conducted to test for autocorrelation in the residuals of the model. Breusch-Godfrey LM tests the null hypothesis that

there is no serial correlation in the residuals. The p-value of 0.5927 suggested that the null hypothesis could not be rejected at all levels (1%, 5% and 10%) of significance. This implied that there was no serial correlation among the variables.

Ramsey RESET test was conducted to test whether the estimated model was well specified. The test was conducted with the null hypothesis that the model had no omitted variable, that is, it is well specified. Since the p-value was 0.2271, the null hypothesis was accepted at all levels (1%, 5% and 10%) of significance, implying that the model had no omitted variable. This means that the model was well specified.

Breusch-Pagan / Cook-Weisberg test was conducted to test for heteroscedasticity. Breusch-Pagan / Cook-Weisberg test the null hypothesis that the residuals variance is homogenous. The p-value of 0.8349 suggests that the null hypothesis cannot be rejected at all levels (1%, 5% and 10%) of significance. This implies that the variables had constant variance, i.e. no heteroscedasticity.

4.6   Interest Rate Liberalization and Private Domestic Savings

Table 4.2 shows that the coefficient of one period lag real deposit interest rate is -0.224 which is statistically significant at the 1% level. This implies that the one period lag real deposit interest rate explains the variations in the ratio of private domestic savings to GDP in Kenya. The variable exerts a negative effect on the ratio of private domestic savings to GDP. The coefficient implies that when real deposit interest rate changes by a unit the ratio of private domestic savings to GDP decreases by 0.224 units. The negative sign is contrary to the McKinnon and Shaw hypothesis. This means that financial liberalization has not brought about the postulated positive effect an implication that liberalization of interest rates does not enhance private domestic savings. This finding is consistent with Ogwumike and Ofoegbu (2012) and Okpara (2010) in

Nigeria and Baliamourne-Lutz (2006) in Morocco who also found negative and significant effect of real deposit interest rate on private domestic savings.

4.7   Financial Sector and Foreign Investors on Private Domestic Savings

The coefficient of financial intermediation (ratio of domestic credit to private sector to GDP) exerts a positive and a significant effect at the 10% level on the ratio of private domestic savings to GDP. This implies that a unit increase in financial intermediation will lead to a 0.711 unit increase in the ratio of private domestic saving to GDP. This variable is the proxy for opening of the financial sector to foreign investors. This result is consistent with the study by Ogwumike and Ofoegbu (2012) which found positive and significant effect of domestic credit to private sector/GDP (financial intermediation) on private domestic savings in Nigeria.

4.8   Credit Control Elimination on Private Domestic Savings

The coefficient of the log of per capita real money balances (M2/GDP) has a negative sign and statistically significant at 5 percent level. This result suggests that a one percent increase in the log of per capita real money balances will lead to a 0.163 unit decrease in the ratio of private domestic savings to GDP. This result contradicts the McKinnon and Shaw (1973) hypothesis that postulated an increase in private domestic savings as a result of financial deepening which is a byproduct of easing liquidity constraint in the financial sector brought about by elimination of credit control. This result contradicts the study by Nyanzi and Kaberuka (2013); Odhiambo (2006) and; Khan and Hassan (1998) who found positive and significant coefficient on M2/GDP.

4.9   Summary

This chapter outlined the test that were carried out in order to determine the effect that financial liberalization had on private domestic savings in Kenya. The variables used in the study were all found to be stationary at first difference except the ratio of private domestic savings to GDP, real

deposit interest rates and public savings which were stationary at levels. Engle and Granger (1987) suggest possibility of a linearly combined non-stationary series yielding a stationary series. In such a case the non stationary series are said to be cointegrated. The variables in the study were subjected to co integration test and they were found to be cointegrated. This means that the variables in the model have a long run relationship and therefore need to test short run dynamics.

The error correction method was used in the study and the one lag error correction term coefficient was found as -0.496 and statistically significant at the 5 percent level an implication that about 50% disequilibrium from previous period instability are corrected in the long run equilibrium in the present period. The error correction model found real deposit interest rate to exert a negative effect on the ratio of private domestic savings to GDP. Opening of the financial sector to foreign investors was found to exert a positive effect on the ratio of private domestic savings to GDP. Credit control elimination on the other hand was found to exert a negative but significant effect on the ratio of private domestic savings for GDP.

CHAPTER FIVE

SUMMARY, CONCLUSION AND POLICY IMPLICATIONS

5.1   Introduction

This chapter contains the summary of the study findings, conclusion drawn from the findings and policy implications. The chapter also highlights the areas of further research.

5.2   Summary of the Study

Since the initiation of financial liberalization policies in the early 1990s, Kenya's private domestic savings rate has always been declining. This study therefore set out to analyze the effects that financial liberalization policies had on private domestic savings in Kenya over the period 1975 to 2011 as the main objective. A savings function model which incorporated both financial liberalization measures and determinants of savings variables was estimated to determine the short run and long run relationship between private domestic savings and financial liberalization variables. The data used in the study was from 1975 to 2011. Co-integration and error correction method was utilized in the study for analysis.

The study found one period lagged real deposit interest rate to exert a negative and statistically significant effect on the ratio of private domestic savings to GDP. Financial intermediation (domestic credit to private sector/GDP) was found to exert positive and significant effect on the ratio of private domestic savings to GDP. The per capita real money balances was found to exert a negative but significant effect on the ratio of private domestic savings to GDP.

5.3   Conclusion

From the econometric analysis, it is evident that the positive relationship which was postulated by financial liberalization policy between real deposit interest rate and private domestic savings does not exist for the case of Kenya. This implies that interest rates liberalization has not led to

increased savings mobilization in Kenya. This is contrary to the McKinnon and Shaw hypothesis which postulated positive interest rate influencing savings mobilization. Therefore financial liberalization has not worked through interest rate liberalization.

Financial intermediation (proxy for opening of the financial sector to foreign investors) was found to be positively related to private domestic savings. This indicates that opening the financial sector to foreign investors has enhanced intermediation. This implies that financial liberalization has worked through financial intermediation. On the basis of this finding it is prudent for the government to continue the efforts of liberalizing financial markets to allow more foreign investors in order to enhance financial intermediation.

Per capita real money balances (proxy for credit guideline elimination) on the other hand was found to be negatively related to private domestic savings. This implies that financial deepening which results from elimination of credit guidelines has not been achieved in Kenya. Therefore financial liberalization has not worked through financial deepening brought about by real money balances (proxy for credit guideline elimination)

5.4   Policy Implications

There is need for the government to fast track the process of privatization of state owned banks. This change in the structure of commercial banks operations would result in increased competition in the banking industry. Competition in the banking industry brings with it competitive pricing of interest rates. This will lead to an increase in nominal deposit interest rates with improved efficiency of intermediation process. This is a very important process towards converting the negative effect of real deposit interest rates to positive on private domestic savings as demonstrated by the results of the study.

The government could also encourage development of financial innovations through creating enabling regulatory and supervisory framework. Since the banking industry in Kenya is dominated by five major banks, encouraging financial innovations would attract more savers in the financial sector. This will increase competition in the industry thereby promoting market determined interest rates. This will ultimately work towards changing the negative effect of real deposit interest rate on private domestic savings to positive.

There is need for the government to widen access to credit. This could be done by improving informational, legal and judicial reforms. This is because better information would enhance competition while giving borrowers an incentive to maintain good credit records. Legal and judicial reforms would entail definition and execution of collateral and bankruptcy law which are vital in the process of access to credit. This is because the results of the study found opening of financial sector to foreign investors (proxied by domestic credit extended to the private sector/GDP) to have a positive and statistically significant effect on private domestic savings. The government could further strengthen the stability of the financial system; and, create an enabling environment for different players in the financial system.

Finally, there is need for the government to have a stable, credible and sustained macroeconomic environment. Macroeconomic stability implies fiscal discipline on the part of the government. The government should reduce its debt (1.8 trillion) as the first step towards fiscal discipline. There is also the need for the government to tighten loopholes in its revenue collection such as tax evasion as well as tax avoidance so as to reduce reliance on borrowing to finance its budget deficit. This is because elimination of credit guidelines (proxied by M2/GDP) was found to have a negative effect on private domestic savings. There is also the need to control inflation in real terms through effective monetary policy. This is because an increase in inflation in Kenya makes households to keep more currency and less quasi money. There is a further need to Strengthening

the Central Bank of Kenya's capacity in controlling and guiding the activities of financial institutions and financial intermediaries.

5.5   Areas for Further Studies

This study focused on the effects of financial liberalization on private domestic savings in Kenya. Three financial liberalization measures were considered namely; interest rates liberalization, opening of financial markets to foreign investors and credit guideline elimination. Future studies could focus on other liberalization measures such as privatization of commercial banks, liberalizing capital flows and reducing barriers of entry to banking sector or on all the financial liberalization measures as a whole.

REFERENCES

Ahmed, A. D. (2007). Potential impact of financial reforms on savings in Botswana: An Empirical Analysis using a VECM Approach. *The Journal of Developing Areas*, 41(1), 203-219

Akyuz, Y. (1995). Financial liberalization in developing countries: Keynes, Kalecki and the Rentier in *Poverty, Prosperity and the World Economy; Essays in Memory of Sidney Dell*, Gerry Helleiner et al. (eds.), London: MacMillan Press Ltd.

Ang, J. (2007). A survey of recent developments in the literature of finance and growth, Discussion Paper 03/07, Department of Economics, Monash University

Arrieta, G. M. (1988). Interest Rates, Savings and Growth in LDCs: An Assessment of Recent Empirical Research. *World Development*, 16(5), 589-605

Aryeetey, E., Hettige, H., Nissanke, M., & Steel, W. (1997), Financial Market Fragmentation and Reforms in Ghana, Malawi, Nigeria, and Tanzania, *World Bank Economic Review*, 11(2), 195-218

Athukorala, P. C., & Sen, K. (2001), The Determinants of Private Saving in India. *World Development,* 32(3), 491-503.

Awan, R. U., Munir, R., Hussain, Z., & Sher, F. (2010), Rate of Interest, Financial Liberalization and Domestic Savings Behaviour in Pakistan. *International Journal of Economics and Finance*, 2(4), 75-81

Baliamoune-Lutz, N. (2006). Financial Reform and the Mobilization of Domestic Savings: The Experience of Morocco. *Working Papers RP2006/100*, World Institute for Development Economic Research (UNU-WIDER)

Banderia, O., Caprio, G., Honohan, P., & Schiantarelli, F. (2000), Does Financial Reform raise or reduce saving? *Review of Economics and Statistics, 82*, 239-263

Bayoumi, T. (1993), Financial Deregulations and Household Saving, *Economic Journal,* 103, 1432-1443

Brautigam, D. A., & Knack, S. (2004). Foreign aid, institutions, and governance in Sub-Saharan Africa, *Economic Development and Cultural Change*, 13, 255-285

Buffie, E. F. (1984). Financial Repression, the New Structuralists, and Stabilization Policy in Semi-Industrialized Economies, *Journal of Development Economics* 14, 305-322.

Campbell, J., & Mankiw, G., (1990). Permanent income, current income, and consumption *Journal of Business & Economic Statistics*, 8(3), 265-279

Edwards, S. (1996). Why are Latin America's savings rates so low? An International Comparative Analysis, *Journal of Development Economics,* 51, 5-44

Ekanayake, E. M., & Chatrna, D., (2010). The effect of foreign aid on economic growth in developing countries, *Journal of International Business and Cultural Studies*, *3*(2)

Emenuga, C. (1996). The outcome of financial sector reforms in west Africa, in *African Voices on Structural Adjustment to Our Continent, Our Future, (Chapter 14),* International Development Research Centre (IDRC).

Engle, R. F., & Granger, C. W. J., (1987), Co integration and error correction: Representation, estimation and testing, *Econometrica,* 55, 251–76

Fry, M. (1988). *Money, Interest and Banking in Economic Development,* Baltimore, The johns Hopkins Press

Fry, M. (1995). *Money, interest and banking in economic development*. London: The John Hopkins University Press

Giovannini, A. (1985). Savings and Real Interest Rates in LDCs. *Journal of Development Economics,* 18, 2-3

Goldsmith, R. W. (1969). *Financial Structure and Development*, New Haven: Yale University Press

Gupta, K. L. (1987). Aggregate savings, financial intermediation and interest rates, *Review of Economics and Statistics,* 69(2)

Gurley, J. G., & Shaw, E. S., (1955), Financial Aspects of Economic Development, *American Economic Review* 45, 515-538

Habibullah, M. S., & Hidthiir, M. H., (2004), Does financial liberalization matter for higher savings? Some evidence for Malaysia, the Philippines and Thailand, *Savings and Development*, 28(1), 5-19

Herberger A., (1950) Currency Depreciation, Income and the Balance of Trade. *Journal of Political Economy* 58, 47-60

Hermes, N., & Lensink, R., (2005). Does Financial Liberalization Influence Saving Investment and Economic Growth? Evidence from 25 Emerging Market Economies, 1973-1996, *University of Groningen, UNU-WIDER Discussion Paper No. 2005/69*

Hicks, J. R., (1969) *A Theory of Economic History*, Oxford: Oxford University Press

Jappelli, T., & Pagano, M., (1994) Saving, Growth and Liquidity Constraints, *Quarterly Journal of Economics*, 109, 83-109.

Kargbo, S. M. (2010). Financial Liberalization and Savings Mobilization in Sierra Leone: A Test of McKinnon's Complementarity Hypothesis. *West African Journal of Monetary and Economic Integration*, 10(1), 131-170

Kariuki, P.W. (1995). The Impact of Interest Rate Liberalization on Financial Savings; the case of Kenya, *African Review of Money, Finance and Banking*, 95, 5-19

Karras, G. (2006). Foreign aid and long-run economic growth: empirical evidence for a panel of developing countries. *Journal of International Development*, 18(7), 15–28.

Kasekende, L. A., & Atingi-Ego, M. (2003), Financial liberalization and its implications for the domestic financial system: The case of Uganda, *African Economic Research Consortium*

Khan, A. H., & Hasan, L. (1998), Financial Liberalization, Savings and Economic Development in Pakistan, *Economic Development and Cultural Change*, 46(3), 581-597

Laursen S. & Metzler, L., (1950), Flexible Exchange Rate and the Theory of Employment. *Review of Economics and Statistics* 32, 281-99

Levine, R. (1997). Financial Development and Economic Growth: Views and Agenda, *Journal of Economic Literature*, 35(2), 688-726

Levine, R., Loayza, N., & Beck, T. (2000), Financial Intermediation and Growth: Causality and Causes, *Journal of Monetary Economics* 46, 31-77

Loayza, N., Schmidt-Hebbel, K. & Serven, L. (2000), What Drives Private Saving Across the World, *Review of Economics and Statistics*, 82(2), 165-181

Maje, E. H. (1996). Financial Sector Reforms in Tanzania: Nature and Prospects, *African Journal of Economic Policy,* 3(2), 49-62

Masson, P. R., Bayoumi, T. & Samiei, H. (1998), International Evidence on the Determinants of Private Saving, *World Bank Economic Review*, 12, 483-501

McKinnon, R.I. (1973). *Money and capital in economic development*, Washington, DC: The Brookings Institution

Murshed, S. M. & Robin, I. A. (2012), Financial Liberalization, Savings and the Banking Sector in Bangladesh, *South Asia Economic Journal*, 13(1), 69-83

Mwega, F. M., Ngola, S. M. & Mwangi, M. (1990). Real Interest Rates and the Mobilization of Saving, A case study of Kenya, *AERC Research Paper*

Ndirangu, N. (2008), The Impact of Financial Liberalization on Savings in Kenya. *Unpublished Master Thesis for the University of Nairobi*

Ndung'u, S. N. (1997). The Impact of Financial Sector Liberalization on Savings, Investment, Growth, and Financial Development in Anglophone Africa, *African Development Review,* 9(1), 20-51

Ngugi, R. W. & Kabubo, J. M. (1998), Financial Sector Reforms and Interest Rate Liberalization: The Kenyan Experience, *A.E.R.C. Research Paper* 72

Ngugi, R. W. (2000). Financial reform process in Kenya: 1989-96. *African Development Review*, 12(1), 52-77

Nyagetera, B. M. (1997). Financial Repression in Tanzania, its Impact on Savings, Investment, Credit and Growth, *Unpublished PhD thesis*, University of Dar-es-salaam

Nyanzi, S. & Kaberuka, W. (2013), The Effect of Financial Sector Liberalization on Private Financial Savings in Uganda (1980-2007), *Greener Journal of Social Sciences*, 3(4), 187-202.

Odhiambo, N. M. (2006). Financial Liberalization and savings in South Africa, *African review of money finance and banking,* 61-74

Ogaki, M., Ostry, J. D. & Reinhart, C. M. (1996), Saving Behaviour in Low-Income Developing Countries, *IMF Staff Papers*, 43(1), 38-71

Ogwumike, F. O. & Ofoegbu, D. I. (2012), Financial Liberalization and Domestic Savings in Nigeria, *the Social Science* 7(4), 635-646

Okpara, G. C. (2010). The effect of financial liberalization on selected macroeconomic variables: Lesson from Nigeria, *International Journal of Applied Economic and Finance,* 4, 53-61

Oshikoya, T. W. (1992). Interest Rate Liberalization, Savings, Investment, and Growth: The Case of Kenya, *Savings and Development,* 16, 305-321

Reinhart, C. M. & Tokatlidis, L. (2002), Before and After Financial Liberalization, *Paper presented at World Bank Conference on Financial Globalization*, May 2002

Republic of Kenya, (1978) *Economic Survey 1978*, Nairobi, Government Printer

Republic of Kenya, (1979) *Economic Survey 1979*, Nairobi, Government Printer

Republic of Kenya, (1980) *Economic Survey 1978*, Nairobi, Government Printer

Republic of Kenya, (1982) *Economic Survey 1982*, Nairobi, Government Printer

Republic of Kenya, (1988) *Economic Survey 1988*, Nairobi, Government Printer

Republic of Kenya, (1997) Development Plan 1997/2001, Nairobi, Government Printer

Republic of Kenya, (2003) *Economic Recovery Strategy for Wealth Creation and Employment*, Nairobi, Government Printer

Republic of Kenya (2007) *Kenya Vision 2030: A Globally Competitive and Prosperous Kenya.* Nairobi, Government of Kenya

Republic of Kenya (2012) *Economic Survey 2012*, Nairobi, Government Printer

Robin, I. A., (2008). Financial liberalization: What has really been achieved in Bangladesh, *Master's Thesis*, Institute of Social Studies.

Schumpeter, J. A. (1911). *The Theory of Economic Development*, Oxford: Oxford University Press

Sen, K. & Vaidya, R. R. (1997) *The process of financial liberalization in India*. Delhi: Oxford University Press

Serieux, J. (2008). Financial liberalization and domestic resource mobilization in Africa: an assessment, *International Poverty Centre, Working Paper* No. 45.

Shaw, E. (1973). *Financial deepening in economic development,* New York: Oxford University Press.

Stiglitz, J. E. (1994). The role of the state in financial markets, *Proceedings of the World Bank Annual Conference on Development Economics 1993,* Washington D.C.: The World Bank

Taylor, L. (1983). *Structuralists macroeconomics: Applicable models for the Third World*, New York, Basic Books

Thornton, J. (1990). The demand for money in India: A test of McKinnon's complementarity hypothesis, *Savings and Development,* 14, 153-157

Wijnbergen, V. S. (1983). Interest Rate Management in LDCs, *Journal of Monetary Economics,* 12, 433-452.

World Bank, (1994) *World Development Report,* New York: Oxford University Press.

Appendix

Table A1: Raw Data

YEAR	PDSG	RDR	RMBP	FI	PGDP	TOT	PS
1975	13.36	-6.705	2.031E-08	31.686	29920.091	86	22401000
1976	20.812	-13.776	2.014E-08	30.892	29451.109	100	35477000
1977	26.829	-11.770	2.258E-08	30.204	31056.195	131	72053000
1978	19.921	2.049	2.289E-08	37.032	31982.146	105	35533000
1979	16.293	-0.509	2.194E-08	37.836	33143.786	97	64630000
1980	18.085	-3.797	1.840E-08	38.918	33693.537	89	16441000
1981	19.654	-2.006	1.744E-08	42.752	33656.581	105	-62700000
1982	17.163	0.605	1.733E-08	49.096	32884.220	100	-142700000
1983	18.762	1.431	1.545E-08	46.230	32071.883	94	-79300000
1984	14.706	1.580	1.497E-08	48.140	31428.301	110	-177510000
1985	20.445	2.944	1.358E-08	48.808	31583.748	92	32650000
1986	17.761	2.538	1.491E-08	50.872	32634.469	103	-44310000
1987	19.283	4.911	1.431E-08	50.696	33350.543	85	-112570000
1988	20.249	3.878	1.320E-08	48.424	34190.450	88	-48690000
1989	18.033	2.231	1.253E-08	46.839	34575.845	79	-445640000
1990	18.957	3.029	1.261E-08	51.384	34824.198	71	-841420000
1991	19.876	-12.532	1.278E-08	53.252	34169.553	82	-940950000
1992	16.258	-18.897	1.458E-08	52.368	32810.511	79	667990000
1993	23.437	-25.698	1.434E-08	45.019	31902.027	90	-2.929E+09
1994	22.317	-17.016	1.427E-08	51.189	31763.165	101	-837640000
1995	15.394	2.376	1.540E-08	52.739	32216.131	96	-637520000
1996	8.164	-24.398	1.270E-08	39.755	32640.577	93	-490680000
1997	22.543	5.286	1.327E-08	41.356	31942.202	102	-1.239E+11
1998	13.160	11.469	1.206E-08	40.517	32158.096	100	-4.276E+10
1999	11.423	5.357	1.174E-08	41.022	32072.453	86	-2.202E+10
2000	12.447	2.021	1.125E-08	39.236	31447.636	84	-5.001E+10
2001	18.079	5.066	1.099E-08	37.547	31799.479	79	-9.562E+10
2002	15.553	4.553	1.159E-08	40.340	31146.387	78	-5.996E+10
2003	16.448	-2.064	1.154E-08	39.814	31227.617	81	-6.706E+10
2004	14.933	-4.694	1.133E-08	40.224	31973.298	77	-5.387E+10
2005	14.483	0.183	1.092E-08	38.405	32994.356	72	-6.079E+10
2006	9.633	-2.648	1.087E-08	37.972	34193.694	72	-3.026E+10
2007	35.159	-0.453	1.129E-08	37.243	35663.338	75.5	-4.943E+11
2008	7.212	-7.910	1.106E-08	39.945	35294.428	76.2	-4.452E+10
2009	10.238	-3.287	1.118E-08	43.071	35334.736	100	-8.588E+10
2010	9.769	2.585	1.236E-08	51.035	36402.700	88.1	-5.74E+10
2011	4.216	-6.505	1.225E-08	52.008	36993.897	84.1	1754550000

Where: PDSG is the ratio of private domestic savings to GDP,

RDR is real deposit interest rate,

RMBP is per capita real money balances,

FI is financial intermediation (domestic credit to private sector/GDP),

PGDP is per capita real GDP,

TOT is terms of trade, and

PS is public savings.

Table A2: ADF Unit Root Test

Variables	ADF test statistic (level)			ADF test statistic (first difference)		
	Lag	Without a Trend	With a Trend	Lag	Without a Trend	With a Trend
Private Domestic Saving/GDP	0	-5.505 (-2.969)	-6.933 (-3.566)	-	-	-
Real Deposit Interest Rate	1	-2.976 (-2.972)	-2.894 (-3.560)	1	-	-5.931 (-3.564)
Log of Per Capita Real Money Balances	1	-1.678 (-2.972)	-1.426 (-3.560)	0	-6.188 (-2.972)	-6.323 (-3.560)
Financial Intermediation	1	-2.201 (-2.972)	-2.175 (-3.560)	0	-6.171 (-2.972)	-6.099 (-3.560)
Log of Real GDP Per Capita	2	-1.634 (-2.975)	-2.136 (-3.564)	1	-3.299 (-2.975)	-3.273 (-3.564)
Log of Terms of Trade	1	-2.285 (-2.972)	-3.020 (-3.560)	1	-5.878 (-2.975)	-5.948 (-3.564)
Public Savings	0	-5.186 (-2.969)	-6.423 (-3.556)	-	-	-

Note: The critical values are within parenthesis (5% level of significance).
Source: Own calculation with Stata 12.

Table A3: Results of Co-integration Regression (Long Run Model)

Dependent Variable - PDSG

Variables	Coefficient	t-statistic	P-value
Real Deposit Interest Rate	-0.038	-0.48	0.637
Log of Per Capita Real Money Balances	15.667*	3.54	0.001
Financial Intermediation	0.376*	2.90	0.007
Log of Per Capita GDP	-44.832*	-2.76	0.010
Log of Terms of Trade	-2.013	-0.30	0.763
Public Savings	-5.85e-11*	-6.03	0.000
Number of obs = 37 F(6, 30) = 7.49 Prod > F = 0.0001 Adj R-squared = 0.5198 Root MSE = 3.9899			

Note: * indicates 1% level of significance
Source: Own computation with Stata 12

Table A4: Co-integration Test: Two Step Engle and Granger Test

Variable	Lag	Test statistic	1% Critical Value	5% Critical Value	10% Critical Value
Predicted Residual (Error Term)	1	-3.585	-3.682	-2.972	-2.618

Source: Own computation with Stata 12