FINANCIAL LIBERALISATION, FINANCIAL DEVELOPMENT, SAVINGS AND GROWTH NEXUS IN SELECTED SUB-SAHARAN AFRICAN COUNTRIES

BY

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CERTIFICATION

The undersigned certify that they have read and hereby recommend for acceptance by Makerere University a Dissertation entitled: **Financial Liberalisation, Financial Development, Savings and Growth Nexus in Selected Sub-Saharan African Countries,** in partial fulfilment of the requirements for the Degree of Doctor of Philosophy (Economics) of Makerere University.

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DECLARATION

I, Benon Mugisha Mutambi, do hereby declare that the work presented in this dissertation is my own except where acknowledged, and that this dissertation or any part of it has not been presented to any other University for a similar or any other degree award.

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DEDICATION

To my beloved mother Jadress Rwamaitsi, my wife Denise Mutambi, and my children.

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Benon Mugisha Mutambi

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LIST OF ABBREVIATIONS/ACRONYMS

ANOVA	Analysis of Variance
CPI	Consumer Price Index
ERPs	Economic Reform Programmes
ESAF	Enhanced Structural Adjustment Facility
GDP	Gross Domestic Product
GMM	Generalised Method of Moments
GNP	Gross National Product
IFS	International Financial Statistics
IMF	International Monetary Fund
LCH	Life Cycle Hypothesis
NBFIs	Non-Bank Financial Institutions
NPAs	Non-Performing Assets
OLS	Ordinary Least Squares
OMO	Open Market Operations
PIH	Permanent Income Hypothesis
SAPs	Structural Adjustment Programmes
SDR	Special Drawing Rights
SOEs	State-Owned Enterprises
SSA	Sub-Saharan Africa
WDI	World Development Indicators
WEO	World Economic Outlook

ABSTRACT

As a result of the failure of financial repression policies to deliver the desired economic growth, most SSA started liberalizing their financial sectors hoping that these reforms would lead to financial development, improve domestic savings and increase economic growth. This study evaluates the direct effects of financial liberalisation on financial development, domestic savings and economic growth for a sample of twelve sub-Saharan African countries over the period 1976 to 2007.

An index of financial liberalisation is constructed and two approaches are employed to study the impact of financial liberalisation on financial development. The first approach compares the indicators of financial development in the pre- and post-liberalisation periods using the equality of means test while the second approach involves the estimation of a panel regression. The findings from the equality of means test do not provide conclusive evidence that financial liberalisation per se has a positive and significant effect on financial development. The outcomes of financial liberalisation vary from country to country but countries which managed to control inflation during and after liberalisation registered improvements in the indicators of financial development. On the other hand, panel econometric results find an overall positive effect of financial liberalisation on financial development while the inflation rate has a negative effect on financial development. The real interest rates and the corresponding spreads increased in the post liberalisation period in the majority of countries.

The results also fail to provide support to the hypothesis that financial liberalisation increases domestic savings. Instead, the increase in private sector credit is found to have a negative effect on domestic savings thus providing support to the view that by easing borrowing constraints, financial liberalisation reduces savings. The results also fail to provide evidence of a direct positive relationship between financial liberalisation and economic growth. Economic growth is instead affected by government expenditure, trade openness, inflation, population growth, initial level of per capita income, and credit to the private sector.

These findings imply that SSA countries should ensure that financial liberalisation policies are accompanied by measures aimed at reducing inflation. In order to promote domestic savings, countries should implement growth enhancing measures, raise per capita incomes and reduce the current account deficits. To promote economic growth, countries should implement policies that reduce government consumption expenditure, reduce inflation, increase trade openness and the investment rate.

CHAPTER ONE

INTRODUCTION

1.1 Background

Sub-Saharan Africa (SSA) registered dismal growth performance for three consecutive decades up to the mid-1990s. During the period 1980-2000, the average annual gross domestic product (GDP) growth rate was a meagre 2.5 percent resulting into a negative annual growth rate of per capita real GDP. While there has been a notable improvement in growth over the past decade, it remains far below the desired levels to pull the region out of poverty. The poor growth performance of SSA is reflected in the low rate of capital accumulation and the low saving rate in the region. Over the same period, for example, SSA invested, on average, 18 percent of GDP compared to over 30 percent for the Asian countries. At the same time, the national savings rate averaged only 16 percent of GDP compared to over 30 percent for developing and the Newly Industrialized Economies of Korea, Hong Kong, China, Singapore and Taipei China (see appendix 1).

As a result of the low savings rate, much of the investments in SSA are financed by massive inflows of foreign capital mainly in form of aid (foreign saving inflows). The reliance on foreign savings to finance investment has unfavourable implications to the sustainability of the current account deficits. The situation is worsened by the fact that a number of countries in SSA which recorded high current account deficits (in excess of 5 percent) had low levels of investment and economic growth raising concerns regarding the sustainability of current

account deficits[1]. Unsustainable current account deficits are undesirable because they may trigger currency crises and scare away investors in the long run.

Some commentators have referred this dismal growth performance of the SSA countries as the worst economic tragedy of the 20th century (Artadi and Sala-i-Martin, 2003). In order to reverse the poor growth performance, and correct the internal and external imbalances, SSA countries adopted Economic Reform Programmes (ERPs) in the late 1980s and 1990s. One of the major components of these ERPs was the liberalization of their financial sectors which was aimed at correcting the distortions in the financial sector that were inhibiting savings mobilization and efficiency of resource allocation. These financial sector reforms were mainly motivated by the financial repression hypothesis promulgated by McKinnon (1973) and Shaw (1973) and popularised by the World Bank and the International Monetary Fund (IMF) following the Williamson's well-known Washington consensus.

According to the proponents of financial liberalization, financial repression through interest rate ceilings keeps interest rates low and this discourages savings with the consequence that the quantity of investment is stifled. In this regard, investment is constrained by savings. On the other hand, the quality of investment is also low because the projects that will be undertaken under a regime of repression will have a low rate of return. The policy prescription by McKinnon and Shaw is to liberalise the financial sector. Financial liberalisation is expected to raise real interest rates which would enhance savings, lead to deeper financial markets and improve efficiency of financial intermediation, increase

[1] See Osakwe and Verick (2007) for a detailed review of the current account deficits in SSA.

capital accumulation and economic growth. In this regard, the effect of financial liberalisation on growth is through the quantity and quality of investment. The quantity of investment increases due to higher savings predicted under the financial liberalisation theory. This is inspired by the findings of the endogenous growth models based on the works of Romer (1986) and Lucas (1988) which predict that higher savings would result in a permanent increase in the growth rates contrary to the neoclassical growth models inspired by the work of Solow (1956) which predict a positive short run impact of higher savings on growth.

Contrary to the above view, there are arguments that liberalising the financial sector may not necessarily lead to higher financial depth. Demirguc-Kunt and Detragiache (1998) argue that a significant increase in interest rates that follows interest rate liberalisation triggers financial crises. Stiglitz (1994) and Arestis and Demetriades (1999) point out that the financial liberalisation hypothesis is based on a set of unrealistic assumptions that include perfect competition and information, and a strong institutional framework. These assumptions, however, are unlikely to be met in practice which may affect the outcomes of financial liberalisation. Arestis and Demetriades (1997) find a positive effect of financial repression on financial development for South Korea while Demetriades and Luintel (1997) find a negative effect in the case of India. It is therefore possible that market failure in the financial system that emanates from imperfect competition or asymmetric information reverses the conclusions of financial liberalisation. Fry (1997) concludes that the impact of financial liberalisation on financial development and growth depends on its sequencing and the macroeconomic environment within which the financial reforms are carried out.

Furthermore, the impact of financial liberalisation and the resultant increase in financial development has an ambiguous effect on the level of savings. To the extent that the development of financial markets may ease the borrowing constraints initially faced by the borrowers under the repressed regime, financial liberalization may impact negatively on savings (Schmidt-Hebbel and Serven, 2002). At the same time, the effect of higher interest rates on savings is theoretically ambiguous because the income effect may offset the substitution effect.

On the basis of the above arguments, it is not so clear cut that financial liberalisation will always enhance financial deepening, increase savings and spur economic growth. Therefore, the key question to ask is whether the financial liberalization undertaken by many SSA has resulted into the expected benefits in terms of increased financial development, higher savings and economic growth[2].

While a number of studies have examined the relationship between financial development and economic growth[3], there have been limited studies that have examined the direct impact of financial liberalisation in the case of developing countries and in particular the SSA countries. Reinhart and Tokatlidis (2003) using data up to 1999 for several SSA countries conclude that financial liberalisation policies have neither mobilised savings, deepened

[2] The term financial liberalisation throughout this study is used in a broader term to refer to the removal of interest rate controls, reduced government intervention in credit allocation, reduction of reserve requirements, privatisation of the banking sector, liberalisation and development of the securities markets, elimination of barriers to entry (pro-competition measures), prudential supervision and regulation and liberalisation of the current and capital accounts.

[3] See Levine (1997, 2004) for a comprehensive review of these studies.

intermediation nor raised investment in SSA. Using a sample of eight developing countries which included two SSA countries, Bandeira, Caprio, Honohan and Schiantarelli (2000) find no support for the hypothesis that financial liberalisation increases savings. Fowowe (2008) investigates the effects of financial liberalization policies on the growth of 19 countries in sub-Saharan Africa (SSA). They find a significant positive relationship between economic growth and financial liberalization policies.

1.2 Statement of the Problem

Before the 1990s, the financial system in most countries in SSA was tightly controlled by the government, a situation referred to as financial repression. With high inflation rates experienced by the majority of these countries at the time, such controls often resulted in highly negative real interest rates. As a result, real financial savings remained stagnant at very low levels and disintermediation became a serious problem. These developments retarded financial deepening and restricted the availability of credit through the financial system thus inhibiting the level and allocative efficiency of investment.

In order to reverse this trend, a number of countries in SSA started implementing financial sector reforms in the late 1980s and 1990s with particular emphasis on the liberalization of the financial sector. These were largely carried out under the framework of the World Bank and IMF supported broader structural adjustment programmes (SAPs). It was hoped that freeing the financial sector of controls on interest rates, reduction or removal of reserve requirements, elimination of directed credit programmes coupled with increased

competition in the banking system and greater prudential supervision would raise real interest rates, enhance saving mobilisation, deepen the financial markets and improve allocative efficiency henceforth leading to higher capital accumulation and economic growth.

Whereas the increase in interest rates often has been the outcome of these liberalization programmes in most countries, the impact of these reforms on the depth of the financial system and on savings as well as growth in the case of developing countries is far from being conclusive. In the theoretical literature, the effect of financial liberalisation on financial development and savings is ambiguous because of the different and sometimes opposing channels. For instance, financial liberalisation eases borrowing constraints which may reduce savings. At the same time the effect of high interest rates on savings is also unclear because of the opposing substitution and income effects. Moreover, the few empirical studies that have examined the effects of financial liberalisation have yielded mixed results (Reinhart and Tokatlidis, 2003; Bandeira *et al.*, 2000).

This study sets out to address the following questions: Has financial liberalization undertaken by many SSA countries enhanced financial development or resulted into deeper financial markets? Has financial liberalisation led to higher levels of domestic savings? Has financial liberalisation spurred economic growth in these countries? This study investigates and attempts to provide answers to these questions.

1.3 Objectives of the Study

The main objective of this study is to examine the impact of financial liberalisation on financial development, domestic savings and economic growth in a selected sample of SSA countries.

This study has three specific objectives:

i. To examine the impact of financial liberalisation policies carried out by the SSA countries on the development of the financial sector;
ii. To examine the impact of financial liberalization on domestic savings; and
iii. To evaluate the direct effects of financial liberalisation on economic growth rates of SSA countries.

1.4 Significance of the Study

While a number of studies have examined the relationship between financial development and economic growth (King and Levine, 1993a); Beck, *et al.*, 2000b; Levine *et al.,* 2000; Fowowe, 2008), very few studies have examined the effects of financial liberalisation on financial development, domestic savings mobilisation and economic growth in SSA. The few studies that have tried to examine this relationship such as Reinhart and Tokatlidis (2003) and Bandeira *et al.,* (2000) suffer from a number of shortcomings. These studies are based on a short experience of SSA countries with financial liberalisation, and do not

construct a financial liberalisation variable that effectively captures the degree of financial liberalisation. The use of dummy variables of 1 and 0 to construct a financial liberalisation variable as is the case with Bandeira *et al.,* (2000) does not effectively capture the degree and gradual nature of financial liberalisation.

This study improves on the existing studies in a number of aspects. The study provides a chronology of the financial liberalisation policies for each of the selected countries that cover a period of 32 years. Based on this review, an index of financial liberalisation is constructed for each of the dimensions of financial liberalisation which include credit controls and reserve requirements, interest rate controls, entry barriers or competition, development of securities markets, government ownership, and prudential regulation and supervision. Each of these is given a score ranging from 0 to 3 depending on the degree of liberalisation. This is an improvement over the previous studies that have used dummy variables of zeros and ones.

The study uses data that covers the period 1976 to 2007 which is a relatively longer period compared to previous studies. This provides a reasonably long experience with liberalisation for most countries in the sample. For the majority of these countries, financial liberalisation was began in early 1990s and completed by late 1990s giving a sufficient period after liberalisation for its effects to be analysed.

In addition, the study makes use of the recent advances in econometric panel data estimation to carry out the estimation by controlling for country specific effects and the

endogeneity of the regressors. Furthermore, the study examines the direct effects of financial liberalisation on financial development, savings and economic growth by including the index of financial liberalisation among the regressors.

Lastly, this study improves on the measurement of financial intermediary development by using the method of principal components to construct a single measure of financial development using the three traditional indicators of financial development, namely, private sector to GDP ratio, broad money to GDP ratio and banking deposits to GDP ratio. This goes a long way in trying to get a measure of financial intermediary development that reflects the quality of the functions provided by the financial system.

The study findings fails to find strong evidence that financial liberalisation in SSA has increased financial development, domestic savings and growth. Yet a developed financial sector is desirable because it facilitates the allocation of resources, trading and hedging of risk, monitoring of managers, mobilization of savings and facilitation of exchange of goods and services. In order to achieve a developed financial sector and increase domestic savings and growth, SSA must look at other policies other than financial liberalisation per se.

1.5 Scope of the Study

The study uses panel data collected on a sample of 12 SSA countries covering the period 1976-2007. This time period is long enough and gives sufficient observations for the pre- and post-liberalisation periods in each of the countries. The selection of these countries was

based on the availability of data and the liberalisation experience of these countries. Therefore, SSA countries with a reasonably longer liberalisation experience and where data was available were selected into the sample. In addition, it was important that countries that have belonged to a monetary union are not all included. In this regard, Swaziland and Lesotho were left out. At the same time, we left out the countries which have been engulfed in deep civil conflicts, violence and wars because in most of these countries data was not available for the entire period of study. It is important to note that it was difficult to get data on most non-English speaking countries partly because most of their publications on their website were not in English and it became impossible to get sufficient data to construct the financial liberalisation index.

The study is limited to a narrow definition of financial liberalisation which covers only the banking sector liberalisation. This is because of the dominant position played by the banking sector in these countries. In most of these countries, the non-bank financial institutions not yet well developed and the capital markets are still thin and undercapitalised and play a limited role in financial intermediation. Commercial bond markets are thin and government bond markets are largely used by captive buyers who hold these bonds to satisfy liquidity requirements of government (Fry, 1997). It is also difficult to construct a long time-series data on the non-bank financial institutions for a number of SSA countries.

1.6 Organisation of the Study

The rest of this study is organised as follows. Chapter two provides a background on the experience of the selected countries with financial reforms. It documents the experiences of the selected countries with financial liberalisation with particular emphasis on interest rate liberalisation, changes in reserve requirements and credit controls, prudential bank supervision and regulation, removal of barriers to entry, privatisation of state owned banks, development and liberalisation of the securities markets, and the liberalisation of the current and capital account. Emphasis is placed on the years when there were major policy changes in respect of each of the above aspects of financial reforms.

Chapter three examines the impact of financial liberalisation on financial development in SSA countries. It reviews both the theoretical and empirical literature related to financial liberalisation and financial development. An appropriate measure of financial development is constructed as well as an index of financial liberalisation that captures the extent of financial liberalisation for each country in each year. Two methodological approaches are employed in the analysis. The first approach compares the indicators of financial development in the pre- and post-liberalisation periods using the equality of means test. The second approach involves the estimation of a panel model using the GMM one-step and two-step estimators. The results of the Pool OLS and the Within Fixed Effects estimators are also presented as a robustness check. The financial development variable is regressed on the index of financial liberalisation and macroeconomic and institutional variables as control variables.

Chapter four examines the impact of financial liberalisation on domestic savings. It presents a review of the consumption theories including the Life Cycle Hypothesis (LCH), and the Permanent Income Hypothesis (PIH) as well as the precautionary motive for saving and the liquidity constraints. Based on these theories, a savings function that captures the channels through which financial liberalisation affects savings by including some financial variables among the regressors, is then formulated. Given the persistence of the savings variable, a dynamic model that includes the lagged dependent variable is estimated using the GMM estimator.

Chapter five examines the direct relationship between financial liberalisation and economic growth. It first presents the neoclassical and the endogenous growth theories and then reviews the finance-growth relationship. A neoclassical growth model that is modified to encompass the other growth theories especially the macroeconomic policy and institutions is estimated using the OLS and Within Fixed Effects estimation.

Chapter six presents conclusions and derives policy implications based on the findings. It also identifies the areas for further research.

CHAPTER TWO

FINANCIAL REFORMS IN SUB-SAHARAN AFRICA

This chapter presents a generalised as well as individual country experiences with financial reforms for selected SSA countries. Most importantly, the section first provides a history of the financial reforms in these countries.

In addition, the chapter documents the experiences of the selected countries with financial liberalisation with particular emphasis on interest rate liberalisation, changes in reserve requirements and credit controls, prudential bank supervision and regulation, removal of barriers to entry, privatisation of state owned banks, development and liberalisation of the securities markets, and the liberalisation of the current and capital account. Attention has been paid to periods when there were major policy changes in respect of each of the above aspects of financial reforms.

2.1. The History of Financial Reforms in SSA

Before the 1990s, most SSA countries intervened heavily in their financial sectors by way of controlling interest rates, and directing lending to priority sectors of the economy such as agriculture, trade and manufacturing. Credit was seen as a powerful instrument of promoting economic development. Policy makers in these countries were convinced that the best way to promote economic growth was to identify key sectors of the economy and use subsidized credit and selective credit controls to expand sectoral growth. However, due

to the high levels of inflation experienced by most SSA countries at the time, real interest rates were often negative which severely undermined financial intermediation.

The banking sector was largely dominated by government owned banks or a joint venture between government and the private sector. Government owned banks were expected to lend to the priority sectors and the small farmers at subsidised rates. In a number of these countries, government banks also undertook aggressive branch expansion programmes in the rural areas as part of the government directives. However, the political pressure to lend to un-creditworthy borrowers often resulted into higher levels of non-performing assets (NPAs). In some of the countries, the levels of non-performing assets accounted for 60-80 percent of the total loans of government owned banks. The largest share of these NPAs was accounted for by the state-owned enterprises (SOEs). Another source of the high NPAs was the loans to agriculture especially those extended to crop farming (Brownbridge and Gayi, 1999).

This model that McKinnon (1973) termed "financial repression" often resulted into inefficient allocation of resources and credit rationing, led to inflationary refinancing of commercial banks' operations by the central banks, and absorption by the government of the banking losses. The priority sectors rarely showed the performance that, in the first instance, had justified the controls (Gelbard and Leite, 1999). The banking system provided few instruments, had a high proportion of NPA's and faced severe financial difficulties that threatened their liquidity and solvency, and hence the stability of the entire financial system. The banks suffered from undercapitalisation, inadequate bank regulation and

supervision, insufficient credit analysis, inappropriate sectoral policies, and weak accounting and management systems. As a result, the savings mobilisation and financial intermediation in SSA became the lowest in the world. For instance, the average M2/GDP ratio for the region fell from 27.3 percent in 1981-85 to 26.6 percent in 1986-1990 (Aryeetey, 2003).

Following the failure of financial repression policies to deliver the desired economic growth and development objectives, a number of SSA countries in the late 1980s and early 1990s adopted comprehensive economic reform programmes which were largely supported by the World Bank and the International Monetary Fund (IMF). Under these structural adjustment programmes, the countries were expected to restructure their economies in order to allow for a market based system and achieve private sector led growth. One of the main components of these reforms was the liberalisation of the financial sectors and particular emphasis was placed on liberalisation of interest rates, elimination of credit controls, restructuring and privatisation of commercial banks, removal of barriers to entry of new banks and particularly foreign ones, adoption of indirect instruments of monetary policy and strengthening prudential regulation.

It was hoped that these reforms would lead to more efficient and deeper financial systems that could support private sector led growth. The reduced government intervention in directing credit and setting of interest rates was expected to improve allocative efficiency with credit being allocated to projects with higher expected returns. At the same time,

increased competition resulting from liberalised entry or removal of regulations would lead to increased financial intermediation and depth.

The experience of SSA with financial liberalisation programmes has varied widely and the speed and sequencing has also differed across countries. Some countries made fast and drastic reforms while others followed gradual liberalisation. However, in almost all the countries, there were some common steps that were followed. For example, Treasury bill auctions were first introduced to allow for market forces to influence Treasury bill rates and also to facilitate the use of indirect instruments of monetary policy. The countries allowed new entry of private and also foreign banks while at the same time the measures towards privatisation of government owned banks were being implemented. Measures to strengthen prudential regulation were implemented including the enactment of new banking laws, capitalisation of government owned banks and reform of the management of these banks. Improving the supervisory capacities of the supervision departments of the central banks became the central objective of the World Bank funded financial sector adjustment programmes (Soyibo, 1997; Aryeetey, 2003).

As pointed out by Aryeetey (2003), the most obvious outcome of the liberalisation programme in SSA has been the growing role of the private sector in bank ownership and the rapid rise of non-bank financial institutions (NBFIs) and microfinance institutions. Following the privatisation of state-owned banks and ease in granting of licenses to the private sector, the number of financial institutions has grown significantly in almost all the countries. However, private sector credit seems to have remained at very low levels in some

countries and declined in others. The financial markets are still inefficient, shallow and thin and financial depth is still very low compared to levels obtaining in developed and emerging economies. Nissanke and Aryeetey (1998) have blamed this outcome on the narrow focus of financial sector reforms which emphasized the elimination of financial repression by way of price and interest rate liberalisation. According to them, the reforms did not address adequately the structural and institutional challenges facing most SSA countries financial systems. Aryeetey and Senbet (1999) have blamed the limited monitoring of the activities of borrowers, poor enforcement of collateral, and lack of enforcement of lender's rights for full disclosure of financial information about borrowers for the low financial depth charactering the financial markets in SSA.

The capital and money markets also have remained shallow and undiversified for both savers and investors inspite the increase in the number of stock exchanges. The major characteristics of SSA countries stock exchanges are the limited number of listed companies, low capitalisation and small diversity among the market participants. The markets are also highly volatile in terms of growth rates and rates of return (Senbet, 1997; Ndikumana, 2000; and Aryeetey, 2003).

2.2. Financial Liberalisation Experiences of Selected SSA Countries

This section presents a review of the financial liberalisation experiences of the selected countries and identifies the timing of policy changes related to the various components of financial reforms. The selected countries include Malawi, Zambia, Uganda, Kenya,

Botswana, Tanzania, Ghana, The Gambia, Namibia, Ethiopia, South Africa, and Mauritius. The selection of these countries is largely based on the availability of data, their liberalisation experience and the membership of countries in a monetary union.

The major sources of this information include publications and research papers by Mlachila and Chirwa (2002), Sato (2001), Geda (2006), Harvey (1998), Masawe (2001), Musinguzi and Katarikawe (2001), Nanyonjo (2002), Kalyalya (2001), Simatele (2004), Maimbo and Mavrotas (2003), Nyawata and Bird (2004), Bundoo and Babee (1999), Jankee (1999), Ikhide and Alawode (2002), Nanna (2001), Mensah (1997), Addison (2001), Ngugi (2000), and Kinyua (2001). In addition, this section also utilised the Article IV consultation reports of the IMF, Central Bank Websites and responses to the questionnaire that was sent to officials in the respective central banks.

This information is useful in the construction of a financial liberalisation variable that captures the degree of liberalisation in each year. This variable is subsequently used as one of the regressors in the financial development, savings and growth equations.

2.2.1. Malawi[4]

Financial sector reforms in Malawi were initiated in 1987 as part of wider adjustment programmes. Measures to deregulate lending rates were begun in 1987 while deregulation of deposit rates took place in 1988. Interest rates were completely deregulated in 1990.

[4] The main source of information on the liberalization experience for Malawi was obtained from Mlachila, *et al* (2002) and Sato (2001).

Credit ceilings and rationing were abandoned in 1989 while preferential lending to the agriculture sector was also abandoned in the 1990.

Treasury bill auctions, as a major indirect monetary policy instrument, were introduced in 1992. These were used partly for fiscal policy purposes as well as liquidity management. In a bid to remain more transparent in its monetary operations, the Reserve Bank of Malawi began issuing its own bills in August 2000. Unfortunately, the secondary market for government securities is not yet developed.

The stock exchange was established in 1995 and commenced operations in November 1996 when it got the first listing. It has, however, remained thin with a single licensed stock broker inspite of the dividends being tax free. Foreign investment is allowed, but is limited to 5 percent of issued share capital for one foreign investor and 49 percent of issued share capital in total. There are no regulations regarding capital repatriation. By 2007, the stock exchange had only five listed companies.

The reserve requirements were first applied in June 1989 following the revision of both the Banking Act and Reserve Bank of Malawi Act. The Banking Act (1989) and the Reserve Bank of Malawi Act of 1989 authorized the Reserve Bank to prescribe a minimum cash reserve balance which other banks were required to maintain in the form of deposits with the Reserve Bank. The reserves are maintained in the same currency as the underlying deposit liability. When the reserve requirement was first introduced in 1989, the rate was set at 20 per cent of commercial banks' deposit liabilities and they were supposed to earn

interest but this was scrapped in 1990. The reserve requirements on domestic currency deposits were subsequently increased to 35 percent in 1995 and remained at this level until June 2000 when they were reduced to 30 percent followed by another reduction to 25.5 percent in February 2007.

Regarding prudential regulation and supervision, the Banking Act that was revised in 1989 covers all financial institutions and includes provisions for minimum capital adequacy and large loan exposure limits. The Act gave more powers to the central bank to supervise and regulate the financial sector. The Reserve Bank of Malawi applies the risk-weighted capital recommended by the Basle Committee. As at end December 1998, all the banks complied with the capital adequacy directives. At the same time, the revised Banking Act set out conditions for new entry. Nonetheless, new entry by private sector banks did not occur until 1995.

The restructuring of the two government owned banks began in 1984 when the bad debts owed by the large parastatal were removed from bank's loan portfolios and replaced by government securities. In line with government policy to deregulate the financial sector, the two commercial banks with government shareholding have been privatised. During the year ending December 1998, Commercial Bank of Malawi became the first bank to be listed on the Stock Exchange. The privatisation of the commercial bank of Malawi was completed in December 2001. The other state owned bank, National Bank of Malawi, was listed on the Malawi Stock Exchange on August 21, 2001 but the Press Corporation Ltd still has the majority shareholding.

On the external policies, the Malawi kwacha was introduced in February 1971 and pegged to the Pound Sterling. In November 1973, the currency was pegged to a weighted average of the Pound and the US dollar. However, due to heavy fluctuations of the two currencies, the kwacha was pegged to the SDR in June 1975. The kwacha was floated against other currencies in February 1994 and a formal foreign exchange interbank market was launched in September 1996.

Malawi removed restrictions on the current account transactions in December 1995 when it accepted article VIII of the IMF. The capital account, however, has remained controlled. Nonetheless, beginning 1998, Malawi started easing restrictions on capital flows in order to attract foreign direct investment. There are currently no restrictions for foreign investors to transfer investment income and their capital out of Malawi. Foreign investors can also participate on the stock exchange and in the money markets.

2.2.2. Ethiopia[5]

Under state socialism (1974-91), popularly referred to in Ethiopia as the 'Derg regime', financial institutions were basically executing the economic plans outlined by the central planning organ. Following the demise of the Derg regime in 1991, post-1991 economic policy adopted a market-oriented economic policy signalling the beginning of reforms in

[5] The main source of information on the liberalization experience for Ethiopia is Geda (2006) and Harvey (1998).

the financial sector. Measures to achieve positive interest rates were started in 1992. Nominal interest rates on deposits and loans were raised by 60–900 percent and 58-144 percent in 1992, respectively. Since January 1995, the central bank switched to a policy of floors on deposit rates and ceilings on lending rates, allowing banks to set interest rates. Further interest rates liberalization was adopted in 2001/02. The central bank revised the floor for saving deposits downwards to 3 percent from 6 percent in 2001/02.

Before 1992, the flow of bank credit was supposed to be in accordance with the agreed priority sectors which included agriculture as the leading economic activity, and mining, manufacturing and power. Starting 1992, discrimination of credit access and interest rates by type of ownership (that is, between state owned enterprises, cooperatives and private firms) were eliminated. Sectoral interest rate discrimination was also reduced. Sectoral discrimination of lending rates, which had continued (favouring agriculture and housing construction with reduced rates) were eliminated in 1994.

The government securities market was established in January 1995 through the introduction of monthly (later biweekly) auction of 91 days treasury bills in 1996. The interbank money market was introduced in 1998. The interbank money market describes the borrowing and lending of funds between banks, microfinance institutions, and non-bank financial institutions at interest rates that are freely determined by the borrowers and lenders themselves. There is no secondary market for treasury bills, and the interbank money market is very thin thus complicating liquidity management. The real interest rates have been largely negative for most of the years.

With effect from 2004, the required reserve ratio was set at 5 percent on all domestic and foreign currency deposit liabilities held in the form of demand deposits, saving deposits and time deposits. Effective 2005, the reserve requirements were calculated at the end of each reporting week. The reserve ratio was increased to 10 percent in 2007 in order to reduce liquidity in the banking system and control monetary growth.

Entry barriers into the banking industry were eased starting 1994 when the private sector (only Ethiopian nationals) were allowed to engage in the banking and insurance businesses. This has seen an increase in private banking and insurance companies. But there is still limited competition in the banking sector because of the significant market power of the Commercial Bank of Ethiopia. In 2007, the Commercial Bank of Ethiopia accounted for two third of the banking system assets. State-owned banks are not yet privatized. However, comprehensive financial restructuring of the government banks, and in particular the Commercial Bank of Ethiopia, began in November 2003.

There have been successive improvements in prudential regulation and supervision beginning 1991. New directives on licensing and supervision business were passed in January 1994 (Proclamation N0.84/1994) and they became effective in May 1994. These established minimum capital requirement for setting up a bank and the capital adequacy ratio (8 percent of weighted assets). However, it said nothing about the central bank having any right to approve the applicant's directors and senior management, no exposure limits were set on a single borrower, and no provision rules for doubtful loans. Another

amendment therefore came into force in 2002 which addressed all the previous shortcomings.

The supervision department of the central bank was started in 1995 but the head of the department was appointed in 1996 and the staff in the department increased to six. After 2000, the supervision department started conducting on-site inspections and developed corrective actions that the banks subsequently implemented. Nonetheless, the inspections are not yet as frequent as required (once every year), and the supervision department suffered from a loss of experienced staff. The non-performing loans of the government banks have remained high inspite of the recent reduction to 27 percent in 2005. A new directive on sharing of credit information and establishment of a credit information centre came into force in 2004. However, the central bank has not yet adopted risk-based management of credit.

The exchange rate reform began by devaluing the currency beginning in October 1992. In 1993, the central bank introduced the auction-based exchange rate system. In July 1996, the central bank introduced a weekly auction replacing the previous auction system. The interbank foreign exchange market was introduced in 1998 and this resulted into the unification of the foreign exchange market. Effective October 24, 2001, the central bank terminated the weekly wholesale foreign exchange auctions and moved all foreign exchange operations to the interbank market.

There have been progressive efforts to liberalize the current account though it is not yet fully liberalized. In March 2001, the authorities eliminated the restrictions on the purchase of foreign exchange for holiday travel and education purposes. The remaining current account exchange restrictions include; (a) the tax certification requirement for repatriation of dividend and other investment income; (b) restrictions on repayment of legal external loans and supplies and foreign partner credits; (c) rules for issuance of import permits by commercial banks; and (d) the requirement to provide a clearance certificate from National Bank of Ethiopia to obtain import permits. These restrictions are inconsistent with Article VIII, Section 2(a), of the IMF's Articles of Agreement. Although the officials claim that the exchange rate is a managed float, its flexibility is still limited. The foreign exchange market has remained generally thin.

2.2.3. Tanzania[6]

The Bank of Tanzania was established in 1966 by an Act of Parliament. With the Arusha declaration of 1967 which proclaimed socialism, the central bank adopted the use of direct instruments of monetary policy. Among the instruments were the Annual Finance and Credit Plan which targeted specific levels of credit growth to different sectors of the economy, to be attained through administered interest rates. The Bank of Tanzania Act was amended in 1978 and the focus of the central bank was broadened so as to allow the Bank to be involved in development financing particularly in the promotion of credit to the agricultural sector. These policies led to rapid growth in the money supply, mainly caused

[6] The main sources of information on Tanzania's liberalization experience is Masawe (2001) and the Bank of Tanzania website at (http://www.bot-tz.org/FinancialMarkets/FinMarketsInTanzania.asp)

by central bank accommodation of the government and commercial banking lending to government-owned parastatal institutions. In 1986, the government introduced broad-based reforms with the objective of stabilising the economy.

Nominal interest rates were raised in 1987 while full liberalisation of interest rates was achieved in 1993. In addition, the lending directives were abolished under the Banking and Financial Institutions Act (1991). The Bank of Tanzania subsequently introduced the Treasury bills market to act as an anchor for market-determined interest rates. The new Bank of Tanzania Act of 1995 provided for a move away from the multiple policy objectives to the single policy objective of price stability. The implementation of monetary policy also changed from the use of direct instruments to indirect instruments. The reserve requirement in 2006 stood at 10 percent of all deposit liabilities excluding 50 percent of vault cash.

The securities market is still undeveloped. However, government has implemented several measures aimed at developing the securities and capital markets over the past two decades. In August 1993, the Bank of Tanzania introduced Treasury Bills Auctions, as a tool for financing short term government deficit and as an instrument for liquidity management. In January 1994, the Capital Market and Securities Act was enacted. In December 1994, the 364-day Treasury bill was introduced in the market. In 1996, the Capital Markets and Securities Authority was set up in order to facilitate the establishment of stock exchange for mobilizing and allocating savings for medium and long-term investments. In July 1997, the Repurchase agreements were introduced to complement Treasury bills and bonds in the

conduct of open market operations. In April 1998, trading activities at the Dar-es-Salaam Stock Exchange commenced. In July 1999, the Bank of Tanzania introduced a computerized book entry system and a Central Depository System for Treasury bills. In February 2002, the Bank of Tanzania on behalf of the Government launched a 5-year Treasury bond. In July 2002, the Bank of Tanzania on behalf of the Government launched a 7-year Treasury bond. In August 2002, the Bank of Tanzania on behalf of the Government launched a 10-year Treasury bond. Several regulations were published in 2003 to guide foreign investors dealing in the Stock Exchange and establish regulatory safeguards for orderly stable market activities. In March 2004, the Financial Markets Leaders Forum was established in order to promote dialogue and networking among stakeholders in the financial markets.

Regarding the prudential regulation and supervision, the Banking and Financial Institutions Act which was enacted in 1991, provided for major changes in the financial sector. Privately owned banks and financial institutions were allowed to do business in Tanzania for the first time since independence. Five private banks and one financial institution began operations during 1993-1995. The objective was to stimulate domestic competition among banks and financial institutions so as to increase efficiency and strengthen efforts to mobilise savings. The number of banks grew rapidly to 19 licensed private commercial banks and eight non-bank financial institutions within a span of only six years.

A new Bank of Tanzania Act was then enacted in 1995. The Act increased the autonomy of the central bank among other things. Regulations on licensing, capital adequacy, and

minimum capital, loan exposure, and provisioning were strengthened. The central bank supervision department was strengthened and directives issued for offsite reporting and on-site examinations.

The restructuring of government owned banks began in 1987. Government took over bad debts of crop marketing parastatals in 1987. The Loans and Advances Realisation Trust was set up in 1991 and all non-performing credits of commercial banks were transferred to this trust. By October 1993, the clean up of the balance sheets of the major commercial banks was almost achieved. The restructuring of the National Bank of Commerce including staff retrenchment and branch closures started in 1995. The Housing Bank was liquidated in 1995.

Government has moved cautiously to privatise the government owned banks. The National Bank of Commerce was privatised in 2000 while 49 percent shares in the National Microfinance Bank were privatised in 2005.

The Inter-bank Foreign Exchange Market was established in June 1994 to pave the way for a market-determined exchange rate. Furthermore, the country accepted Article VIII of the IMF in July 1996. Several aspects of the capital account have been gradually liberalised with the exception of portfolio flows. In 2002, the Government opened up the Dar es Salaam Stock Exchange to foreign investors.

2.2.4. Uganda[7]

Before 1992, monetary policy was mainly conducted using direct instruments which included interest rate and credit controls. Interest rates were administratively set and remained unchanged for long periods, despite inflation developments thus translating into negative real interest rates.

The liberalisation of interest rates was implemented in 1992 with some rates decontrolled and others linked to the Treasury bill rate. The Treasury bill auction was introduced in April 1992 allowing the participation of commercial banks for the first time. With effect from 1993, Bank of Uganda abandoned the use of direct monetary policy instruments and adopted indirect monetary policy instruments. Linking of interest rates to the Treasury bill rates was stopped in 1994 and interest rates were left to be determined by market forces. An interbank money market was also established in 1994. In order to increase its array of monetary policy instruments and exercise greater flexibility in monetary management, the central bank introduced its own bill to supplement the Treasury bill in November 1996. In July 2001, the central bank introduced a central depository system for securities, which was first operationalized in July 2001 and a secondary market for government securities. At the same time, the REPO transactions were first introduced. In 2004, the central bank introduced a primary dealership system.

[7] The summary of the financial sector reforms in Uganda are mainly from the paper by Musinguzi and Katarikawe (2001) and Nanyonjo (2002).

Selective credit policy in form of channelling a certain proportion of total credit to the various economic activities and individual ceilings for banks were partially abandoned in 1981. Selective credit controls were replaced by the stipulation that at least half of any increase in credit had to be extended to crop finance, other agricultural credits, and manufacturing. Directed lending was effectively disbanded in 1990. The responsibility for the provision of crop finance was transferred from the government to the central bank.

Reserve requirements continued to be used both as an instrument of monetary policy and for prudential purposes. The reserve requirements remained unchanged at 10 percent of commercial banks' deposit liabilities between 1972 and 1992. The Banking Law of 1968/69 prescribed liquidity requirements of 20 percent on commercial banks' demand deposits and 15 percent on time and savings deposits. In 1988, banks were required to operate three separate accounts at Bank of Uganda (interest-bearing loan account, statutory reserves account, and the clearing account) to make reserve requirement a more effective instrument. In November 1994, the three accounts were merged into one transactions account. In April 1996, the maintenance of and compliance with cash reserves were changed from a daily basis to an average basis covering a two-week period in order to give commercial banks greater flexibility in liquidity management and reduce the high levels of excess reserves. In November 1996, the cash reserve ratio on domestic currency deposits was raised by 1 percentage point from 7 percent and 8 percent to 8 percent and 9 percent on time and savings deposits and demand deposits respectively to contain the rapid expansion of private sector credit. In August 2000, the reserve requirement was extended to cover foreign-currency deposits. In December 2000, the cash reserve requirements were again raised by 1

percentage point from 8 percent and 9 percent to 9 percent and 10 percent on time and savings deposits and demand deposits, respectively.

Before 1993, the capacity of the central bank to regulate and supervise financial institutions had been greatly undermined by Government when the responsibility for the monetary policy formulation, licensing of banks, and revocation of licenses was vested in the Ministry responsible for Finance. The Bank of Uganda Act of 1966 was amended in 1993 as per the Bank of Uganda Statute of 1993, empowering the central bank as the only monetary authority in Uganda, with the autonomy to formulate and implement monetary policy, and supervise and regulate the financial institutions. The new Act imposed minimum capital adequacy requirements and restrictions on large loan exposures and insider lending. Bank supervision was reorganised and reporting requirements strengthened and bank onsite inspections instituted. The Uganda Constitution of 1995 further strengthened the independence of the central bank. The constitution clearly stipulates that BOU must not be under the direction of any other person or body in the pursuit of its mandate.

Restructuring of government banks began in early 1990s when government recapitalised the Uganda Commercial Bank and subsequently transferred its debts to the Non-Performing Asset Trust in 1995/96 which were replaced by government bonds. Under this restructuring, a number of its branches were closed down. The bank was first privatised in 1998 but this sale was not successful and government later sold the bank to Standard Bank of South Africa in 2001. Following the various bank failures in the 1990s, the central bank has

strengthened bank regulation and supervision. The Financial Institutions Act was amended in 2004 and a Microfinance Deposit Taking Institutions Act was enacted in 2003. The central bank has subsequently issued several regulations in 2005 aimed at tightening loan classification and provisioning standards, and provide for the establishment of a credit reference bureau.

At the beginning of 1990/91, foreign exchange bureaux were introduced as part of the gradual process of liberalizing the exchange rate system. The current account of the balance of payments was liberalized in 1993 and this was followed by the de facto liberalization of the capital account in July 1997.

2.2.5. Zambia[8]

Prior to 1992, monetary policy had multiple objectives and the targets were not well defined and the implementation of monetary policy relied mainly on direct instruments which included fixed interest rates and credit allocation, core liquid assets and statutory reserve requirements.

In 1983, Zambia adopted structural adjustment programs which were abandoned in 1987. Between January 1983 and January 1987 when the reforms were abandoned, the lending rate was increased by 154 percentage points while the Treasury bill rate increased by about 195 percentage points from 9.5 percent to 28 percent. The interest rates were fully

[8] The main sources of information on Zambia used in this study include; Kalyalya (2001), IMF (2007), Simatele (2004), and Maimbo and Mavrotas (2003).

decontrolled in 1993 and the Treasury bill auction system was introduced in March 1993. The introduction of the tender system marked a significant shift from a fixed to a market-determined pricing of Treasury bills and Government bonds. Since then financial institutions have been free to compete and determine the interest rates. With the introduction of the Treasury bill tender system, the Bank of Zambia moved to indirect monetary policy instruments.

Before 1993, government put in place a lot of administrative controls to try and redistribute lending to priority sectors. These included directed lending, limits on composition of boards of directors and control on interest rates. Commercial banks were also required by law to open branches in rural areas. The authorities had abolished all credit controls by 1994.

The reserve requirements have continued to be used though sparingly as an instrument of monetary policy. In December 1996, cash reserve requirements were raised to 8 percent. The ratio was adjusted downwards by 3.5 percentage points in October 2003 to 14.0 per cent from 17.5 per cent. On October 1, 2007, the reserve requirement was reduced from 14 percent to 8 percent.

The securities and capital markets are still underdeveloped. In 1998, the central bank started a secondary market for government securities. The government bonds were also listed on the stock exchange in the same year. However, the listing of corporate bonds is still limited. Only four corporates had listed on the stock exchange by 2006. There are only three brokers licensed to deal on the stock exchange. The Repo market was introduced in 2001.

Prudential regulation and supervision was strengthened with the enactment of the Banking and Financial Services Act in December 1994. This Act provided for entry of private players in the financial sector. Unlike the previous regulation, this Act covers all bank and non-bank financial institutions. Licensing now falls under the registrar of Banks and Financial Institutions based at Bank of Zambia. The new law sets out screening standards for applicants and criteria include capital adequacy, the history of the applicant and proposed associates, major shareholders and affiliates including the character and qualifications of proposed directors and managers. The supervisory capacity of Bank of Zambia has also been strengthened and a separate supervisory and regulation department was created. The Banking Act was also amended in 1996 to better focus on the core objectives of monetary policy. Accordingly, the amended Bank of Zambia Act No. 43 of 1996 narrowed the central bank's objective to price and financial system stability. The Act enhanced the supervisory and regulatory powers of the Bank of Zambia in relation to banking and financial services and brought existing legislation in line with best practice and internationally accepted standards for licensing, prudential regulation and supervision.

Zambia, however, has experienced one of the worst bank closures in SSA. The Capital Bank closed in 1990 and the Meridien Bank closed in 1995. Stricter regulations were issued in early 1996 to try and avoid more bank closures but of the 26 banks registered in December 1995, only 15 were operational by April 2003. In 2004, Zambia embarked on a financial sector development plan that was designed to create a sound and well-functioning financial system. One major achievement was the licensing of a credit bureau in January

2006 which was formally launched in 2007. Regulations for microfinance institutions have been introduced and the Bank of Zambia now supervises deposit-taking microfinance institutions and the larger institutions among non-deposit MFIs in terms of capital.

By 2000, efforts to privatise the state owned bank, Zambia National Commercial Bank, had started. In December 2001, the Zambia Privatisation Agency advertised the sale of 35 percent of the Zambia National Commercial Bank with management control to the buyer. In 2006, the Zambia Privatisation Agency selected Rosebank as the favoured bidder for a controlling 49 percent stake in the Zambia National Commercial Bank.

Following the cessation of the Exchange Control Act in 1994, the exchange rate became fully liberalized. The Lusaka Stock Exchange was established in February 1994. Foreign exchange controls were also removed around the same time. The exchange rate and the allocation of foreign exchange were permitted to be market determined. By March 1993, most foreign exchange controls on current transactions had been removed and in February 1994, the capital account of the foreign payment systems was liberalised

2.2.6. South Africa[9]

The South African Reserve Bank was initially established in 1921 under the Currency and Bank Act, 1920. Before 1983, the interest rates were controlled and played a limited role in the conduct of monetary policy. From 1978 until December 1983, the Reserve Bank began

[9] The major sources of information were the IMF article IV consultations and Nyawata and Bird (2004).

setting its interest rates at a margin above the money-market rates of the previous week, which resulted in an upward movement in interest rates. During this period, credit extension data were distorted significantly by the large degree of disintermediation brought about by the direct limits on credit extension by the banking system. Full liberalisation of interest rates was achieved in 1983. Starting 1986 to 1998, the reserve bank adopted a more transparent form of monetary policy where explicit monetary growth targets and guidelines for M3 were announced annually. The pre-announced monetary targets were to be achieved indirectly by adjusting interest rates. The short-term interest rate became the main monetary policy instrument as the Bank's discount rate was employed to influence the cost of overnight collateralised lending and hence market interest rates. Various measures such as open-market operations were used to influence overall liquidity and credit extension to the private sector. Monetary control operated indirectly through the slowing of the demand for money.

South African monetary policy has changed further in recent years. At the beginning of March 1998, a new system of monetary accommodation commenced with daily tenders of liquidity through repurchase transactions. From March 1998, the M3 growth guidelines were set for a three-year period and an informal inflation target of 1 to 5 per cent was set for the first time. The Bank aimed at signalling its policy intentions for short-term interest rates through the amount offered at the daily tender for repurchase transactions. This marked the beginning of the inflation targeting regime. A formal inflation targeting monetary policy framework was adopted in February 2000.

Unlike other SSA countries, South Africa has a developed securities and capital markets. The Johannesburg Stock Exchange is one of the oldest stock exchanges in the world, having been established as far back as 1886. At the end of 2005, the JSE had 388 companies listed. Since the beginning of 1995, new markets have been developed (for example, a formalised gilt market and further development of market for financial derivatives); introduction/development of new financial instruments (for example, commercial paper, equity options and futures contracts; continuous deregulation of the Johannesburg Stock Exchange; replacement in March 1998 of Bank rate with a more market-related repo rate; etc.). In addition, South Africa has a developed equity market. Government bonds comprise only 60 percent of the listed bonds. The money markets are highly liquid.

Current legislation pertaining to the South African Reserve Bank is contained in the South African Reserve Bank Act, 1989 which gave the Reserve Bank greater autonomy. The South African Reserve Bank, in pursuit of its primary objective, must perform its functions independently implying that the South African Reserve Bank has operational autonomy. This autonomy is also enshrined in the Constitution. The Reserve Bank's primary mandate is explicitly stated in both the South African Reserve Bank Act, 1989 and the Constitution as being the protection of the value of the currency so as to achieve balanced and sustainable economic growth over the long term. The Bank is listed on the Johannesburg Securities Exchange SA and its shares are privately held.

The South African financial system did not experience the "nationalisation" that faced many other African countries immediately after independence. Therefore, the sector has always been open to private participation. In 1985, foreign banks were allowed to open branches in South Africa. The last privatisation of state owned bank in South Africa was in 1988. There are now no state owned banks.

The year 1995 marked the start of the process of gradual phasing out of foreign exchange controls. Measures have included the abolition of the rand and the introduction of liberal foreign investment allowances for South African companies particularly for investment in Africa.

2.2.7. Mauritius[10]

Mauritius embarked on a structural adjustment programme from 1979 to 1986. However, these reforms did not include wide ranging liberalization policies. It is only in the early 1990s, that more pervasive liberalization measures were introduced.

The minimum interest rate banks could pay on deposits and the maximum lending rates they could charge on loans to priority and non-priority sectors were controlled, with the former benefitting from preferential rates. The bank rate, rediscount rates and the rates of interest on government securities were all controlled. In November 1981, the ceiling on lending rates applicable to the non-priority sectors was removed. As far as the priority

[10] The main sources of information on Mauritius are Bundoo and Babee (1999) and Jankee (1999).

sectors are concerned, the maximum lending rates were removed in February 1983. Ceilings on inter-bank rates were removed in September 1981. As a result, the minimum interest rates on time deposits were removed in March 1984, whereas the minimum interest rates on saving deposits were abolished much later in July 1988. In order to establish a framework for effectively carrying out open market operations, the auctioning of Treasury Bills began in November 1991.

Reserve requirements played a significant role in the conduct of monetary policy during the periods of controls. Commercial banks were required to keep a cash ratio which varied between 10-12 per cent from 1970 to 1996. The cash ratio was reduced to 8 percent in July 1996 and to 5.5 percent in July 1998.

Before 1992, the central bank would set an annual credit ceiling for the expansion of bank credit, which was then allocated among the commercial banks. The credit ceilings were introduced in 1973. From 1973 to 1979, bank credit was allowed to expand by 15 per cent a year and a more restrictive sub-ceiling was set for credit expansion to non-priority borrowers. From 1980 to 1991, the rate set for expansion of bank credit varied between 17 and 20 per cent. Beginning July 1992, the ceiling on bank credit to priority sectors was abolished and by July 1993, the credit ceilings on non-priority sectors were lifted marking the end of credit controls. A credit-deposit ratio was imposed which was also abolished in July 1996.

The Bank of Mauritius introduced repurchase transactions (Repos) with effect from 15th December 1999. On the 15th December 1999, the central bank introduced a standing facility under the Lombard Facility Scheme. This facility was to provide overnight-collateralised advances to commercial banks. In 2007, the Monetary Policy Committee as a statutory committee of the Bank of Mauritius was launched. On 18 December 2006, the Bank of Mauritius introduced a new framework for the conduct of monetary policy, with the Repo Rate instead of the Lombard Rate as the key policy rate to signal changes in its monetary policy stance.

Mauritius has a fairly developed securities and capital market. The Stock Exchange of Mauritius has been in operation since 1989. It is fairly capitalized with a listing of 48 listed companies. The country was already receiving portfolio flows by early 1990s. Beginning 2003, the authorities decided that Treasury bills and over time other Government debt instruments be traded on the Stock Exchange of Mauritius. A secondary market for securities was introduced in February 1994.

The Bank of Mauritius Act 1966 and Banking Act 1988 empowered the Central Bank to perform both on-site examination and off-site supervision of the commercial banks. The on-site inspections are performed once every two or three years. The central bank participates in the activities of the Basle Committee on banking supervision and has endorsed the Basle Committee's core principles for effective supervision of banks. While the central bank is viewed as an independent institution, the Act authorizes only the Prime Minister to appoint the Governor and the Managing Director of the central bank.

The Banking Act 1988 has empowered the central bank in its supervision and prudential regulation. Banking supervision is in line with international standards, as prudential regulations were strengthened as part of the financial sector reform process. New capital adequacy guidelines were issued in 1994, in line with those prescribed by the Bank for International Settlements. Banks have also been required to observe international accounting standards since 1994. Commercial banks are required to publish 6-monthly audited accounts in addition to the annual audited financial statements as part of their regulatory requirements.

Offshore banking was launched early in 1989 and comprehensive legislation for offshore business activities introduced in July 1992. All domestic banks are also required to maintain a weighted risk assets capital adequacy ratio of not less than 8 per cent in accordance with the Basle Capital Accord. This ratio has been raised to 9 per cent as from January 1997 to 10 per cent as from July 1997.

Before the coming into operation of the Bank of Mauritius in August 1967, the Mauritian rupee was pegged to a sterling exchange standard (January 1976 to February 1983). A new trade weighted basket was adopted from March 1983 to mid-July 1994. The rupee was also devalued in 1979 and also in 1981. During the first adjustment period, the mechanism for the determination of the exchange rate was modified to reflect more fully the relative importance of the country's trading partners.

In line with the government's policy of increased liberalization, there was an important move towards market determination of the exchange rate of the rupee as from mid-July 1994. The rate is now set by the inter-bank market. The Exchange Control Act was suspended. Full currency convertibility was therefore attained in 1994.

2.2.8. Nigeria[11]

In the 1970s, the authorities introduced a wide range of controls in the banking system through ownership as well as through interest rate and credit controls. As part of the indigenisation wave, most foreign owned banks were nationalised. At the same time, a floor for deposit rates and a ceiling for lending rates were introduced and a credit allocation quota of up to 70 percent of the bank's portfolio was enforced.

The most important instrument of monetary control relied upon was the setting of targets for aggregate credit to the domestic economy and the prescription of low interest rates. The level and structure of interest rates were administratively determined by the Central Bank of Nigeria. Following the Central Bank of Nigeria Decree of 1991, the focus of monetary policy shifted significantly from growth and developmental objectives to price stability. Partial liberalisation of interest rates was attempted in January 1987 and in September 1987 and the interest rates were fully liberalised with the central bank only fixing its minimum rediscount rate to indicate the desired direction of interest rates. In 1989, however, there

[11] The main sources of information on the liberalisation experience for Nigeria are Ikhide and Alawode (2002) and Nanna (2001).

was a slight reversal in policy. The Central Bank of Nigeria issued directives on the desired spreads between deposit and lending rates and in 1991, the government prescribed a maximum margin between each bank's average cost of funds and its maximum lending rates. In 1992, interest rates were deregulated again. However, this saw interest rates rising to unprecedented levels due to high levels of inflation. In 1994, direct interest rate controls were restored. Full deregulation of interest rates was again adopted in October 1996.

Credit ceilings on the deposit money banks, and prescribed sectoral credit allocation to the various sectors of the economy were a major component of monetary policy before 1993. Overall, the "preferred" sectors, such as agriculture, manufacturing and construction, were singled out for the most favoured treatment, in terms of generous credit allocation and a below-market lending rate. Beginning from September 1993, the Central Bank of Nigeria embarked on a selective removal of all credit ceilings for banks that met some pre-set criteria under the Basel Committee's prescribed prudential guidelines. From October 1996, all mandatory credit allocations were abolished. The commercial and merchant banks were subjected to equal treatment.

The Central Bank of Nigeria complements the use of OMO with reserve requirements. In this connection, the reserve requirement is an instrument for liquidity management and for prudential regulation. The cash reserve requirements have been progressively increased from 6 per cent in 1995 to 8 per cent in 1997. These were again increased to 10 percent in April 1998 and 12 percent in June 1998 and then to 12.5 per cent in April 2001. In 2004,

reserve requirements were reduced to 9.5 percent and a two weeks maintenance period introduced.

Starting September 1987, the Central Bank of Nigeria eased entry restrictions of new banks. In 1988, as a first step towards bank restructuring, banks were allowed to own shares in non-financial business as well as engage in insurance brokerage. Because of very low entry requirements and high market premiums that could be earned with arbitrage activities in the foreign exchange markets, several new financial institutions sprang up. By 1991, the number of banks had increased to 119 from 40 banks in 1986.

As a result of weak prudential guidelines and weak supervision, most banks started showing signs of distress by 1990. In 1991, the central bank imposed a moratorium on new licenses. New prudential guidelines were also introduced in 1990. In addition, a uniform accounting standard for banks was introduced to ensure accuracy, reliability and comparability of their financial statements. The concern about the health of financial system also led to the promulgation of the Central Bank Decree 24 of 1991 and the Banks and Other Financial Institutions Decree 25, also of 1991. This was followed by the Central Bank of Nigeria (Amendment) Decree Number 37 of 1998 and the Banks and Other Financial Institutions (Amendment) Decree Number 38 of 1998. Overall, the Central Bank of Nigeria's amended Act granted the Bank more discretion and autonomy in the conduct of monetary policy.

In a bid to strengthen prudential requirements, the minimum paid capital for commercial and merchant banks was increased in February 1990. The central bank also brought into

force the risk-weighted measure of capital adequacy recommended by the Basle Committee of the Bank for International Settlements in 1990. While the Ministry of Finance continued to exert an influence on the conduct of monetary policy, efforts were made by the political leadership to strengthen the Central Bank's Act, in order to render the Bank less dependent on the Ministry of Finance. The central bank has the mandate to issue and revoke the licenses. The central bank's independence is compromised to the extent that it has to finance the government deficit through Ways and Means Advances to some limits which are often disregarded by government.

In 1992, the privatisation agency scheduled the sale of government shares in eight commercial banks and six merchant banks in which the federal government had an ownership stake. These 14 banks constituted 51 percent of total banking sector assets and 60 percent of total banking system deposits. Eight of these privatizations were implemented through the stock exchange but participation was restricted to Nigerians and limited groups of Africans. This program of privatisation however did not reduce entirely government ownership. In December 1996, there were still 20 banks with government interests.

Efforts to liberalise the foreign exchange market were embarked on in September 1986 when a second-tier Foreign Exchange Market was introduced. The foreign exchange market bureau de change was introduced in 1989 for dealing in privately sourced foreign exchange. The foreign exchange market was liberalised in 1992 when the naira was allowed to float but this was reversed in 1995 with the introduction of the autonomous foreign exchange

market. The foreign exchange market was further liberalised in October 1999 with the introduction of an inter-bank foreign exchange market.

An auction market for government securities was introduced in 1989 in preparation for eventual removal of credit controls. Government approved issuance of 3-5 year bonds in 1998 but actual issuance began in 2000. Primary dealer system for government securities was introduced in 2003 and is regulated by the debt management office. A Pension Reform Bill was signed into law on 25th June 2004.

2.2.9. Ghana[12]

Since the launch of the Economic Recovery Programme in 1983, monetary policy in Ghana has changed considerably in line with changes in the financial system. The overriding goal of monetary policy in Ghana is price stability, although this became more pronounced since 1996.

Until 1987, the interest rates were heavily controlled. The Central Bank also regulated interest rates by stipulating floors and ceilings for deposit and lending rates respectively. Controls on bank interest rates were relaxed gradually from 1987 and phased out in February 1988. In November 1990, the Bank of Ghana decontrolled all bank charges and fees. To improve liquidity management, treasury bills and bonds were introduced by the

[12] The main sources of information on the liberalization experience for Ghana are Mensah (1997) and Addison (2001).

Bank of Ghana in 1990 for trading through open market operations which were fully operational in 1992. In March 1996, the central bank introduced the wholesale auction system. Tenders became restricted to only primary dealers, comprising commercial banks, discount houses and brokerage firms. Repurchase agreements were introduced in August 1998. Dealing in money market instruments for the private sector is relatively small. The Treasury bill market is largely dominated by commercial banks. The commercial paper and bankers acceptance markets have been constrained by the lack of a credit rating agency. Presently there is only a limited secondary market in these instruments. However, it is the objective of the central bank to foster an active secondary market for money market instruments. As a commitment to the development of the domestic capital market, the Bank of Ghana introduced the Central Securities Depository system, which became operational in 2005.

The establishment of the Ghana Stock Exchange in 1990 was a landmark event in the financial sector development of Ghana. The Security Industry Law was enacted in 1993 and it provides for the establishment of a Securities Regulatory Commission to serve as a watch dog over the securities industry. The government has supported stock market development by offering a favourable tax regime. The Ghana Stock Exchange is tax exempt. The capital gains are exempted from capital gains tax for the first 10 years. In 1994, exchange control regulations were amended to give non-resident investors access, with some conditions, to the market.

Before 1987, sectoral credit guidelines drawn by the central bank were imposed on the banks to channel credit to priority sectors of agriculture, manufacturing, and exports. Measures to relax controls on credit allocation were embarked on in 1987 but full abolition of controls on bank sectoral allocation was achieved in 1990. The last of these was the removal of the requirement that 20 percent of each bank's loan portfolio should be allocated to agriculture. Bank-specific credit ceilings, which had been the main instrument of monetary policy, were removed in 1992 and replaced with market-based system of monetary control involving weekly auctioning of treasury bills.

Ghana has a long history of using reserve requirements for both prudential and monetary management purposes. During the period of direct controls, they were used as a supplement to credit controls. The central bank continued to use reserve requirements after the introduction of indirect monetary control but the ratio, base and method of calculation have evolved over the years. Prior to March 1990, the reserve requirement ratios discriminated between types of deposit. Finally in 1997, the coverage was extended to foreign exchange deposits. The reserve requirement ratio reached its highest level of 27 per cent in 1990. After 1990, the ratio was progressively lowered until it reached its lowest level of 5 per cent in 1993. The reserve ratio was again raised to 10 per cent in 1996 and lowered to 8 per cent in 1997 when foreign currency deposits were included in the total deposit base for the calculation of reserves. In July 2000, the reserve requirement ratio was raised to 9 per cent. In Ghana, the contemporaneous observance and daily maintenance of reserve requirements was used until 1994, when it was replaced by a one-week lagged observance. The seven-day week averaging method also replaced the daily observance at the same time.

The Banking Act of 1970 did not provide clear guidelines to the banks and the banking authorities on minimum capital requirements, risk exposure, and prudential lending limits and provisions for possible loan losses. A new Banking Law was passed which came into force on August 8, 1989. The new law provided a sound prudential and regulatory base for the country's banking system. Banks were required to maintain a minimum capital base equivalent to 6 percent of risk-weighted assets, uniform accounting and auditing standards were established, limits were placed on bank risk exposure to a single group or individual borrower, and also limits were placed on loans and advances to directors and employees of banks. In addition, the reporting system for all banks was improved and the central bank's powers to take remedial actions if banks were not being managed well were emphasized. A Non-Bank Financial Institutions Act was enacted in 1993. Previously, the non-bank financial institutions were not covered under the banking law.

Barriers to entry of new banks were relaxed under the new banking law in 1989. By 1990, two new banks had started operations and a foreign bank started operations in 1992. It is worth noting that the government did not nationalise the two foreign banks (that is, Barclays and Standard Chartered) that operated throughout the 1970s and 1980s. Instead, government acquired a 40 percent stake in them.

A bank restructuring programme was approved by government in July 1989. It empowered the central bank to remove non-performing loans from the portfolio of banks and replace them with the central bank bonds. It also created a government agency, the Non-Performing

Assets Recovery Trust charged with recovering the bad loans of government owned banks. Privatisation of state owned banks started in 1995 when government sold off its equity share in the Social Security Bank and 30 percent of its shares in the Ghana Commercial Bank in 1996.

Having been devalued in March 1973, the cedi was again devalued in June 1978. The foreign exchange bureaus were allowed to operate in February 1988. In March 1992, an interbank foreign exchange market was setup. This marked the liberalisation of the foreign exchange market. In February 1994, Ghana accepted obligations of Article VIII of the IMF articles of agreement.

2.2.10. Kenya[13]

Before 1991, interest rates were largely controlled by the central bank. In July 1991, the interest rates were fully liberalised and the open market operations were introduced in the same month. The central bank started using indirect instruments of monetary policy.

Directed lending to priority sectors was one aspect of monetary policy before 1991. For example, the central bank in 1972 instructed commercial banks to increase their lending to the private sector by no more than 12 per cent for the whole year and directed that priority be given to requests for loans to the agricultural sector and small African enterprises and exporters. Credit controls took the form of instructions to banks to divert their credit to

[13] The main sources of information on Kenya's liberalization experience are Ngugi (2000) and Kinyua (2001).

identified sectors and limiting the total credit for the private sector. However, it was weak and selectively enforced, and commercial banks failed to comply. Credit guidelines operated to ensure adequate flow of funds to the agricultural, manufacturing, export business and construction sectors. However, with a segment of the sector not under Central Bank control, credit regulatory efforts were weakened. Credit guidelines were abolished in November 1993. In addition, government abolished controls on credit in December 1993.

The reserve requirement has also been used as an instrument of monetary policy by the central bank. The central bank imposed a minimum cash ratio of 5 per cent on commercial banks in 1971 but this was removed in 1972 and reintroduced at 6 per cent in December 1986. The cash ratio was increased to 12 per cent in October 2003 but has been brought down to 10 percent since 2004. Banks have to fulfil the ratio twice a month: in the middle and at the end of every month.

Financial sector reforms concerning prudential supervision and regulation of the financial sector in Kenya started in 1985. The Central Bank Act was amended in 1985 aimed at strengthening the monetary authority control mechanism over banks, financial institutions and building societies, thus protecting the depositors. The licensing procedure of institutions operating in the banking industry was tightened to ensure stability of the monetary system and to gain public confidence in the industry and ensure growth of a healthy financial sector. The Banking Act was again amended through the 1988 Finance Act aimed at enhancing penalties charged under the Banking Act and to allow for more transparent disclosure of information relating to the banking institutions' balance sheets to

the public. Further revisions of the Banking Act in 1989 strengthened the activities of the central bank including: inspection of institutions, establishment of reporting, audit and loan loss provisions requirements, stipulation of the capital adequacy requirement and exposure limits together with assessment of penalties against non-compliant institutions. Efforts were also made to improve the effectiveness and coverage of central bank supervision of financial institutions and the building societies and non-bank financial institutions were subjected to the stringent licensing and operating regulations. The new prudential regulations resulted in the liquidation of seventeen financial institutions in the first half of 1993. Annual inspections of banks began in 2004.

The Central Bank Act was amended substantially in 1996, narrowing the mandate of the central bank to that of maintaining price stability and fostering liquidity, solvency and the proper functioning of a stable market- based financial system. The amended banking laws narrowed the regulatory gap between classes of institutions, imposing more stringent licensing requirements on banks and near-bank financial intermediaries and increasing minimum capital requirements. The Central Bank's technical and managerial capacity to inspect, monitor and supervise the financial system was strengthened. For the first time, guidelines were set for both loan provisioning and minimum financial disclosure requirements. The central bank began annual inspections in 2004.

During the 1970s and 80s, the government took a deliberate policy to encourage Kenyans to participate in the financial sector by relaxing licensing requirements. NBFIs and building societies mushroomed but most of them were poorly managed and under-capitalized, with

low entry barriers and inadequate supervision. This culminated in the insolvency problem in 1985 and 1986 due mainly to under-capitalization, non-performing loans and internal mismanagement. On the restructuring of government owned banks, the single largest state owned Kenya Commercial Bank was partially privatized in 1994.

The country has taken several measures aimed at developing money and capital markets. The authorities diversified money market instruments and removed taxation differences between the debt and equity finance (Sessional Paper No. 1 of 1986). In response, the Minister of Finance gazetted the formation of the Capital Market Development Advisory Council to work out modalities of establishing the Capital Market Authority in 1988. Measures were also taken to remove policy and institutional constraints on the operation of Treasury bills and the Treasury bonds market including the activation of auction tendering mechanism and use of a broader range of Treasury bills. The two steps were important to enhance competition and for monetary control through reserve management. The Capital Markets Aurhority was established in January 1990, aimed at stimulating the development of long-term debt and equity markets. The taxation system was reviewed to remove the biases against equity capital, thus encouraging investors to raise funds in the capital market (Ngugi, 2002).

In 1996, the Repurchase Agreement (REPO) was introduced as an alternative instrument to be used in the money market, aimed at encouraging the development of active secondary market in Treasury bills. Although Kenya has one of the oldest stock exchange in the region, the Capital Markets Authority was only established in 1989.

The foreign exchange market and the current account liberalization started with the acceptance of commercial banks being authorized to deal in foreign exchange and accept deposits in 1992. A market determined flexible exchange rate was adopted in 1993. Kenya accepted Article VIII of the IMF articles in June 1994. Although the capital account is not yet fully liberalized, there is a greater degree of openness to inward and outward flows.

2.2.11. Botswana

Although Botswana gained political independence in 1966, it remained part of the Rand Monetary Area until 1976. This arrangement entailed the use of a common currency, the South African rand, as well as monetary policy being undertaken from South Africa. Botswana attained monetary independence and set up its own central bank in 1976.

At independence in 1966, two banks of British origin, namely, Barclays and Standard Chartered dominated Botswana's commercial banking sector. Until April 1975, both institutions operated as branches of their respective head offices located in South Africa. The lack of a central bank in Botswana meant that banking policies related to setting of interest rates and liquidity and capital requirements were subject to the policy regulations enacted by the South African Reserve Bank. Botswana's membership of the Rand Monetary Area (RMA) also meant that in cases of transactions with non-member countries of the RMA, commercial banks applied South African foreign exchange regulations.

In 1976, the central bank, the Bank of Botswana, was established and the national currency, the Pula introduced. The legislative powers granted to Bank of Botswana at its inception effectively ushered in the era of banking regulation as the Bank of Botswana independently set interest rates on banks' deposits and lending, fixed domestic liquidity requirements and implemented exchange control regulations. Exchange controls were primarily enacted to curb imported inflation from its largest trading partner, South Africa.

At its inception, the Bank of Botswana adopted a restrictive monetary policy by setting the prime lending rate and the commercial bank interest rate for each class of deposits. The setting of interest rate ceilings resulted into negative real interest rates. In September 1989, the policy of controlling interest and other bank charges was abandoned. The central bank began issuing its own paper, the Bank of Botswana Certificates, in May 1991 in order to mop excess liquidity and to achieve positive real interest rates. This marked the transition from a monetary framework in which monetary policy was implemented by direct controls to one that is market-oriented. Credit controls were abolished in 1990 as part of the interest rate liberalisation.

There is a reasonable degree of central bank independence. The Government plays no direct role in the formulation and implementation of monetary policy, and the central bank is left to set interest rates and determine other parameters of monetary policy implementation without interference. This allows the central bank to focus squarely on its objective of achieving low and sustainable inflation.

Concerned with the lack of banking competition and long established oligopolistic features of commercial banking in Botswana, the government enacted a number of financial laws and regulations to promote competition and enhance the efficiency of intermediation. In 1982, the Bank of Credit and Commerce Botswana Limited opened its doors to the public in Botswana, followed by Zimbank Botswana Limited which became the first foreign bank to apply for a banking license and were incorporated in Botswana in 1990. Between 1991 and 1992, three more foreign-owned commercial banks began operations in Botswana.

The Banking Supervision Department of the central bank is responsible for the day-to-day supervisory activities of all financial institutions licensed under the Banking Act, 1995. These institutions are commercial banks, merchant/investment banks, credit institutions and discount houses. In addition, the Bank of Botswana has been designated the regulatory authority for the administration of the Collective Investment Undertakings Act, 1999 and the operations of the International Financial Services Centre entities and bureaux de change, under the Bank of Botswana (Amendment) Act, 1999. The supervision of non-banking financial institutions such as building societies, savings banks and other financial parastatals is primarily the responsibility of the Ministry of Finance and Development Planning. The central bank has not been always able to conduct full-scope on-site examinations of all licensed banks within a year. The central bank is also independent with regard to the licensing and supervision of banks.

Formally established in 1989, the Botswana Stock Exchange continues to be pivotal to Botswana's financial system, and in particular the capital market, as an avenue on which

government, quasi- government and the private sector can raise debt and equity capital. There has been some foreign portfolio investment in the shares quoted on the Botswana Stock Exchange. Botswana has the beginnings of a bond market, with the first three issues having been made in 2006 and 2007. But the bond market is still thin and even more illiquid than the share market.

Before 1989, the Rand/Pula exchange rate was managed so as to control imported inflation from South Africa. From the time when they were introduced, Botswana's exchange controls tended to be more liberal than those of South Africa. In respect of the liberalization of exchange controls, the process entailed the complete removal of controls on current account transactions and a substantial reduction of controls on the capital account. All remaining capital account controls were eliminated in 1999. Neither the liberalisation nor the eventual abolition of exchange controls made very much difference. From their first introduction in 1976, Botswana's exchange controls were not severe enough to impose significant constraints on the current account. There were never any exchange controls on visible trade (nor any other controls on imports). The controls on invisible trade and capital movements were generally quite liberal, and the exchange control rules were liberally interpreted. The exchange rate is fixed to a basket of currencies comprising the rand and the SDR, and thus varies in line with movements in these currencies and to the extent of the weight of each in the basket.

2.2.12. The Gambia[14]

During the first decade after independence in 1965, The Gambia enjoyed stable macroeconomic conditions. In the decade up to 1985, however, a variety of external shocks and inappropriate policy responses led to a decline in growth, accelerating inflation, and emergence of external payments arrears. Dissatisfied with the performance of the banking system in promoting economic development, the government started to intervene more actively in the development process through subsidized directed credit. In 1972, the government created The Gambia Commercial and Development Bank which became the largest bank in The Gambia. In 1985, The Gambia began implementing a comprehensive adjustment programme. In 1986, government began a process of financial liberalisation. The key elements of the reform process included; strengthening the role and authority of the Central Bank of The Gambia and rehabilitation of the banking system, mainly through restructuring of the main commercial bank, The Gambia Commercial and Development Bank.

It is worth noting that while there were no obvious policy reversals, the military coup of July 1994 interrupted the economic reform process. The presidential and parliamentary elections which were held in 1996 and 1997, respectively, marked the end of the transition from the military to a civilian government and helped re-establish conditions for resuming donor and economic reforms. The IMF in 1998 subsequently approved a 3-year arrangement under the Enhanced Structural adjustment Facility (ESAF).

[14] This summary of financial liberalisation process in The Gambia has been extracted from various country reports of the IMF.

The interest rates were liberalised in 1986 and the central bank of The Gambia started using indirect instruments of monetary policy notably through the auction and discounting of Treasury bills. Credit controls and directed lending were abolished in 1986. In 1990, the Central Bank bills were launched. Important steps have been taken since 1992 and especially 1998 to improve the institutional environment for conducting monetary policy. With a view of separating monetary policy operations from financing of the government budget, a 14-day instrument was introduced in 2002 dedicated to monetary policy.

The reserve requirement is effectively used as a monetary policy instrument. The Central Bank of The Gambia Act of 1992 introduced reserve requirements for all Gambian financial institutions. For the commercial banks, the ratio was first set at 24 percent for the demand deposits and 8 percent for the time and savings deposits with an average effective reserve requirement of slightly less than 14 percent. In June 1998, the reserve requirements on all deposits were unified at a rate of 14 percent and reserve assets requirements were to be calculated on a bi-weekly basis. The reserve requirement was increased to 18 percent in 2006.

The Central Bank of The Gambia Act (1992) improved the Central Bank of The Gambia's ability to formulate and implement independent monetary policy, while the Financial Institutions Act (1992) made the Central Bank of The Gambia the sole regulator and licensor of financial institutions in the Gambia in accordance with the Basle principles. Achieving and maintaining price stability is the key objective of monetary policy under the

Central Bank of The Gambia Act 1992. To facilitate bankruptcy and collateral liquidation procedures, a commercial chamber in the High Court was established in October 1998 and it became fully operational in 1999. The Central Bank of The Gambia undertook further steps to strengthen its regulatory framework and supervision of the financial sector in 2002. A new Financial Institutions Act was enacted in 2003 and a new Central Bank of The Gambia Act was ratified in December 2005. Efforts are also being made to make the credit reference bureau operational. A Prompt Corrective Action Framework was introduced in March 2007.

During 1986-1989, The Gambia undertook the financial restructuring of The Gambia Commercial and Development Bank with assistance from the World Bank. When recapitalisation was completed in 1991, The Gambia Commercial and Development Bank was converted into a limited liability company, and was sold to the Meridien Bank in July 1992. However, following the failure of Meridien bank in April 1995, government took control of the Meridien Bank and operated it under the name of Trust Bank until it was privatised again in 1999 through a competitive bidding process.

The Gambia has operated a liberal exchange rate system since the introduction of an interbank foreign exchange market in the context of the floating of the dalasi in 1986. In January 1993, the authorities accepted the obligations of Article VIII, sections 2,3 and 4 of the Fund's Articles of Agreement. There are no exchange controls or restrictions on the current or the capital account transactions. However, for the commercial banks registered in The Gambia, the Central Bank of The Gambia sets a limit on the amount of foreign

exchange they can hold. In addition, banks are not allowed to hold foreign currency deposits.

CHAPTER THREE

THE IMPACT OF FINANCIAL LIBERALISATION ON THE DEVELOPMENT OF THE FINANCIAL SECTOR

The financial repression literature postulates that liberalising the financial sector leads to financial deepening, enhances saving mobilization, improves the allocative efficiency of capital and promotes growth. Majority of the SSA countries liberalised their financial sectors starting late 1980s and early 1990s. This chapter examines the impact of financial liberalisation on the development of the financial sector in these countries with particular emphasis on the banking sector.

The chapter provides a review of the underlying theoretical and empirical literature relating to financial liberalisation and financial development. An appropriate methodology for assessing the impact of financial liberalisation on financial development is developed based on two approaches: the equality of means test and econometric panel data estimation. By identifying the year that appropriately distinguishes the pre- and post-liberalisation periods, we carry out an equality of means test for the different indicators of financial development.

Furthermore, a time-series index of financial liberalisation that captures the extent of financial liberalisation for each country in each year based on the already documented

policy changes in the second chapter is constructed. Lastly, we estimate a panel regression model with a measure of financial development as a dependent variable and the financial liberalisation index as one of the regressors alongside a set of macroeconomic and institutional factors as control variables.

3.1. Theoretical Literature

More than three decades ago, the financial sectors of most countries were characterised by controlled interest rates, high reserve requirements and quantitative restrictions on credit allocation. Early criticism to this model came from Goldsmith (1969) followed by McKinnon (1973) and Shaw (1973), who saw it as being responsible for low savings, credit rationing and low investment. They dubbed this process of government controls on the financial sector 'financial repression.' According to them, interest rate controls, heavy reserve requirements on bank deposits, and compulsory credit allocations interact with ongoing price inflation to reduce the attractiveness of holding claims on the domestic banking system. In such a repressed financial system, real deposit rates of interest on monetary assets are often negative, and are difficult to predict when inflation is high and unstable. As a result, the demand for domestic money, broadly defined to include savings and fixed deposits as well as checking accounts and currency, falls as a proportion of gross national product (GNP) (McKinnon, 1990). In addition, high reserve requirements restrict the supply of bank lending even further while directed credit programs distort the allocation of credit since political priorities are, in general, not determined by the marginal productivity of different types of capital. In a financially repressed system, investment

suffers not only in quantity but also in quality terms since lenders do not ration the available funds according to the marginal productivity of investment projects but according to their own discretion. Under these conditions the financial sector is likely to stagnate.

They proposed that in order to eliminate financial repression, interest rates should be freed, reserve requirements should be reduced, and directed credit schemes should be eliminated while stabilizing the price level. Liberalising the financial markets promotes financial deepening reflected in the increased use of financial intermediation by savers and investors and the monetisation of the economy. As a result, it encourages saving and reduces constraints on capital accumulation and improves allocative efficiency of investment by transferring capital from less productive to more productive sectors.

Therefore financial liberalization would increase investment and growth either because of the "complementarity effect" (that is, the need to accumulate funds to undertake lumpy investments would make money and capital complimentary rather than substitutes) or because of the "credit availability effect" (that is, increased savings into the banking system would increase investment through enhanced credit availability) (McKinnon, 1973; and Shaw, 1973).

This financial repression hypothesis has been challenged by the neo-structuralists led by van Wijnbergen (1983) and Taylor (1983) who have argued that the existence of informal credit markets can reverse the effect of an increase in interest rates on the total amount of savings. The effect of an increase in the deposit rate on the amount of loanable funds

depends on whether households substitute out of informal market loans or cash to increase their holdings of time deposits. If time deposits are closer substitutes for informal market loans than for cash, then the supply of funds to firms could fall given that banks are subject to reserve requirements and informal markets are not.

Another line of criticism to the McKinnon-Shaw hypothesis is that it is based on the assumptions of perfect information and perfect competition which do not obtain in practice. In the presence of imperfect and oligopolistic money and credit markets, which are a characteristic of developing countries, a sudden dose of liberalisation often leads to the overshooting of both nominal and real interest rates. The resulting real interest rates often exceed the marginal return to investment (Cho and Khatkhate, 1989). Pill and Pradhan (1997) argue that if competition among banks in the liberalised financial sector is weak, liberalisation may result in lower real deposit rates rather than the anticipated movement toward modestly positive, equilibrium levels. Monopolistic banks can take advantage of the opportunity created by the abolition of interest rate controls to simply widen the margins between their deposit and lending rates to increase profits.

The imperfect information and competition criticism to the financial repression hypothesis has been taken up by Arestis and Demetriades (1999) who have included the role of institutions. To the extent that financial liberalisation hypothesis is based on unrealistic assumptions, including perfect competition, perfect information, a sound institutional framework, and limited influence of stock markets, the implementation of financial

liberalization programs, especially in developing countries with weak institutions, has created many more problems than it has solved.

The emerging consensus is that if financial and capital market liberalization is done hurriedly, without first putting in place an effective supervisory and regulatory framework, it could result into financial market instability (Stiglitz, 1994, 2000; Schmidt-Hebbel and Serven, 2002). Inadequate prudential supervision and regulation enable distress borrowing to crowd out borrowing for investment purposes by solvent firms therefore producing an epidemic effect (Fry, 1997). In the presence of market failures, Stiglitz (1994) has suggested that there are some forms of government intervention that will not only make financial markets function better but will also improve the performance of the economy.

Fry (1997) has presented strong arguments against what he termed "the Stiglitz controversy". He argues that lowering interest rates does not necessarily increase the average efficiency of investment as portrayed by Stiglitz (1994) because lower interest rates can attract entrepreneurs with lower yielding projects to bid for funds. In addition, financial repression may not lower the cost of capital if rationing forces borrowers into the curb market. Lastly, directed credit programmes have invariably raised delinquency and default rates, therefore increasing the fragility of the financial system by forcing financial institutions to increase their risk exposure with no compensating return.

Khatkhate (1997) has emphasized two issues which need to be kept in mind while designing financial liberalisation policy strategy. First, while financial reform is aimed at eliminating the distortions in the financial markets induced by government intervention, it

does not necessarily create perfect credit markets which were not perfect even before the onset of government controls. Second, the financial liberalisation can only be interpreted as withdrawal of government intervention for economic reasons but it is essential that a mechanism for prevention of breach of prudential rules is in place in order to protect investors' interests. It is difficult to ensure preservation of property rights, which is essential for functioning of market economy without state intervention of a regulatory kind. Thus, the greater the degree of financial liberalisation, the greater is the need for strengthening the regulatory framework.

3.2. Empirical Literature

The empirical evidence related to whether financial liberalisation affects financial deepening and henceforth promotes financial development is still scanty and inconclusive. Among the early empirical studies, Cho and Khatkhate (1989) examined the experience of five Asian countries, namely South Korea, Malaysia and Sri Lanka, Philippines and Indonesia, with respect to financial liberalisation along the following six dimensions: (a) the level and structure of interest rates; (b) growth of the financial sector; (c) competitiveness, profitability and efficiency of financial institutions; (d) availability of long-term credit; (e) integration of domestic interest rates with foreign interest rates; (f) quality of banks' loan portfolios; and (g) the corporate sector's financial structure. They find that after liberalisation, interest rates moved in the expected direction though the margins also widened, financial depth increased in some of the countries while competitiveness of the banking system increased in all the countries but at varying degrees.

One of the main conclusions from their study is that price stability and more broadly, macroeconomic stability, is key to successful liberalisation and if financial liberalisation is not properly designed, it may cause instability in the financial system.

Demetriades and Luintel (1997) estimate the effects of financial repression in India on financial development. In their model, the dependent variable is financial depth measured by the ratio of bank deposits to nominal GDP and among the regressors is the logarithm of real GDP per capita, the real rate of interest, the population density of bank branches and an index of financial repression which is derived using the principal component analysis. They find evidence that suggests that financial repression has substantial negative effects on financial development, independently of its well-known influence through the level of the real interest rate. The financial policies play an important role in determining not only the long-run but also the short-run behaviour of financial depth. The real rate of interest, however, falls short of being an important explanatory variable for the dynamic behaviour of financial deepening. On the contrary, Arestis and Demetriades (1997) using similar variables find that financial repression has a positive effect on financial development in South Korea. They attribute the contradicting outcomes of the two studies to the differences in the effectiveness of government institutions in the two countries.

Contrary to the financial liberalisation thesis, most of the empirical studies do not find results that support the hypothesis that financial liberalisation positively affect financial development. Using a sample of 28 SSA countries for the period 1970-1998, Reinhart and Tokatlidis (2003), comparing the before and after liberalisation periods, concluded that

financial liberalisation has not raised savings, deepened intermediation or raised investment in SSA. They find that a small group of middle income and less indebted countries in SSA enjoyed financial deepening as measured by the credit and monetary aggregates. On the other hand, countries with less advanced financial sectors experienced the surge in real lending rates as well as an increase in the spreads between the lending and deposit rates.

The minimal impact of financial liberalisation on the development of the financial system has been attributed to the inadequate sequencing and speed of reforms. Pill and Pradhan (1995) point out that most countries in SSA carried out financial liberalisation in an environment of high inflation. They emphasize the need for macroeconomic stability and a sound banking system as preconditions for successful financial liberalisation. They find that African countries which liberalised their financial sector and competition among banks in the liberalised financial sector remained weak, liberalisation has resulted in little financial deepening since attractiveness of bank deposits to domestic savers has reduced. Instead, the monopolistic banks have taken advantage of the opportunity created by the abolition of interest rate controls to widen the margins between their deposit and lending rates to increase profits.

Soyibo (1997) argues that executing financial liberalisation in an inflationary environment will send out inappropriate signals, resulting in adverse consequences. Therefore, factors causing macroeconomic instability like fiscal deficits, rapidly depreciating exchange rate, and high inflation need to be checked before embarking on financial liberalisation. Caprio and Levine (1994) suggest that in general full liberalisation of interest rates should be

considered when: (a) macroeconomic conditions are stable; (b) the financial condition of banks and their borrowers is sound; and (c) financial markets are sufficiently competitive or stable.

It has been shown that where the implementation of financial liberalization programs has been done in an environment of weak macroeconomic stability and institutions, it has created many more problems than it has solved. Colombia, Uruguay and Venezuela in the early 1970s, Malaysia in the late 1970s, Argentina, Brazil, Chile and Mexico in the mid- to late-1970s, and Turkey, Israel, the Philippines, and Indonesia in the early 1980s all implemented financial reforms. Their experience was catastrophic: interest rates exceeded 20 percent, a number of "bad" debts and waves of bank failures and other bankruptcies ensued, extreme asset volatility and the whole financial system reached a near collapse stage (Arestis and Demetriades, 1997). Banks increased deposit and lending rates to compensate for losses attributable to loan defaults. High real interest rates completely failed to increase saving or boost investment, which actually fell as a proportion of GNP over the period. The only type of saving that did increase was foreign saving (that is, external debt). This, however, made the "liberalized" economies more vulnerable to oscillations in the international economy, increasing the debt/asset ratio, and thus service obligations, and promoting the debt crises experienced in the recent past. Financial liberalization meant international markets displaced domestic markets.

Kaminsky and Reinhart (1999) provide further evidence that banking crises are often preceded by financial liberalisation and liberalisation helps to predict a crisis. Stiglitz

(2000) further argues that it is no accident that the two large developing countries that survived the 1998 financial crisis and continued with remarkably strong growth in spite of a difficult global economic environment were India and China, both of which had strong controls on capital flows.

Recent studies have emphasized the role of institutions, such as legal institutions and information or credit bureaus, in explaining why financial liberalisation has had minimal impact on financial depth in some countries. Those subscribing to this view argue that what determines how much private credit a financial system will extend to firms and individuals depends on the power of creditors and the information they have about borrowers. In the first instance, financial institutions are more willing to extend credit to firms and individuals if they can more easily force repayment, grab collateral or even gain control of the firm and if they know more about borrowers, their credit history, or other lenders to the firm (La Porta *et al.,* 1997; Djankov, McLiesh, and Schleifer, 2005).

Beck, Demirguc-Kunt, and Levine (2003) assess empirically two theories of why legal origin (that is, the political channel and the adaptability channel) influences financial development. They use historical comparisons and cross-country regressions to assess the validity of these two channels. They find that legal origin matters for financial development because legal traditions differ in their ability to adapt efficiently to evolving economic conditions.

Djankov *et al.*,(2005) investigate cross country determinants of private credit, using new data on legal creditor rights and private and public credit registries in 129 countries over 25 years. They find that both creditor protection through the legal system and information sharing institutions are associated with higher ratios of private credit to GDP, but the former is relatively more important in the richer countries. An analysis of legal reforms also shows that improvements in creditor rights and in information sharing precede faster credit growth.

McDonald and Schumacher (2007) investigate the role of creditor rights and information sharing in explaining why some financial markets in SSA have remained shallow. Using panel data for 37 SSA countries, they find that financial development is positively correlated with financial liberalization index but negatively correlated with inflation. However, for countries with similar financial liberalization efforts, those with stronger legal institutions and information sharing have deeper financial development implying that while financial liberalization and macroeconomic stability promote financial deepening, they are not enough on their own. These findings are collaborated by Sacerdoti (2005) who concludes that reducing public deficits and restoring macroeconomic stability is a necessary step to promote bank intermediation but not a sufficient condition for its expansion. The improvement of information, legal and judicial environment are essential in order to create conducive environment for credit expansion.

Law and Habibullah (2009) using data from 27 economies (the G-7, Europe, East Asia and Latin America) during 1980-2001, find that real income per capita and institutional quality

are significant determinants of banking sector development and capital market development while financial liberalisation is found to have a weak statistical impact on financial development. They use the private sector credit provided by the banking sector as a measure of financial development and exclude real interest rates from the list of regressors.

Tressel and Detriagache (2008), in a study covering 91 developed and developing countries, find that banking reforms have a positive effect on financial development only in countries with institutions that place checks and balances on political power. They do not find much evidence that other institutional dimensions, such as contractual rights or prudential regulation and supervision, affect the impact of banking sector reforms.

Recent studies have brought to the fore the role of political stability in financial development. Using various measures of political instability, Roe and Siegel (2009) find that the effect of political instability on financial development is strong and statistically significant.

3.3. Summary of the Literature

On the basis of the above review of the literature, there appears to be little evidence that financial liberalization has a positive effect on the development of the financial sector contrary to the predictions of the financial liberalisation thesis. Majority of the empirical studies fail to find a strong positive relationship between financial liberalisation and financial development (Arestis and Demetriades, 1997; Reinhart and Tokatlidis, 2003; Law

and Habibullah, 2009). A few studies find a positive relationship between financial liberalisation and financial development (McDonald and Schumacher, 2007; Tressel and Detriagache, 2008).

The general consensus emerging out of the literature is that the speed and sequencing of financial reforms affects their outcomes. The theoretical literature provides support to the view that countries which ensure macroeconomic stability and have strong institutions register positive outcome from financial liberalisation. At the same time, the presence of imperfect and oligopolistic money and credit markets negates the effects of financial liberalisation. Therefore, the success of financial liberalisation depends largely on the initial conditions including the presence of macroeconomic stability, strong institutions and regulatory framework that is able to enforce prudential guidelines and the level of competition in the financial sector.

3.4. Methodology

3.4.1. Empirical Model Specification[15]

The methodology employed in this chapter follows two approaches. The first approach is based on descriptive statistics to compare the period before and after financial liberalisation. The sample period is divided into two periods, one referring to the period before liberalisation and another after liberalisation. Unlike Reinhart and Tokatlidis

[15] The analysis was carried out using the Eviews econometric software version 6.

(2003)[16], we define the period after liberalisation as that one when the interest rates are fully liberalised, indirect instruments of monetary policy are established and credit controls are completely eliminated. Therefore, the dates/years that are chosen as turning points differ from Reinhart and Tokatlidis (2003). Table 3.1 shows the years that are chosen as the turning points compared to those by Reinhart and Tokatlidis. These dates are derived from the previous review of the liberalisation experience of each of the countries in chapter two.

Table 3.1 Turning Points for the Pre-and Post Liberalisation Periods

	Used in this Study	Reinhart & Tokatlidis/2	Serieux/2
Botswana	1990	1991	1989-91
Ethiopia	Not yet liberalised	n.a.	n.a.
Ghana	1991	1988	1987-90
Kenya	1992	1991	1990-93
Malawi	1992	1988	1988-90
Mauritius	1991	1993	1981-93
Nigeria	1997	1987-91, 1995	n.a.
South Africa	1983	1980	n.a.
Tanzania	1994	1991	1991-93
Gambia, The	1987	n.a.	1985-87
Uganda	1994	1988	1992-94
Zambia	1994	1992	1992-93

/1 The period marking the turning point as presented in Reinhart and Tokatlidis (2003)

/2 Liberalisation or transition period as presented in Serieux (2008)

A test for the equality of means based on the analysis of variance (ANOVA) is subsequently carried out. The underlying idea is that if the subgroups have the same mean, then the variability between the sample means (between groups) should be the same as the

[16] Reinhart and Tokatlidis (2003) chose the turning points based on the period when the authorities in the country undertook commitments and adopted measures to move to a liberal regime. The interest rate deregulation was therefore important in deciding the date of the turning point.

variability within any subgroup (within group). Suppose we denote the i-th observation in subgroup g as $y_{g,i}$, where $i = 1,....,n_g$ for groups $g = 1,2,...,G$. The between and within sums of squares can be defined as:

$$SS_B = \sum_{g=1}^{G} n_g (\bar{y}_g - \bar{y})^2 \tag{3.1}$$

and

$$SS_w = \sum_{g=1}^{G} \sum_{i=1}^{n_g} \left(y_{ig} - \bar{y}_g \right)^2 \tag{3.2}$$

where $\bar{y}_g$ is the sample mean within group g and $\bar{y}$ is the overall sample mean. The F-statistic for the equality of means under the assumption that the subgroup means are identical is computed as:

$$F = \frac{SS_B / (G-1)}{SS_W / (N-G)} \tag{3.3}$$

where N is the total number of observations. The F-statistic has an F-distribution with $G-1$ numerator degrees of freedom and $N-G$ denominator degrees of freedom under the null hypothesis of independent and identical normal distribution, with equal means and variances in each subgroup.

Among the weaknesses of the descriptive analysis is that it fails to control for other factors that affect financial development. In order to control for these factors, an econometric panel regression model in which each of the four measures of financial development is regressed

on financial liberalization index as well as a set of other conditioning variables is estimated. The panel estimation helps in exploiting the time-series dimensions of the data and to control for possible endogeneity of the regressors.

Given that the measures of financial development are likely to display considerable degree of persistence[17], an appropriate methodology to employ should be able to capture the dynamic behaviour of these variables. This requires inclusion of a lagged dependent variable among the regressors yielding a dynamic regression model in a log-linear form shown in (3.4).

$$FD_{it} = \alpha + \beta FD_{i,t-1} + \theta FL_{it} + \delta' X_{it} + u_{it} \qquad (3.4)$$

$$i = 1,2,---,N$$
$$t = 2,3,---,T$$

Where FD_{it} is the measure of financial development for country i in period t; FL_{it} is the financial liberalisation index for country i in period t; X_{it} represents a set of other variables that affect financial development and u_{it} is the error term. Given that the countries in the sample differ in legal origin, colonial history, size, and religious affiliation, it is necessary to control for this country heterogeneity. This is done by modelling the error term as

$$u_{it} = \eta_i + \nu_{it} \qquad (3.5)$$

[17] The coefficient on the lagged dependent variable is large (more than 0.7) implying persistence in the dependent variable.

Where η_i represents the unobserved time invariant country specific effects; and v_{it} is the disturbance error term which is independently and identically distributed. The subscripts i and t represent country and time period respectively in all the cases.

Equation 3.4 is estimated using the Ordinary Least Squares (OLS) and the WITHIN fixed effects estimation. However, due to possible correlation between the lagged dependent variable and the error term, u_{it}, the estimated coefficients are likely to be inconsistent and biased upwards. Similarly, it has been shown that whereas the WITHIN estimator eliminates the individual effects through transformation of variables, the lagged dependent variable and the transformed error term are still correlated. The WITHIN estimator has been shown to be biased downwards (Baltagi, 2008; Blundell, Bond and Windmeijer, 2000 and Bond, 2002). The size of the bias is of the order $\frac{1}{T}$.

While the OLS and Fixed Effects estimation results may be biased, they are however indicative and provide a robustness check. The appropriate estimation method in the case of a lagged endogenous variable is the Generalised Method of Moments (GMM) proposed by Arellano and Bond (1991), Arellano and Bover (1995) and Blundell and Bond (1998). I estimate the one-step and two-step estimators as well as the system GMM. The GMM estimation relies on first-differencing to eliminate un-observed individual-specific effects, and then uses lagged values of endogenous or dependent variable as instruments. Equation 3.4 then becomes

$$\Delta FD_{it} = \alpha + \beta \Delta FD_{i,t-1} + \theta \Delta FL_{it} + \delta \Delta X_{it} + \Delta v_{it} \tag{3.6}$$

In this case, the vector of the dependent variables $(FD_{i1}, FD_{i2}, ..., FD_{i,T-2})$ can be used as instruments in our differenced equation. The GMM can then be used to derive efficient estimators. The matrix of instruments is given as

$$Z_i = \begin{bmatrix} FD_{i1} & 0 & 0 & - & - & 0 & - & - & 0 \\ 0 & FD_{i1} & FD_{i2} & - & - & 0 & - & - & 0 \\ - & - & - & - & - & - & - & - & - \\ 0 & 0 & 0 & - & - & FD_{i1} & - & - & FD_{i,T-2} \end{bmatrix} \tag{3.7}$$

The moment conditions are such that

$$E\left[Z_i^{/} \Delta v_i\right] = 0 \qquad \forall i = 1,2,....., N \tag{3.8}$$

These moment conditions increase with T. Actually, as the column dimension of Z_i becomes large, the GMM estimation is made difficult. In addition, GMM estimators using many over-identifying restrictions have been found to have poor finite sample properties (Wooldridge, 2002; Baltagi, 2008). The practice is to use a couple of lags rather than all the lags in order to take advantage of the trade-off between the reduction in bias and the loss in efficiency. The Sargan test of over identification restrictions is carried out in all GMM estimations.

In the OLS and WITHIN estimations, we have included up to 5 lags for those explanatory variables whose impact on financial development is likely to take effect after some lag. This is equivalent to estimating an autoregressive distributed lag model of equation 3.4. In the GMM, we have included those lags that have been found to be statistically significant.

Four different indicators of financial development are used in this study. These include the private sector credit to GDP ratio (PSC), the ratio of liquid liabilities of banks or broad money to GDP (M2), and the ratio of deposits to GDP (DEPOS). In addition, we have constructed another measure of financial development by using the method of principal components which is denoted as LFD.

The main variable of interest is the financial liberalisation index (FL). Based on the literature, the conditioning variables included in our estimation include; the log of real GDP per capita GDP (CAPITA), inflation rate (INF), and the real deposit rate (RIR).

Political instability has also been found to be an important determinant of financial development. A variable measuring political instability (PV) is also included among the regressors.

3.4.2. Data, Sources, and Definition of Variables

The data used has been collected mainly from the World Bank's World Development Indicators (WDI) 2008 CD-Rom, the IMF's International Financial Statistics (IFS), Central

Bank Websites and the Polity IV database. Initially, data was collected on 18 SSA countries which had carried out substantive financial sector reforms by the end of 1990s for the period 1976-2007[18]. Due to data constraints, some of the countries were later dropped from the analysis. Section 3.4.2.1 explains the construction of the various measures of financial development and section 3.4.2.2 explains the construction of the financial liberalisation variable.

The data on financial development indicators has been restricted to the banking sector or deposit taking institutions. This is because the banking sector dominates the financial sector in SSA countries. The non-bank financial institutions have just started gaining prominence in the recent years, the capital markets are still in their infancy and very thin and the insurance and pension companies are very small (Fry, 1997).

3.4.2.1. Measuring Financial Development

One of the main challenges facing empirical studies on the determinants of financial development is getting an appropriate measure of financial development that captures the financial intermediaries' ability to reduce information and transaction costs, mobilize savings, manage risks and facilitate transactions. Such a measure is difficult to construct and as a result, most of the empirical studies rely on more than one measure of financial development.

[18] The final list of countries include Botswana, Ethiopia, The Gambia, Ghana, Kenya, Malawi, Mauritius, Nigeria, South Africa, Tanzania, Uganda, Zambia.

The commonly used indicators of financial development in the empirical literature include the ratio of liquid liabilities to GDP, ratio of deposit money banks domestic assets to deposit money banks domestic assets plus central bank domestic assets, the ratio of private sector credit by deposit money banks to GDP and the ratio of private credit by deposit money banks and other financial institutions to GDP (King and Levine, 1993). These indicators, however, suffer from some shortcomings. The quantity measures which are based on credit and monetary aggregates do not cover the liquidity and risk management services provided by financial institutions, and they fail to measure the full extent of financial intermediation. In addition, as the financial sector deepens and the non-bank institutions and securities become more important, the credit and monetary measures above are biased downwards (Pill and Pradhan, 1995).

Beck, Demirguc-Kunt, and Levine (2000a) have constructed a comprehensive database of the various indicators of financial development. They broadly categorise the indicators measuring the performance of financial intermediaries into those measuring the size and those measuring the activities of financial intermediaries. They first categorise between the three groups of financial institutions: central banks, deposit money banks, and other financial institutions. The indicators measuring the size of the three financial sectors relative to GDP include: the ratio of central bank assets to GDP; the ratio of deposit money bank assets to GDP; and the ratio of other financial institutions' assets to GDP. The sum of these last three indicators equals the total claims the financial intermediaries have on non-financial domestic sectors relative to GDP and therefore constitutes a comprehensive measure of financial intermediation. The other set of indicators focuses on the liability side

of the balance sheet. These include: the ratio of liquid liabilities to GDP; the ratio of private credit by deposit money banks to GDP; and the ratio of private credit by deposit money banks and other financial institutions to GDP.

This study uses private sector credit to GDP ratio, banking system deposits to GDP ratio, and the ratio of broad money or liquid liabilities to GDP as indicators of financial development. In addition, an indicator of financial development that combines the three indicators is constructed using the method of principal components. The principal component analysis is a multivariate statistical technique used to reduce the number of variables in a data set into a smaller number of 'dimensions'. In mathematical terms, from an initial set of n correlated variables, the principal component analysis creates uncorrelated indices or components, where each component is a linear weighted combination of the initial variables. For example, from a set of variables Y_1 through to Y_n,

$$\begin{aligned} PC_1 &= a_{11}Y_1 + a_{12}Y_2 + ... + a_{1n}Y_n \\ &\vdots \\ PC_m &= a_{m1}Y_1 + a_{m2}Y_2 + ... + a_{mn}Y_n \end{aligned} \qquad (3.9)$$

where a_{mn} represents the weight for the mth principal component and the nth variable. The weights for each principal component are given by the eigenvectors of the correlation matrix.

The principal component analysis is used when the variables are correlated with one another and measuring a related attribute. Table 3.2 shows the correlation among the various measures of financial development. The variables are expressed as ratios of GDP and are in logs.

Table 3.2 Correlation between different measures of financial depth

	Private sector credit	Bank deposits	Broad money (M2)
Private sector credit	1		
Bank deposits	0.853448	1	
Broad money (M2)	0.796248	0.969694	1

The results of the principal component analysis are presented in appendix 2. However, in all the cases, the first two principal components which explain over 80 percent of the standardised variance are considered. In each case, their variances are adjusted to ensure that they add up to one. These adjusted values are then used as the weights in computing the principal component. The resultant summary measure of financial development derived from the principal component analysis is shown in appendix 3.

Based on the above review, this study uses the following measures of financial development:

i. **Private sector credit to GDP ratio**: The credit extended by deposit taking financial institutions as reported in line 22(d) of the IFS.

ii. **Monetary aggregates**: If financial deepening is happening, the ratio of M2/GDP is expected to be increasing at a faster rate than the growth in M1/GDP. Basically, narrow money (M1) reflects the payment service and broad money (M2) reflects the saving service. Therefore the ratio of M1 to M2 should be declining. Given that the non-bank and securities markets in SSA are not yet developed, the bank based measures of credit

and monetary aggregates are therefore used in this study. Data on broad money and narrow money was obtained from the IFS lines 35(l) and 34, respectively. In addition, it is expected that by increasing the real rate of return on bank deposits, financial liberalisation increases the deposits to GDP ratio. Therefore, the bank deposits to GDP ratio is another indicator of financial development that is used in this study.[19] The data on deposits was obtained from the IFS as a sum of lines 24 and 25.

iii. **Overall Indicator of Financial Development:** Another indicator of financial development that combines the three indicators of financial development is constructed using the method of principal components. The credit to the private sector as a ratio of GDP, ratio of deposits to GDP, and the ratio of broad money to GDP are used in deriving the combined indicator.

Appendix 3 shows the derived principal components. In all the cases, the first two principal components, which in most cases accounted for more than 80 percent of the total variation, are used. The weight attached to each of the principal components is equal to its relative contribution in explaining the variation of the policy variables.

3.4.2.2. Constructing a Measure of Financial Liberalization

Constructing a quantitative measure of financial liberalization has almost been more challenging than measuring financial development. Most early studies trying to analyze the

[19] See Demetriades and Luintel (1997) for a detailed discussion.

effects of financial liberalization on savings used interest rates as a proxy for financial liberalization (Giovannini, 1985). Others have used the dummy variable technique to distinguish between the period before and after liberalisation (de Melo and Tybout, 1986; Reinhart and Tokaldis, 2003). The challenge with this kind of approach has been to come up with a clear decision point as to what defines the after from the pre-liberalisation periods given that liberalization measures are not just implemented in a single year and in most instances carry over a long period of time and its multifaceted nature.

Recognizing the above shortcomings, some of the recent studies have attempted to come up with an index of financial liberalization or repression that captures the degree of financial liberalization and the gradual nature of the liberalisation process. Demetriades and Luintel (1997) and Ang and McKibbin (2007) follow a similar approach in constructing a financial repression index. They identify the repressionist policies related to interest rate controls, reserve requirements and directed credit and code them using the dummies which take on a value of either 1 or 0. Then a summary measure of financial repression is constructed using principal component analysis.

Using the method of principal components, Bandeira *et al.,* (2000) construct an index of financial liberalization for eight developing countries including Ghana, Chile, Indonesia, Korea, Malaysia, Mexico, Turkey and Zimbabwe. They take into account the following eight components of financial liberalization: interest rates; pro-competition measures; reserve requirements; directed credit; bank ownership; prudential regulation; securities markets deregulation; and capital account liberalization. They construct a matrix of 0 and 1

variables, where 1's correspond to the years after a particular reform is introduced and use the method of principal components to derive a single continuous liberalization index for each of the countries.

A similar approach has been used by Fowowe (2009) to construct an index of financial liberalization which measures the different phases of the deregulatory and institution building process. He identifies five major indicators of moves towards liberalization which are: bank denationalization and restructuring, interest rate liberalization, prudential regulation, directed credit abolition, and free entry into the banking system. He then allocates to each of these variables a value of 0 prior to liberalization. After liberalization, the indicators take on values from one. By using zeros and ones, the study does not fully capture the gradual nature of liberalisation.

Inspite of the improvements in constructing a measure of financial liberalisation, the above approaches do not fully capture the gradual nature of liberalisation and sequencing of the various policy changes that characterise a liberalisation process. For example, the liberalisation of the capital account has been carried out in a cautious and gradual manner in many countries and is still ongoing. Coding such a measure requires identifying the timing of the various policy changes that reflect the gradual nature of capital account liberalisation.

Abiad and Mody (2005) and Abiad *et al.,* (2008) tried to improve on the previous studies by constructing an index of financial liberalisation that captures the timing and significance of the various events surrounding a financial liberalisation process. Abiad and Mody (2005)

constructed a financial liberalisation index which covers 35 countries for the period 1973 to 1996. The index is an aggregation along six dimensions: directed credit/reserve requirements; interest rate controls; entry barriers and/or lack of pro-competition policies; restrictive operational regulations; the degree of privatisation of the financial sector; and controls on international financial transactions. Their sample, however, included only three SSA countries namely Ghana, South Africa and Zimbabwe.

Following Abiad and Mody (2005), Abdul *et al.*, (2008) have constructed a comprehensive database on financial reforms covering 91 economies over the period 1973-2005. The database recognizes the multi-faceted nature of financial reforms and therefore captures financial policy changes along seven different dimensions: credit controls and reserve requirements; interest rate controls; entry barriers; state ownership; policies on securities markets; banking regulations; and restrictions on the capital account. Liberalisation scores for each category are then combined into a graded index that is normalized between zero and one.

In this study, we follow Abiad and Mody (2005) and Abiad *et al.*, (2008) to construct an index of financial liberalisation for 12 SSA countries which include; Botswana, Ethiopia, Gambia, Ghana, Kenya, Malawi, Mauritius, Nigeria, South Africa, Tanzania, Uganda and Zambia. The coding of the various policy changes is based on the financial liberalisation experiences of the selected countries. This study improves on the coding of the financial liberalisation index used in the previous studies and is based on a comprehensive review of

the liberalisation experiences of the 12 countries in the sample. Five out of the twelve countries in the sample were not covered in earlier studies[20].

The following six policy aspects of domestic financial liberalisation are considered:-

a) Credit control and reserve requirements. The nature of credit controls considered in this study encompass directed credit toward priority sectors of the economy, ceilings on credit allocation to certain sectors, and whether directed credit is extended at subsidised rates or not. With respect to reserve requirements, a threshold of 20 percent is taken to distinguish between excessive reserve requirements from those that are not.

b) Extent of interest rate controls. The controls on lending and deposit rates are coded separately. In addition, a distinction is made between whether interest rates are controlled by fiat, ceilings/floors or interest rate bands.

c) Degree of entry into the banking sector. Entry barriers may include restrictions on entry of foreign or domestic banks, stringent licensing requirements, and a moratorium on licensing of new banks, restrictions on the nature of activities that banks can participate in, and restrictions on opening new branches.

d) Extent of government ownership of banks or the degree of privatisation of state-owned banks.

[20] These countries include Botswana, Gambia The, Malawi, Mauritius, and Zambia.

e) Prudential regulation and banking sector supervision. There is now consensus in the literature that financial liberalisation which is not followed by strengthened on site and offsite supervision as well as adoption of prudent regulatory practices such as risk-weighted capital adequacy ratios, may lead to financial instability. In this regard, consideration is made as to whether a country has adopted the risk-weighted capital adequacy ratios, the effectiveness of bank supervision in as far as conduct of on-site and off-site supervision is concerned, and the independency of the supervision department in carrying out prompt corrective measures in banks under distress.

f) The extent of development of the securities market. An underdeveloped securities market undermines the liquidity and risk management functions of a financial system. Various measures that lead to a developed securities market such as auctioning of treasury bills, introduction of a secondary market and a primary dealership system, central depository system for securities, listing of government securities on the stock exchange, and introduction of derivative instruments and reform of the pension sector, are considered.

This study follows the coding developed by Abiad *et al.*, (2008) with the exception of the interest rate liberalisation variable. In addition to looking at the extent of controls on lending and deposit rates, we have also considered the autonomy of the central bank in as far as the conduct of monetary policy is concerned and the adoption of indirect instruments of monetary policy. The extent to which the signalling effect of interest rate improves following liberalisation depends partly on the adoption of indirect monetary policy

instruments and the clarity in the use of the various instruments by the central bank. The interest rate measures were coded out of a maximum of 7 points but scaled to 3.

Inspite of following the same coding rules, the timing of various policy changes in this study differs from those of Abiad *et al.*, (2008). As a result, the derived financial liberalisation index differs from theirs for those countries covered in their study over the same time span. Indeed in their paper, they remark that because of the complex nature of the policy changes in question and the difficulty in retrieving information, especially for countries that have not been the object of specific case studies, their database remains a work in progress, and would benefit from feedback on both its construction and on the coding of the specific countries. The approach followed in this study is in one way a contribution towards the refinement in construction of a financial liberalisation index for SSA countries.

The overall index of financial liberalisation for each country over the period 1976-2007 is presented as in appendix 4. Table 3.3 presents the descriptive statistics of the overall index and its sub-components.

Table 3.3 Summary of Descriptive Statistics

	Credit controls	Interest controls	Entry barriers	Privatisation	Security markets	Banking supervision	Overall Liberalisation Index	Normalised liberalisation index
Mean	1.438374	1.19822	1.653187	1.272527	0.843516	0.707692	7.113319	0.395153
Median	1.13	0.86	1.2	1	0.6	0	5.93	0.32917
Maximum	3.000	3.000	3.000	3.000	3.000	2.500	16.400	0.91111
Minimum	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
Std. Dev.	1.102	1.202	1.133	1.318	0.883	0.846	5.524	0.306867
Skewness	0.090	0.216	0.060	0.299	0.651	0.641	0.238	0.238413
Kurtosis	1.534	1.304	1.375	1.326	2.144	1.829	1.567	1.566434
Jarque-Bera	41.357	58.054	50.321	59.944	46.067	57.207	43.267	43.27189
Probability	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
Sum	654.460	545.190	752.200	579.000	383.800	322.000	3236.560	179.7944
Sum Sq. Dev.	550.970	655.799	582.513	788.207	353.998	324.748	13853.140	42.75196
Observations	455	455	455	455	455	455	455	455

Source: Own Computations

Going by the mean and median of the various components of liberalisation, much progress has been made in respect of removing entry barriers, removal of credit controls, privatisation and liberalisation of interest rates. Least progress has been made in respect of adopting prudential regulatory and supervisory practices and development of the securities markets.

The correlation coefficients derived from the various components of the financial liberalisation index do not differ significantly from those obtained by Abiad and Mody (2005) for a sample of 35 countries largely developed and developing countries. See table 3.4.

Table 3.4 Correlations among financial liberalisation variables

	Credit controls	Interest rate controls	Entry barriers	Privatisation	Security markets	Banking supervision
Credit controls	1					
Interest rate controls	0.833961	1				
Entry barriers	0.690486	0.723793	1			
Privatisation	0.593677	0.62201	0.450126	1		
Security markets	0.724676	0.726888	0.693296	0.55261	1	
Banking supervision	0.759057	0.805681	0.759591	0.52279	0.738333	1

Source: Own Computations

The interest rate liberalisation sub-component is strongly correlated with the removal of credit controls implying that the removal of credit controls occurred together with the liberalisation of interest rates. Privatisation of state owned banks is least correlated with other variables.

3.4.2.3. Other Variables

In order to minimise the possibility of model misspecification, it is necessary to include the real GDP per capita, inflation rate and a proxy variable for political instability as a set of conditioning variables. With regard to inflation, a growing body of literature emphasize the negative relationship between inflation and financial development. Empirical studies find evidence to support this hypothesis (Boyd, Levine, and Smith, 2001). The inflation rate is derived from the consumer price index (CPI) data which is obtained from the IFS line 64.

Another variable expected to enhance financial development is the real interest rate. A fundamental requirement for financial liberalization to enhance saving and financial deepening is that the real deposit rate should increase after liberalization and become

positive. At the same time, it is expected that the real lending rate will increase after liberalization but the spread as a measure of efficiency of the financial system should reduce. The data on the deposit and lending rate is obtained from the IFS lines 60(l) and 60(p) respectively. The real interest rate is derived based on the Fischer equation.

$$(1+i) = (1+r)(1+\pi) \tag{3.9}$$

Where;
i = nominal interest rate

r = real interest rate, and

π =expected inflation rate.

The interest rate spread is then calculated as the difference between the ex-ante lending rate on loans and deposit rate. The real interest rate is highly correlated with the inflation rate. As a result, either of the two variables is included in the panel regressions but not both.

The country's level of economic development can also affect the level of financial development. Indeed, the early debate in the finance-growth literature concentrated on whether financial development affects economic growth or vice-versa. Robinson (1952) argued that where enterprise leads, finance follows. Therefore, the real GDP per capita (constant 2000 US$) from the World Development Indicators (WDI) is included in the estimation.

Recent literature has emphasised the role of institutions in affecting financial development. Starting with the legal origin arguments (Laporta *et al.,* 1997) followed by the creditor

rights arguments (Djankov *et al.*, 2007) and political instability argument (Roe and Siegel, 2009), they have all concluded that the differences in financial development across countries is caused by the differing levels of institutional development. In this study, a measure of political instability is included as a proxy for the development of political institutions. The measure of political instability used is the coded variable of political and international violence obtained from the website of Centre for Systemic Peace. It is taken from the data series **actotal.**[21]

3.4.2.4. Summary Statistics and the Correlation Matrix

The summary statistics of the data used in the panel estimations is shown in tables 3.5 and 3.6. Table 3.5 presents the mean, median, maximum, minimum and the standard deviation for each of the variables stacked in the panel. Table 3.6 presents the correlation coefficients between variables. The three measures of financial development namely, the log of private sector credit to GDP ratio (LPSC), the log of broad money to GDP ratio (LM2) and the log of banking deposits to GDP ratio (LDEPOS) are highly correlated with each other. This renders support to the need to construct a summary measure using the method of principal components. The fourth measure of financial development created using the principal component analysis in logs is denoted LFD. As expected, the financial liberalisation index (FL) is positively correlated with all the measures of financial development while the inflation rate is also negatively correlated with them. The log of real GDP per capita (LCAPITA) is positively correlated with the measures of financial development. The

[21] This data is available on the website for Center for Systemic Peace at http://www.systemicpeace.org/inscr/inscr.htm

measure of political violence (PV) is negatively correlated with the measures of financial development but the correlation coefficient is small. The real interest rate is strongly and negatively correlated with the inflation rate (INF).

Table 3.5 Descriptive Statistics of the Data

	Mean	Median	Maximum	Minimum	Std. Dev.	Observations
LFD	1.880	1.762	3.340	0.822	0.463	384
LM2	3.330	3.281	4.616	1.742	0.498	384
LPSC	2.539	2.568	4.414	0.433	0.863	384
LDEPOS	3.038	2.955	4.551	1.149	0.609	384
FL	0.425	0.400	0.911	0.000	0.306	384
INF	20.777	11.708	200.000	-15.276	28.512	372
LCAPITA	6.121	5.783	8.457	4.585	1.100	384
RIR	-4.744	-1.505	37.216	-60.004	12.930	371
PV	0.828	0.000	8.000	0.000	1.694	384

Table 3.6 Correlations Matrix

	LFD	LM2	LPSC	LDEPOS	FL	INF	LCAPITA	RIR	PV
LFD	1								
LM2	0.8765	1.0000							
LPSC	0.8442	0.8106	1.0000						
LDEPOS	0.9002	0.9724	0.8600	1.0000					
FL	0.3597	0.3036	0.3742	0.3951	1.0000				
INF	-0.3543	-0.4399	-0.4511	-0.4548	-0.3404	1.0000			
LCAPITA	0.6426	0.6316	0.7130	0.6791	0.3972	-0.2557	1.0000		
RIR	0.3332	0.3729	0.4158	0.4165	0.4918	-0.8800	0.2484	1.0000	
PV	-0.1835	-0.1458	-0.2165	-0.1675	-0.0932	0.1028	-0.1670	-0.1367	1.0000

3.5. Estimation Results

3.5.1. Results of Descriptive Analysis

Table 3.7 presents the means and standard deviations for each of the indicators of financial development and their corresponding F-test for the statistical significance of the difference in the means during the pre- and post- liberalisation periods. The results are presented by country to enable us capture the divergent experiences with financial liberalisation among the countries in our sample.

Table 3.7 Test for Equality of Means Before and After Financial Liberalisation

Botswana	**Full Sample**		**Before Liberalisation**		**After Liberalisation**			
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Anova F-test P-Value	Welch F-test* P-Value
RDR	-0.713	2.773	-2.298	3.297	0.168	2.039	0.021	0.051
RLR	3.153	4.444	0.741	5.029	4.492	3.558	0.029	0.056
INF	10.258	2.557	10.982	2.328	9.694	2.647	0.161	0.155
IRS	4.227	2.779	3.364	3.614	4.707	2.160	0.227	0.303
PSCG	14.424	3.684	13.534	4.205	15.116	3.174	0.234	0.253
DEPG	22.726	5.727	20.191	3.951	24.698	6.201	0.025	0.018
M2GDP	28.770	4.927	30.194	4.006	27.663	5.388	0.153	0.138
M1M2	54.562	26.085	75.631	25.789	38.174	9.070	0.000	0.000
The Gambia	**Full Sample**		**Before Liberalisation**		**After Liberalisation**			
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Anova F-test P-Value	Welch F-test* P-Value
RDR	1.855	8.359	-6.333	7.689	6.144	4.749	0.000	0.000
RLR	12.788	10.641	1.513	8.506	18.694	5.725	0.000	0.000
INF	10.339	10.330	15.968	14.460	7.391	5.856	0.023	0.084
IRS	11.926	2.749	9.028	1.849	13.444	1.723	0.000	0.000
PSCG	15.063	5.258	21.080	3.667	11.910	2.403	0.000	0.000
DEPG	20.895	8.381	15.114	2.381	23.923	8.833	0.003	0.000
M2GDP	29.753	9.791	24.739	3.348	32.379	11.041	0.034	0.007
M1M2	57.787	7.121	65.554	4.205	53.719	4.382	0.000	0.000

Ghana	**Full Sample**		**Before Liberalisation**		**After Liberalisation**			
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Anova F-test P-Value	Welch F-test* P-Value
RDR	-8.978	15.810	-20.378	16.552	-0.261	7.827	0.000	0.001
RLR	-0.525	18.631	-15.204	17.319	10.699	9.761	0.000	0.000
INF	37.745	30.983	54.667	36.581	22.814	13.554	0.002	0.005
IRS	10.646	5.122	7.499	2.122	13.052	5.475	0.002	0.001
PSCG	7.165	5.410	3.377	1.441	10.508	5.436	0.000	0.000
DEPG	13.807	5.923	9.272	3.837	17.809	4.336	0.000	0.000
M2GDP	22.039	7.054	17.630	5.510	25.929	5.962	0.000	0.000
M1M2	65.514	13.212	78.750	2.433	53.836	4.887	0.000	0.000
Kenya	**Full Sample**		**Before Liberalisation**		**After Liberalisation**			
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Anova F-test P-Value	Welch F-test* P-Value
RDR	-2.213	6.735	-2.758	4.656	-1.668	8.451	0.655	0.656
RLR	4.979	9.022	0.832	4.310	9.127	10.627	0.007	0.009
INF	13.033	8.655	12.943	4.623	13.124	11.551	0.954	0.954
IRS	8.073	4.716	4.063	1.127	12.084	3.220	0.000	0.000
PSCG	22.919	3.010	21.561	2.919	24.277	2.505	0.008	0.008
DEPG	29.819	3.777	27.454	3.410	32.184	2.432	0.000	0.000
M2GDP	35.516	4.064	33.195	4.229	37.838	2.181	0.001	0.001
M1M2	44.609	8.343	50.834	4.619	38.384	6.312	0.000	0.000
Malawi	**Full Sample**		**Before Liberalisation**		**After Liberalisation**			
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Anova F-test P-Value	Welch F-test* P-Value
RDR	-2.405	7.866	-3.168	5.132	-1.880	9.433	0.684	0.652
RLR	8.874	12.221	3.416	6.007	12.626	14.070	0.052	0.030
INF	21.734	15.874	15.971	7.470	25.697	18.933	0.120	0.078
IRS	13.326	6.963	7.683	1.733	17.558	6.364	0.000	0.000
PSCG	10.059	4.603	13.188	3.957	6.929	2.691	0.000	0.000
DEPG	15.955	2.051	16.726	1.603	15.184	2.204	0.031	0.032
M2GDP	20.432	2.538	21.186	1.860	19.678	2.940	0.093	0.095
M1M2	51.868	5.246	50.173	6.206	53.562	3.498	0.067	0.069

Mauritius	**Full Sample**		**Before Liberalisation**		**After Liberalisation**			
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Anova F-test P-Value	Welch F-test* P-Value
RDR	2.8933	3.0078	2.1700	4.2957	3.3188	1.9498	0.3478	0.4410
RLR	10.2667	4.8773	5.9310	4.7577	12.8171	2.6949	0.0001	0.0011
INF	8.7541	6.9748	11.3447	9.5148	6.4682	1.7877	0.0465	0.0697
IRS	7.8622	3.4713	4.0560	1.1438	10.1012	2.1129	0.0000	0.0000
PSCG	42.3609	18.4329	26.4273	3.9422	56.4200	14.0246	0.0000	0.0000
DEPG	59.7066	20.7050	41.0347	9.1182	76.1818	11.9419	0.0000	0.0000
M2GDP	67.1547	19.4659	49.6240	7.9368	82.6229	11.6919	0.0000	0.0000
M1M2	25.3772	11.3799	34.1240	11.1783	17.6594	2.5617	0.0000	0.0000
Nigeria	**Full Sample**		**Before Liberalisation**		**After Liberalisation**			
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Anova F-test P-Value	Welch F-test* P-Value
RDR	-7.004	11.361	-11.068	11.957	0.754	3.648	0.003	0.000
RLR	-2.618	12.200	-8.044	11.499	7.739	4.140	0.000	0.000
INF	21.478	18.277	26.807	20.496	11.304	4.677	0.020	0.003
IRS	5.283	2.734	3.990	2.335	7.751	1.432	0.000	0.000
PSCG	13.208	3.549	12.769	3.639	14.045	3.372	0.342	0.333
DEPG	16.555	4.047	17.338	4.447	15.061	2.735	0.133	0.084
M2GDP	23.701	5.650	25.588	5.798	20.098	3.158	0.007	0.002
M1M2	60.397	4.735	61.529	4.665	58.237	4.260	0.061	0.057
South Africa	**Full Sample**		**Before Liberalisation**		**After Liberalisation**			
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Anova F-test P-Value	Welch F-test* P-Value
RDR	1.313	4.512	-4.280	2.230	2.880	3.656	0.000	0.000
RLR	5.215	4.824	-0.050	2.687	6.689	4.232	0.000	0.000
INF	10.243	4.665	12.879	1.778	9.505	4.973	0.091	0.009
IRS	4.278	1.077	4.781	0.919	4.137	1.092	0.165	0.144
PSCG	57.901	10.109	46.961	2.287	60.964	9.275	0.001	0.000
DEPG	52.434	4.380	53.951	2.589	52.009	4.717	0.307	0.170
M2GDP	55.360	4.373	56.924	2.690	54.922	4.689	0.292	0.166
M1M2	33.977	8.908	24.356	2.977	36.671	8.106	0.001	0.000

Tanzania	**Full Sample**		**Before Liberalisation**		**After Liberalisation**			
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Anova F-test P-Value	Welch F-test* P-Value
RDR	-7.698	7.577	-12.172	6.924	-1.946	3.298	0.000	0.000
RLR	1.766	9.735	-4.922	7.580	10.365	3.046	0.000	0.000
INF	19.092	11.586	25.019	9.371	11.472	9.700	0.000	0.001
IRS	11.233	4.448	9.213	3.863	13.829	3.841	0.002	0.002
PSCG	10.164	3.700	12.127	2.045	7.640	3.870	0.000	0.001
DEPG	15.731	4.029	13.783	2.104	18.236	4.572	0.001	0.004
M2GDP	22.078	4.189	20.269	2.705	24.404	4.682	0.004	0.008
M1M2	60.353	13.243	70.559	5.269	47.231	7.230	0.000	0.000
Uganda	**Full Sample**		**Before Liberalisation**		**After Liberalisation**			
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Anova F-test P-Value	Welch F-test* P-Value
RDR	-8.594	23.800	-22.809	29.443	3.590	3.057	0.003	0.010
RLR	-0.855	26.424	-18.556	30.530	14.317	4.110	0.001	0.003
INF	41.143	63.090	82.739	74.352	5.490	3.256	0.001	0.004
IRS	9.112	3.587	6.946	3.658	11.278	1.800	0.001	0.001
PSCG	4.714	2.369	3.203	1.191	6.657	2.073	0.000	0.000
DEPG	8.988	3.926	6.623	2.827	12.029	2.934	0.000	0.000
M2GDP	13.090	4.690	10.832	4.369	15.994	3.370	0.001	0.001
M1M2	69.060	13.908	80.073	6.767	54.899	4.180	0.000	0.000
Zambia	**Full Sample**		**Before Liberalisation**		**After Liberalisation**			
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Anova F-test P-Value	Welch F-test* P-Value
RDR	-12.757	15.404	-22.583	15.337	-4.241	9.416	0.001	0.001
RLR	-3.851	19.377	-18.456	15.299	8.807	12.399	0.000	0.000
INF	46.486	46.464	58.694	49.582	35.907	42.403	0.201	0.207
IRS	10.682	7.011	5.520	3.064	16.532	5.393	0.000	0.000
PSCG	10.096	4.251	12.336	4.595	7.557	1.702	0.001	0.001
DEPG	20.729	5.690	24.678	4.530	16.253	2.799	0.000	0.000
M2GDP	24.785	7.016	29.803	5.593	19.097	2.833	0.000	0.000
M1M2	47.121	9.860	55.186	4.999	37.981	4.267	0.000	0.000

Notes:

RDR is the real deposit rate; RLR is the real lending rate; INF is the inflation rate; IRS is the interest rate spread; PSCG is the ratio of private sector credit to GDP; DEPG is the ratio of commercial bank deposits to GDP; M2GDP is the ratio of broad money (M2) to GDP and M1M2 is the ratio of narrow money to broad money.

In most of the countries, the indicators have improved in the post-liberalisation compared to their levels in the pre-liberalisation period.

In Botswana, real interest rates increased during the post-liberalisation period and the spreads did not widen significantly. Inflation, which was already low in the pre-liberalisation period, remained unchanged. On the other hand, the monetary aggregates recorded mixed performances. The means of the private sector credit and the broad money variables are indistinguishable from the pre-liberalisation levels.

Gambia also recorded an increase in real interest rates after liberalisation and the interest rate spreads[22] also widened significantly unlike Botswana where the spreads remained almost unchanged. While the private sector credit declined after liberalisation, the deposits to GDP ratio and broad money to GDP all increased significantly and the ratio of narrow to broad money reduced.

Kenya, on the other hand, did not witness increases in real deposit rates after liberalisation. On the contrary, the real lending rates increased sharply resulting into substantial widening

[22] Interest rate spreads are measured as the difference between ex-ante loan and deposit interest rates.

in the spreads. The mean of the interest rates in the post-liberalisation period is almost 300 percent higher than the pre-liberalisation levels. Nonetheless, all the monetary aggregates showed significant improvement after liberalisation.

In the case of Malawi, real deposit rates in the post-liberalisation period did not show any statistically significant difference from the levels in the pre-liberalisation period and have stayed negative. But the real lending rates increased sharply resulting into significant widening in the interest rate spreads. While the mean of inflation in the post-liberalisation period increased by almost 66 percent, it is not statistically different from its mean in the period before liberalisation at 5 percent level of significance.

Tanzania and Uganda have recorded more or less similar trends. The real interest rates in both cases increased after liberalisation. In Uganda, the real interest rates moved from highly negative levels to positive levels. Inflation reduced significantly in the period after liberalisation while at the same time, interest rate spreads widened. In the case of Uganda, all monetary aggregates point to increased deepening of the financial system while in Tanzania, the private sector credit actually declined after liberalisation.

Nigeria and Zambia present unique case studies of financial liberalisation. In both cases, there were slippages in the reform programme and policy reversals at the beginning. While the real interest rates increased quite significantly after liberalisation in Nigeria, the monetary aggregates have either deteriorated or remained statistically equal in the two periods. In Zambia, the real interest rates which were heavily negative before liberalisation,

improved in the post liberalisation period although the real deposit rate has remained, on average, negative. The monetary aggregates have deteriorated in the post-liberalisation period. What seems to be a major outcome is the increase in the interest rate spreads of almost 300 percent after liberalisation. It is worth noting that Zambia and Malawi recorded the highest levels of inflation among the sample countries during the post liberalisation period at 36 percent and 26 percent, respectively.

In Mauritius, the real interest rates were on average positive in the pre-liberalisation period unlike many of the SSA countries. In the post-liberalisation period, the real lending rates have increased leading to widening of the interest rate spreads. Like South Africa, Mauritius enjoyed stable inflation rates during the pre- and post-liberalisation periods. The average inflation rate in the two periods is statistically equal in both periods. All the monetary aggregates increased in the post-liberalisation period and the means are statistically different in both periods. In the case of South Africa, however, the ratio of broad money to GDP and deposits to GDP remain statistically indistinguishable from the pre-liberalisation period. It is only the private sector credit to GDP ratio that increased after liberalisation.

What emerges from the above analysis is that in most of the countries, deposit rates did not increase as fast as lending rates after liberalisation thus leading to the widening of the interest rate spreads. The majority of the countries recorded interest rate spreads in excess of 10 percent. This result implies that financial markets in these countries are highly imperfect and as such banks have taken the advantage of liberalisation to increase lending

rates. At the same time, the finding is in line with earlier findings by Cho and Khatkhate (1989) that in imperfect and oligopolistic financial markets, a sudden dose of liberalisation often leads to overshooting in both nominal and real interest rates. The overshooting of interest rates after liberalisation is also emphasised by Stiglitz (1994). According to him, financial markets suffer from imperfect and asymmetric information.

The indicators of financial development have also moved in opposite directions in some of these countries following liberalisation (for example, Gambia) and in other countries there is no notable improvement (for example, Kenya). Other countries have experienced deterioration in the indicators of financial development (Zambia, Malawi and Nigeria). A few countries have registered an improvement in the indicators of financial development (Uganda, Tanzania, Mauritius, and Botswana). Generally, all countries experienced a reduction in the ratio of M1 to M2 following liberalisation which is a reflection of substitution away from currency and demand deposits to fixed and savings deposits.

3.5.2. Estimation Results from Panel Regression Analysis

The estimation results from the POOL OLS estimation are presented in table 3.8 while the WITHIN estimation and GMM results are presented in tables 3.9 and 3.10 respectively.

Table 3.8 OLS Estimation Results

Dependent Variable	LDEPOS		LM2		LPSC		LFD	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Lagged Dependent Variable	0.9262***	0.9245***	0.9293***	0.9237***	0.9104***	0.9168***	0.9694***	0.8647***
	(0.0149)	(0.0147)	(0.0159)	(0.0155)	(0.0173)	(0.0168)	(0.0115)	(0.0221)
FL	(0.1193)		-0.0978		-0.3949**		-0.1010	
	(0.1272)		(0.1204)		(0.1959)		(0.0808)	
FL(-1)	0.3933**	0.0357	0.3050*	0.0163	0.8561**	0.0978*	0.3109***	0.0371**
	(0.197)	(0.024)	(0.1863)	(0.0223)	(0.3038)	(0.0369)	(0.1251)	(0.0160)
FL(-2)	-0.3401*		-0.2566		-0.3543		-0.2007	
	(0.1985)		(0.1878)		(0.3060)		(0.1261)	
FL(-3)	0.1788		0.1083		-0.1506		0.0187	
	(0.1989)		(0.1881)		(0.3065)		(0.1263)	
FL(-4)	-0.1374		-0.0874		-0.1665		-0.0614	
	(0.1979)		(0.1872)		(0.3050)		(0.1257)	
FL(-5)	0.0437		0.0485		0.3210		0.0579	
	(0.1306)		(0.1236)		(0.2014)		(0.0830)	
INF	-0.0022***	-0.0022***	-0.0019***	-0.0019***	-0.0018***	-0.0018***	-0.0011***	-0.0014***
	(0.0003)	(0.0002)	(0.0002)	(0.0002)	(0.0004)	(0.0004)	(0.0002)	(0.0002)
LCAPITA	-0.1447		-0.1841**		-0.2439		-0.0890	
	(0.0925)		(0.0873)		(0.1425)		(0.0586)	
LCAPITA(-1)	0.1495		0.1351		0.3022*		0.1198	
	(0.1208)		(0.1143)		(0.1861)		(0.0767)	
LCAPITA(-2)	-0.1142		-0.0578		-0.2489		-0.1061	
	(0.1145)		(0.1082)		(0.1764)		(0.0727)	
LCAPITA(-3)	0.26675***	0.0149*	0.2843***	0.01386**	0.1066	0.0271**	0.138595**	0.0566***
	(0.1110)	(0.0080)	(0.1050)	(0.0073)	(0.1709)	(0.0131)	(0.0704)	(0.0195)
LCAPITA(-4)	-0.0576		-0.0531		-0.0180		-0.0370	
	(0.1108)		(0.1049)		(0.1705)		(0.0703)	
LCAPITA(-5)	-0.0843		-0.1145		0.1366		-0.0255	
	(0.0784)		(0.0741)		(0.1211)		(0.0498)	
PV	0.0011	-0.00005	0.0037	0.0045	-0.0085	-0.0151**	-0.0005	-0.0085**
	(0.0042)	(0.0038)	(0.0039)	(0.0037)	(0.0065)	(0.0063)	(0.0027)	(0.0035)
Intercept	0.1831	0.1819***	0.2158	0.2085***	0.0483	0.0651	0.077594***	-0.0627
	(0.0435)	(0.0418)	(0.0483)	(0.0455)	(0.0633)	(0.0604)	(0.0262)	(0.1102)
Observations	324	372	324	348	324	348	324	348
Adjusted R-squared	0.9671	0.9621	0.9548	0.9548	0.9609	0.9587	0.9773	0.9785
DW	2.2423	2.2397	2.1882	2.1882	1.8262	1.8262	2.1009	2.0879

Notes:
1. All the resgressions are estimated using OLS
2. Figures in parentheses are standard errors
3. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels respectively.

Table 3.9 The WITHIN Estimation Results

Dependent Variable	LDEPOS		LM2		LPSC		LFD	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Lagged Dependent Variable	0.8462***	0.8313***	0.8496***	0.8444***	0.8676***	0.8667***	0.8710***	0.8647***
	(0.02728)	(0.0258)	(0.0289)	(0.0274)	(0.0244)	(0.0228)	(0.0234)	(0.0221)
FL	-0.1114		-0.1078		-0.4230**		-0.1130	
	(0.1256)		(0.1190)		(0.1928)		(0.0771)	
FL(-1)	0.3721**	0.068257***	0.2920	0.0365	0.8349***	0.0830**	0.2809**	0.0371**
	(0.1939)	(0.0273)	(0.1833)	(0.0244)	(0.2979)	(0.0393)	(0.1190)	(0.0160)
FL(-2)	-0.2954		-0.2222		-0.3079		-0.1615	
	(0.1957)		(0.1849)		(0.3003)		(0.1200)	
FL(-3)	0.1733		0.1038		-0.1525		0.0234	
	(0.1957)		(0.1851)		(0.3004)		(0.1201)	
FL(-4)	-0.1174		-0.0767		-0.1247		-0.0446	
	(0.1951)		(0.1844)		(0.2992)		(0.1196)	
FL(-5)	0.0330		0.0486		0.2777		0.0518	
	(0.1302)		(0.1231)		(0.1999)		(0.0799)	
INF	-0.0023***	-0.0023***	-0.0012***	-0.0019***	-0.0019***	-0.0020***	-0.0014***	-0.0014***
	(0.0003)	(0.0003)	(0.0003)	(0.0002)	(0.0004)	(0.0004)	(0.0002)	(0.0002)
LCAPITA	-0.0901		-0.1273		-0.2111		-0.0841	
	(0.1025)		(0.0967)		(0.1590)		(0.0633)	
LCAPITA(-1)	0.1515		0.134648		0.3095*		0.1105	
	(0.1190)		(0.1126)		(0.1827)		(0.0730)	
LCAPITA(-2)	-0.1165		-0.066136		-0.2485		-0.0948	
	(0.1130)		(0.1069)		(0.1735)		(0.0693)	
LCAPITA(-3)	0.2666**	0.1037***	0.2797***	0.0772***	0.1245	0.0977**	0.1522**	0.0566***
	(0.1094)	(0.0322)	(0.1035)	(0.0295)	(0.1680)	(0.0480)	(0.0671)	(0.0195)
LCAPITA(-4)	-0.0377		-0.0342		-0.0175		-0.0138	
	(0.1092)		(0.1033)		(0.1674)		(0.0669)	
LCAPITA(-5)	-0.0876		-0.1158		0.1124		-0.0239	
	(0.0799)		(0.0756)		(0.1227)		(0.0490)	
PV	0.0007	-0.0003	0.0054	0.0053	-0.0337***	-0.0403***	-0.0068*	-0.0085**
	(0.0060)	(0.0057)	(0.0057)	(0.0054)	(0.0095)	(0.0089)	(0.0038)	(0.0035)
Intercept	-0.0200	-0.0868	0.0983	0.0765	-0.0327	-0.2073	-0.008053	
	(0.2455)	(0.1806)	(0.2324)	(0.1730)	(0.3848)	(0.2788)	(0.1516)	
Observations	324	348	324	348	324	348	324	348
Adjusted R-squared	0.9682	0.9664	0.9585	0.9563	0.9624	0.9624	0.9795	0.9795
DW	2.2101	2.1451	2.2495	2.1391	1.9316	1.8888	2.1607	2.0879

Notes:
1. All the resgressions are estimated using the WITHIN Fixed Effects Estimation
2. Figures in parentheses are standard errors
3. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels respectively.

Table 3.10 The GMM Estimation Results

Dependent variable	LDEPOS			LM2			LPSC			LFD		
	One-step Estimations	Two-step estimations	System GMM	One-step Estimations	Two-step estimations	System GMM	One-step Estimations	Two-step estimations	System GMM	One-step Estimations	Two-step estimations	System GMM
Lagged Dependent Variable	0.6558***	0.5180*	0.8203***	0.8154***	0.7531***	0.8339***	0.7235***	0.4859**	0.8396***	0.7096***	0.6560***	0.8979***
	(0.0861)	(0.2776)	(0.1036)	(0.1055)	(0.1243)	(0.0943)	(0.0552)	(0.2482)	(0.1667)	(0.0785)	(0.0954)	(0.0276)
FL(-1)	0.0937	0.6685	0.1026	0.0093	-1.0171	0.0138	0.1716	-0.4835	-0.2342	0.0619	-0.8889	0.0123
	(0.0820)	(0.4902)	(0.0675)	(0.0731)	(0.9732)	(0.0531)	(0.1359)	(2.2236)	(0.2937)	(0.0647)	(0.6615)	0.0289
INF	-0.0030***	-0.0020***	-0.0018**	-0.0026***	-0.0014*	-0.0022***	-0.0024***	-0.0017*	-0.0024	-0.0017***	-0.0016***	-0.0011***
	(0.0005)	(0.0005)	(0.0009)	(0.0005)	(0.0008)	(0.0008)	(0.0007)	(0.0009)	(0.0018)	(0.0003)	(0.0005)	(0.0004)
LCAPITA(-3)	0.3288**	0.3057**	0.0464	0.3000*	0.2554***	0.1746*	0.2519**	0.2801	0.7447	0.2005***	0.1537***	0.0732*
	(0.1710)	(0.1325)	(0.1352)	(0.1761)	(0.0463)	(0.0969)	(0.1239)	(0.2062)	(0.8064)	(0.0780)	(0.0396)	(0.0401)
PV	0.0113	0.0168	-0.0132	0.0199	-0.0005	0.0294	-0.0069	-0.0312	-0.0314	0.0036	0.0006	-0.0206
	(0.0108)	(0.0179)	(0.0162)	(0.0127)	(0.0129)	(0.0277)	(0.0159)	(0.0491)	(0.0506)	(0.0075)	(0.0040)	(0.0167)
Number of observations	336	336	336	336	336	336	336	336	336	336	336	336
Sample period	1980-2007	1980-2007	1980-2007	1980-2007	1980-2007	1980-2007	1980-2007	1980-2007	1980-2007	1980-2007	1980-2007	1980-2007
J-statistic	61.0228	8.4971	6.1755	25.3110	9.0809	6.6138	87.0756	4.6470	7.8217	94.0761	6.1443	6.8715
Instrument rank	60	13	12	32	13	12	88	12	12	88	13	12
Sargan Test (p-value)	0.26842	0.3865	0.6276	0.5570	0.3355	0.4702	0.3584	0.7030	0.3486	0.1907	0.9407	0.4424
Notes:												
1. All the resgressions are estimated using GMM one-step, two-step and system GMM												
2. Figures in parentheses are standard errors												
3. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels respectively.												

Under the OLS POOL and WITHIN Fixed Effects models, the first lag of the financial liberalisation index (FL) is positive and statistically significant across all the various measures of financial development with the exception of broad money variable. When the model is re-estimated by including only the first lag of the financial liberalisation index (FL) and the third lag of the real GDP per capita (LCAPITA(-3)), the financial liberalisation variable remains statistically significant but its magnitude drops significantly. The coefficient is higher in the private sector credit equation and lowest in the broad money

equation. This implies that financial liberalisation boosts credit extension by the banking system to the private sector.

The results of the GMM estimation with respect to the financial liberalisation variable are highly mixed. The financial liberalisation variable is only statistically significant in the GMM one-step estimations for the deposits to GDP ratio and broad money to GDP ratio but is statistically insignificant in the GMM two-step estimation and the system GMM. Given the small number of cross-sections, the results of the GMM estimation need to be taken with caution. The GMM estimator is designed on the assumption of a large number of cross-sectional units and a shorter time-series. The asymptotic properties of the GMM estimator rely on the size of the cross-sectional dimension of the panel.

As expected, the inflation variable was negative and statistically significant in all estimations including the OLS and WITHIN estimations as well as the GMM estimations. The result was robust in all estimations as the magnitude of the coefficient remained almost the same in all the estimations. This finding is consistent with the earlier findings from the equality of means test. In countries such as Malawi, Nigeria and Zambia which experienced higher levels of inflation pre- and post-liberalisation, the indicators of financial development have not shown any improvement after liberalisation and in some cases, they have actually deteriorated. This finding is also consistent with the findings of other empirical studies (Boyd *et al.,* 2001). This finding renders support to the view that macroeconomic stability is important to promoting financial development.

The real GDP per capita is positive and statistically significant in almost all the specifications. However, it is the third lag that is consistently significant across the majority of specifications. This finding implies that financial development follows economic development which is in support of some studies that find that growth leads finance (Robinson, 1952; Demetriades and Hussein, 1996; and Ang and McKibbin, 2007).

The political violence as a proxy for political instability is largely statistically insignificant in most of the specifications. This finding may not be sufficient to conclude that political violence does not affect financial development. The result may have more to do with the proxy used for political instability. Since the main emphasis is to understand the impact of financial liberalisation on financial development, this study uses the available proxy of political instability with such a long time-series dimension.

3.6. Conclusions

This chapter examines the impact of financial liberalisation on financial development in a selected sample of SSA countries. An index of financial liberalization or repression that captures the degree of financial liberalization and the gradual nature of the liberalisation process is constructed. In addition, a measure of financial development that encompasses the services provided by the financial system such as reduction of information and transaction costs, mobilization of savings, management of risks and facilitation of transactions is constructed using the principal component analysis.

Two methodological approaches are employed in the analysis. The first approach compares the indicators of financial development in the pre- and post-liberalisation periods using the equality of means test. The second approach involves the estimation of a panel regression model. The financial development variable is regressed on the index of financial liberalisation and macroeconomic and institutional variables as control variables.

The findings do not provide conclusive evidence that financial liberalisation per se has spurred the development of the financial sector in the sample countries. The indicators of financial development have moved in opposite directions in some of the countries following liberalisation (for example, Gambia) and in other countries there is no notable improvement (for example, Kenya). Other countries have experienced deterioration in the indicators of financial development (Zambia, Malawi and Nigeria). A few countries have registered an improvement in the indicators of financial development (Uganda, Tanzania, Mauritius, and Botswana). This finding appears to support the view that the sequencing of financial reforms affects their outcomes. Countries that maintained low and stable inflation during and after reforms registered significant improvements in the indicators of financial development after liberalisation compared to those countries that were characterised by high inflation and policy reversals. What appears to be a unanimous outcome of financial liberalisation is an increase in real interest rates and the corresponding spreads. In those countries with high inflation, the interest rate spreads increased sharply after liberalisation.

The panel regression results, on the other hand, show that the impact of financial liberalisation on financial development is generally positive and felt after a lag of

approximately one year. The impact is higher on private sector compared to the monetary aggregates. The inflation variable is negative and statistically significant in all estimations reinforcing the argument that macroeconomic stability is critical for the success of financial liberalisation reforms. The real per capita GDP is positive and statistically significant in almost all the specifications which is in support of the view that financial development follows economic development. The study, however, fails to find support for the hypothesis that political instability has a negative effect on financial development.

CHAPTER FOUR

THE EFFECTS OF FINANCIAL LIBERALISATION ON DOMESTIC SAVINGS

This chapter examines the impact of financial liberalisation on savings mobilisation in a selected sample of SSA countries. McKinnon (1973) and Shaw (1973) postulate that liberalising the financial sector increases real interest rates, promotes savings mobilisation as agents substitute away from current consumption to future consumption and also enhances financial intermediation.

The theoretical framework of inter-temporal utility maximisation, which is the basic foundation of most of the saving/consumption theories, is presented together with the Life Cycle Hypothesis (LCH) and the Permanent Income Hypothesis (PIH). The failure of the LCH and PIH in empirical works has led to the consideration of other theories of consumption namely, the precautionary motive for saving, the liquidity constraints and habits. Deriving from these theories, the channels through which financial liberalisation affects saving are explored.

Based on the above theories of consumption, a savings model that encompasses the effects of financial liberalisation is formulated and estimated. Given the persistence of the savings variable, we include the lagged saving variable among the regressors and estimate the

model using the GMM estimator formulated by Arellano and Bond (1991) and Arellano and Bover (1995) already discussed in the previous chapter.

4.1. Theoretical Framework

4.1.1. Inter-temporal Utility Maximisation

Households always make inter-temporal decisions of whether and how much to save. They have to decide how much of their current income to consume in the present and how much to put aside for future consumption. Saving or consumption therefore represents an inter-temporal decision on the part of the household.

In the basic framework of inter-temporal utility optimization, the consumer maximizes the utility function in equation (4.1) subject to the constraint in equation (4.2) (See Deaton, 1989, 1992 and Edwards, 1995).

$$U = E_t\left[\sum_{t}^{\infty}(1+\rho)^{-t} v(C_t)\right] \tag{4.1}$$

Where $\rho > 0$ is the rate of time preference and $v(C_t)$ is the instantaneous utility function.

The evolution of assets or the inter-temporal budget constraint is given as

$$A_{t+1} = (1+r)(A_t + y_t - c_t) \tag{4.2}$$

Where A_t is the real nonhuman wealth, y_t is labour income, c_t is private consumption and r is the fixed real interest rate. The real interest rate is assumed to be fixed and known, and any form of uncertainty will come from labour income.

The solution to the above problem yields the Euler equation given as

$$\psi(C_t) = E_t\left[\frac{(1+r)\psi(C_{t+1})}{(1+\rho)}\right] \tag{4.3}$$

Where $\psi(C_t) = v'(C_t)$ is the instantaneous marginal utility of consumption in period t. The concavity of the instantaneous utility function implies that $\psi(C_t)$ is monotonically decreasing. If $r = \rho$, then $\psi(C_t) = \psi(C_{t+1})$. According to equation (4.3), the consumer equates the marginal utility of consumption overtime. The rational forward looking agents will not want expenditure to be worth more (in discounted utility terms) in one period than in any other period. Because the marginal utility of expenditure and expenditure itself are monotonically related, this leads to "smoothing" of consumption. Thus agents seek to equalize the marginal utility of money from one period to the next and between now and the distant future (Deaton, 1997).

Based on the Euler equation, individuals will postpone consumption to the future if interest rates (r) are higher than the discount rate (ρ). The implication of this is that saving is an increasing function of the interest rates.

4.2. Review of the Literature

4.2.1. Theories of Consumption and Saving

Deriving from the Euler equation, a number of theories or hypotheses have been developed to explain the inter-temporal allocation of money. One of these theories is the Life-Cycle Hypothesis (LCH) which derives from the early work of Franco Modigliani and Richard Brumberg (1954). The main assumption of this model is that households attempt to keep the marginal utility of expenditure constant overtime. In its more simplified form, the model divides the lifetime of individuals into three periods: the young period when individuals are not working; a working period; and retirement period. In the working period, individuals pay off the debts accumulated when they were young and accumulate wealth which is used in the retirement period to maintain their accustomed level of consumption. The LCH recognizes that income tends to fluctuate systematically over the course of an individual's life and that personal saving behavior is therefore determined by one's stage in the life cycle (Modigliani and Brumberg, 1954; Ando and Modigliani, 1963).

In the life cycle framework, saving and consumption follow hump-shaped patterns with dis-saving until early adult age, the peak of saving at mid-life, and dis-saving during retirement as households rundown their retirement assets. The implications of the LCH include: First, the aggregate saving rate will tend to fall in response to an increase in either the youth-dependency ratio or the ratio of the elderly to the working age population. This implies that

factors which change the demographic patterns of a country are key determinants of the saving rate. Therefore, aging populations mean a lower saving rate, as saving by the active population is squeezed by the negative or low saving of those no longer in work. Second, income growth influences personal saving due to the productivity of the younger generation in the population, which is higher than that of the older generation. If the propensity to save is equal, net saving is positive, as the relative income shares of the young are higher than those of the elderly population.

Another model of consumption that derives from the inter-temporal utility maximisation is the Permanent Income Hypothesis (PIH). The PIH abstract from consumer heterogeneity by focusing on consumption of an infinitely lived consumer or, equivalently, an infinite sequence of finitely lived generations linked through intergenerational transfers. According to the PIH, consumption responds to permanent incomes (Friedman, 1957; and Flavin, 1981). Therefore, the anticipated increase in future income relative to current income levels reduces current saving as consumers raise current consumption in anticipation of higher future income. This would imply that the growth in income which is anticipated will have a negative effect on savings.

The PIH is derived from the assumption that consumption is equal to the annuity value of the sum of assets and the discounted present value of expected future labour income (Flavin, 1981). Such a model can be formally derived from the maximization under uncertainty of a quadratic inter-temporally additive utility function under the assumption that the real rate of interest and the rate of time preference are constant and equal to one

another (Deaton, 1992). The horizon is usually taken as infinite and as such the Flavin's (1981) version of the PIH takes the form

$$c_t = \frac{r}{1+r}(A_t + \sum_{0}^{\infty} \frac{E_t y_{t+k}}{(1+r)^k}) \qquad (4.4)$$

Where r is the constant real rate of interest, c_t is real consumption in period t, y_{t+k} is real labour income (earnings) in year **t+k,** whose expectation conditional on information available at time t is $E_t y_{t+k}$, and A_t is the real value of the single asset whose return is r (Deaton, 1997).

As suggested by Campbell (1987), the above equation can be written in terms of saving, s_t, defined as the difference between disposable income and consumption that satisfies the "rainy day equation"

$$s_t = -\sum_{1}^{\infty} E_t \frac{\Delta y_{t+k}}{(1+r)^k} \qquad (4.5)$$

According to equation (4.5), saving is a discounted present value of expected future falls in earnings. The rainy day equation comes from the assumption underlying the PIH that optimal consumption is flat over time. Hence, if earnings is also flat, there is no need to save; if earnings are growing, the consumer should borrow and repay later; if earnings are

expected to fall in the future, for example due to retirement in a finite-life cycle model, the consumer should save to hold consumption constant over the anticipated drop.

Both the LCH and the PIH imply that movements in income should not affect consumption. However tests of this hypothesis using time-series data consistently rejected this prediction (See Campbell and Mankiw, 1990). Consumption was often found to track current income. A number of explanations have been developed to explain this behaviour which includes the presence of liquidity constraints especially in developing countries, precautionary savings, the role of bequests and habits.

The presence of liquidity constraints, for example, may cause the marginal utility of expenditure to fall overtime. Liquidity constrained households are not able to smoothen consumption overtime (Campbell and Mankiw, 1989; Deaton, 1992; Jappelli and Pagano, 1993). In order to take into account borrowing constraints, an additional constraint is often added to the inter-temporal optimisation model in equation (4.1). This constraint is often formulated to allow for the possibility that consumers may not be able to borrow, or at least that they cannot borrow more than some given limit as shown in equation (4.6)

$$A_t \geq 0 \qquad (4.6)$$

In addition to the liquidity constraints, uncertainty and precautionary saving have been found to play a significant role in determining consumption. Skinner (1988), using a Taylor approximation to a life cycle model of consumption for consumers with constant relative

risk aversion, finds that precautionary savings accounts for 56 percent of the aggregate life cycle saving. Hubbard, Skinner and Zeldes (1994) using a life cycle model of consumption confirms the role of uncertainty in precautionary savings. Kotlikoff (1986) extended the analysis of precautionary saving from those arising from lifespan uncertainty and earnings uncertainty to precautionary savings to meet uncertain, uninsured health expenditures. Through a simulation of a 55 period life cycle model, Kotlikoff finds that precautionary saving for uncertain health expenditures was explaining a large amount of aggregate savings.

It is worth noting that, in many respects, liquidity constraints and precautionary motives have similar effects. The inability to borrow when the consumer is in trouble induces a precautionary motive even where none exists. Correspondingly, consumers who are extremely cautious may voluntarily abstain from borrowing in bad times because they are fearful of having to repay when things are worse.

Further explanations regarding the failure of LCH and PIH have concerned the role of intergenerational transfers. The life cycle hypothesis considers the household as the relevant saving unit thus abstracting from the intra-or inter-generational relations among its members, and giving limited consideration to the links between parents and children in different households. In a dynastic approach (Barro, 1974), the relevant saving decision unit is the dynastic family whose foundation lies precisely in transfers (Kotlikoff and Summers, 1981).

Barro (1974) has shown that for families linked with intergenerational altruism, each generation has the utility of immediately succeeding generation as an argument in its own utility function. This implies that saving behaviour depends in part on the intent of parents to leave bequests to their offspring.

4.2.2. Theoretical Linkages between Financial Liberalisation and Savings

The theoretical models of consumption and saving reviewed in the previous section provide a framework within which to analyse the effects of financial liberalization on saving. Financial liberalisation and the resulting increase in financial development have ambiguous effects on the level of saving because of the various channels with differing effects on saving. Financial liberalisation is likely to result into higher interest rates, ease the credit constraints that faced households in the repressed regime, and increase the number of financial intermediaries and lead to a diversified financial sector (Schmidt-Hebbel and Serven, 2002). The resultant deepening of the financial system and strengthened prudential regulation of financial institutions which follows financial liberalization plus diversified number of institutions and products increase opportunities for and returns to financial saving thereby raising saving rates. However, to the extent that the credit constraints faced by households ease, the overall effect of financial liberalisation becomes theoretically ambiguous.

Each of the above channels is briefly discussed below:

4.2.2.1. Interest Rate Channel

This channel was mainly emphasized by McKinnon (1973) and Shaw (1973) and the other proponents of the financial liberalisation thesis. According to them, the major constraint to financial market development is the interference by government in the workings of a market system. Interest rate ceilings produce a bias in favour of current consumption and against future consumption, thus reducing saving. Based on the proposition of McKinnon-Shaw hypothesis, financial liberalisation results into increased interest rates which translate into increased savings as savers are attracted by the high returns.

Theoretically, however, the impact of interest rates on savings is ambiguous. A change in interest rates is associated with a substitution effect which tends to increase savings and an income and wealth effects which may increase or reduce savings depending on whether the household was initially a net lender or a net borrower (Sachs and Larrain, 1993; Schmidt-Hebbel, Serven and Solimano, 1994; Schmidt-Hebbel and Serven, 2002).

4.2.2.2. Easing Liquidity Constraints

The role of capital market imperfections started receiving increasing attention in the literature on consumer behaviour since the late 1980s. Hayashi (1987) argued that liquidity constraints explain the excess sensitivity of consumption to anticipated income fluctuations.

If households are not able to borrow the desired amount from an inter-temporal perspective, relaxation of the credit constraints will lead to a reduction in the saving rates. In the presence of liquidity constraints, households respond strongly to temporary income (Deaton, 1989).

Liquidity constraints may arise in a number of ways. The existence of a large gap between lending and borrowing rates may give rise to liquidity constraints. In these circumstances, the households are not directly constrained but if they choose to borrow, they must do it at a high premium. The household may therefore choose to consume current income rather than borrow. Furthermore, access to credit by the households is also limited in a financially repressed system.

By increasing competition in the financial system, financial liberalisation is expected to lower interest rate spreads thus encouraging households to borrow more within an inter-temporal utility maximisation framework. At the same time, increased competition in the financial system following financial liberalisation enhances the chances of the previously constrained households to access credit. These are all likely to reduce domestic savings[23] (Schmidt-Hebbel, 2002; Jappelli and Pagano, 1994).

[23] Bayoumi (1993) gives a comprehensive theoretical discussion of the channels through which financial liberalisation may affect savings.

4.2.2.3. Diversified and Deep Financial System

Financial liberalisation by enhancing competition in the financial system is likely to result into a deeper financial system. Such a financial system is capable of providing a wide range of saving instruments that match individual preferences, risk-aversion and income profiles (Schmidt-Hebbel and Serven, 2002).

In addition, the deepening of financial markets may lead to what Honohan (1999) termed as "convenience". Developments associated with financial development such as the geographical location of bank branches, queuing time at bank offices, or minimum deposit requirements can play a significant role in the willingness of individuals to keep their savings within the financial system. If the deepening of the financial system allow for diversification and risk hedging, then risk-averse agents can reduce their exposure to shocks that would otherwise threaten their income and wealth levels (Schmidt-Hebbel and Serven, 2002).

4.2.2.4. Higher Growth

To the extent that financial liberalisation enhances financial development, it is expected to lead to higher economic growth. The positive relationship between saving rates and economic growth that has been established in the literature provides another channel through which financial liberalisation affects savings (Carroll and Weil, 1994).

4.2.3. Empirical Literature

Early empirical studies that have investigated the effects of financial liberalisation on savings have largely estimated a regression equation with interest rates as one of the regressors. The results from these empirical studies that have investigated the relationship between interest rates and savings have yielded conflicting results.

Boskin (1978) utilizes after-tax real interest rates in a structural estimation of the United States aggregate consumption function by use of instrumental variable technique. He obtains an interest rate elasticity of savings of 0.4 that is statistically significant. In a study of twelve Latin American countries, McDonald (1983) also finds evidence of a positive relationship between the real interest rate and private savings in most of the countries in the sample of countries. These findings are supported by Fry (1980) who find statistical evidence to support the view that higher real interest rates have a positive effect on saving.

Several other studies, however, fail to find support for a positive and significant interest rate elasticity of saving. Gupta (1984) estimated the savings function for twelve Asian countries, separating financial savings and savings in physical assets. The interest rate was positive in nine of financial savings equations and statistically significant in only three. de Melo and Tybout (1986) find that the real interest rate exhibits a positive, albeit weak, correlation with saving rates in Uruguay. The dependent variable in the regression equation is the ratio of gross domestic saving to GDP.

Giovannini (1985) revisited Fry's earlier work and find that the apparent positive interest rate elasticity is driven by the presence in the sample of a few observations (Korea in 1967 and 1968) that have a disproportionately large influence on the estimated response of savings to the real interest rate. He extends the analysis to eighteen developing countries and finds that the interest rate does not contribute significantly to explaining saving. He finds that in only five of the eighteen developing countries in his sample are consumption and saving sensitive to changes in real interest rates.

Rossi (1988) introduces the role of liquidity constraints in the estimation model and finds that increases in the real rate of return are not likely to elicit substantial increase in savings especially in low income countries. He concludes that given the pervasive liquidity constraints especially in low income countries, increases in real interest rates are not likely to elicit substantial increases in savings. Using data on savings in developing countries, Bosworth (1993) finds a positive coefficient in time series regressions for individual countries and a negative coefficient in panel estimation.

Edwards (1995) finds the real interest rate insignificant in all regressions. When an interactive real interest rate-real GDP per capita are included, the results do not support Ogaki's *et al.,* (1995) finding suggesting that the degree of inter-temporal substitutability in consumption increases with the degree of development. When the spread between lending and deposit rates is included in the regressions, their coefficients remains insignificant.

Masson, Bayoumi and Samiei (1995) find a positive and significant coefficient for the real interest rate variable in case of industrial countries but the real interest rate is negative and insignificant for the sample of developing countries. They attribute this result to measurement problems related to the choice of appropriate interest rate and measure of inflation. Callen and Thimann (1997) using data from 21 OECD do not find the real interest rate a significant determinant of household saving. They argue that the difficulty in finding a significant impact from the real interest rate may be attributable to difficulties in specifying the relevant interest rate variable. They observe that while the after-tax real interest rate should be used, it is difficult to calculate such rates accurately from available data.

Using a sample of developed and developing countries, Loayza, Schmidt-Hebbel and Serven (2000) find a very high negative coefficient (-0.64) on the private saving rate suggesting that the income effect outweighs the substitution effect. However, Loayza *et al.*, (2000) cautions that the result should be interpreted with caution in view of the strong negative correlation between inflation and the real interest rate.

Bandiera *et al.*, (2000) improves on the earlier studies of the impact of financial liberalization on saving by including an index of financial liberalization among the explanatory variables in addition to the interest rate variable. They find no evidence of a positive and significant interest rate effect on saving. It is only when the data is pooled and one assumes that the long run coefficients are equal across countries that they find evidence of a significant and positive interest rate effect on saving though the coefficient is small.

Regarding the index of financial liberalization, they find in the case of individual country estimations, a negative effect for two countries, a positive effect in other two countries, and no clear effect discernable in others. When the long run effects are constrained to be equal, the effect of the financial liberalization index is significantly negative and large.

Ogaki, Ostry and Reinhart (1995) has attributed the failure to find a positive and significant response of saving to real interest rates on the poor quality of the data in general, and more specifically, the fact that there is considerable variation in economic significance and informational content of the data on real rates of return. Lack of sophistication and depth in domestic financial markets or direct regulation may result in interest rates that do not adequately reflect expectations about the underlying economic fundamentals. They observe that in most low-income developing countries, there are a few banks and there is little scope for true market determination. Another factor identified in their study as a cause of the low and weak response of savings to interest rates is because subsistence considerations are likely to be a significant factor determining consumption behaviour. Given that to be able to save, households must first reach a subsistence consumption level, the interest rate sensitivity of private saving will be close to zero for countries where a large share of the population lives at or near subsistence consumption levels. This would imply that a subsistence model would imply a non-linear relationship between saving behaviour and the level of development with the most significant changes occurring when countries move from low-income to low-middle income status.

Another strand of literature has examined the impact on savings of financial liberalisation arising from easing liquidity constraints following increased access to credit by households. Inter-temporal consumption smoothing envisaged under the LCH predicts a disassociation of consumption from income and existence of substantial asset accumulation at least at some points in the life cycle. In recent controversies starting with Kotlikoff and Summers (1981), the validity of predictions has been challenged. The LCH requires well-functioning financial markets to allow agents to borrow and lend across periods. If households are forward looking, not credit constrained and temporary income fluctuations do not change permanent income much, consumption would respond only marginally to temporary fluctuations. To the extent that the desire of households to smooth consumption overtime is constrained by limited access to credit markets, financial liberalization resulting into increased access to these markets, will allow individuals to bring forward their consumption over their working life through borrowing which would reduce saving ratios.

Empirical tests have found liquidity constraints to be binding in both developed and developing countries. Hayashi (1985) finds that liquidity constraints affect 20 percent of the US population. This is collaborated by Zeldes (1989) who finds that borrowing constraints affect consumption in the United States. Rossi (1988) and Vaidyanathan (1993) also find that liquidity constraints are binding in most of the developing countries.

Most of these empirical studies that examine the effects of liquidity constraints on saving have used proxy variables such as the volume of consumer credit and found it to affect saving negatively (Ostry and Levy, 1995). Using a sample of developed countries

Vaidyanathan (1993) find that international variations in the sensitivity of consumption to income are positively related to financial depth (measured as a ratio of M2 to GDP).

Jappelli and Pagano (1994) use an overlapping generations model to investigate the role of capital market imperfections on aggregate saving and growth. They used cross country data on required down payments for mortgages as a proxy for borrowing constraints. Their econometric results on data for advanced countries support the idea that relaxing these constraints will reduce savings and economic growth.

This finding is contradicted in Edwards (1995). Using a panel of 36 countries, he finds a positive and significant coefficient on the ratio of credit to the private sector as a ratio of total domestic credit as a proxy for borrowing constraints while Rodrik (2000)[24] find no significant effect of private sector credit on saving concluding that liquidity constraints are not binding. Edwards (1995) attributes this unique result to the fact that private credit is a poor proxy for borrowing constraints in addition to the fact that borrowing constraints operate on household savings only and not on corporate or total private savings. Unfortunately, better proxies for borrowing constraints are difficult to construct for developing counties.

[24] Rodrik (2000) used a sample of countries that had achieved saving transitions defined as a sustained increase in the saving rate by more than 5 percentage points of national income. As a result, many sub-Saharan countries did not make it into the sample.

4.2.4. Summary of the Literature

The theoretical ambiguity of the impact of the interest rate variable on savings is also confirmed by the empirical literature. The interest rate variable is found to be statistically insignificant in most of the studies although in a few studies, it is positive and statistically significant. This is consistent to an earlier review of the literature by Fry (1995) who finds that a number of positive coefficients found in the studies exceed the negative ones but both types of coefficients are generally small and insignificant. Honohan (1999) suggests that the empirical puzzle could imply the existence of different elasticities across countries, depending on each nation's specific characteristics, such as per capita income, growth rates or levels of indebtedness. The results for the private sector credit variable and the financial depth variable are also inconclusive. This implies that the impact of financial liberalisation on saving remains an empirical question and depends on the net effect of the various channels.

Similarly, studies that use a financial liberalisation index do not generally find a positive relationship between financial liberalisation and domestic savings. It appears that countries that satisfy initial conditions such as having stable macroeconomic environment register positive effects on savings. There is a possibility that financial reform has the effect of shifting savings out of assets such as precious metals, property or currency into bank deposits and marketable securities. This will raise the recorded financial 'depth' without raising savings rates.

4.3. Methodology

4.3.1. Empirical Model Specification

We estimate a panel regression model of the saving rate on the financial liberalisation variable and a set of conditioning variables which have been identified in the literature as important determinants of savings. In previous studies, the saving rate has been found to exhibit significant inertia, with a high degree of serial correlation even after controlling for other relevant variables. In this regard, it is desirable to estimate a dynamic savings model of the form

$$S_{it} = \alpha + \delta S_{i,t-1} + \beta FL_{it} + \phi' X_{it} + \eta_i + \nu_{it} \qquad (4.7)$$

Where s_{it} is the gross domestic saving rate for country i in period t; FL_{it} is the financial liberalisation index for country i in period t; X_{it} represents a set of conditioning variables that have been found to affect the saving rate; η represents a set of unobserved time invariant country specific effects; and ν is the error term.

Equation (4.7) is estimated using the Pool OLS, the fixed effects WITHIN estimation and the GMM one-step and two-step estimators proposed by Arellano and Bond (1991) and Arellano and Bover (1995).

4.3.2. Definition, Measurement of Variables and Data Sources

The data used in the saving equation was obtained from the World Development Indicators (WDI) online database 2009 and the International Financial Statistics (IFS) online database. In some instances, the World Economic Outlook (WEO) database was used to complete the data that was missing for some countries particularly the real GDP per capita. Data was collected on eleven countries namely Botswana, Ethiopia, Gambia The, Ghana, Kenya, Malawi, Mauritius, South Africa, Uganda, Tanzania and Zambia. Savings data for Nigeria was missing and it was excluded from the analysis.

The dependent variable is the gross domestic savings rate (SVG) which is got from the WDI. It is calculated as GDP less final consumption expenditure (formerly total consumption). Final consumption expenditures cover the consumption expenditures by households and the general government. The explanatory variables include the financial liberalisation index constructed in the previous chapter and a set of conditioning variables already discussed in the literature. The conditioning variables used in the estimation include:-

i) **Foreign saving (CAB):** Foreign saving is measured by the current account balance to GDP ratio and is obtained from the WDI. The current account balance is the sum of net trade (exports minus imports) in goods, services, and income plus net current transfers. Gross domestic product is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not

included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.

ii) **Rate of growth of per capita income and the level of per capita income (CAPITA):** A Gross national income per capita (2000 US Dollars) is the gross national income, converted to U.S. dollars using the World Bank Atlas method, divided by the midyear population. A positive correlation between income and saving is often found in empirical estimations. Regarding the growth rate, a simple version of the PIH predicts a negative impact of higher income growth on saving. The relationship is theoretically ambiguous under the LCH and it depends on whether the growth rate takes place within or across generations. A positive relationship between income growth and saving is most often found in empirical estimations.

iii) **Age dependency ratio (AGE)**: Age dependency ratio is the ratio of dependants—people younger than 15 and older than 65—to the working-age population—those aged 15–64. An increase in the dependency rate is expected to reduce the saving rate according to the LCH. This variable is taken from the World Development Indicators.

iv) **Real interest rates (RIR):** The real deposit rate is obtained by adjusting the nominal deposit rate obtained from the IFS line 60(l) by inflation using the Fischer

equation. The overall sign of the real interest rate is theoretically ambiguous because of the substitution and income effects that apply in different directions.

v) **Broad Money/GDP (M2):** Taken as a proxy of financial depth and sophistication of the financial system. An increase in this ratio implies the deepening of the financial system. Theoretically, the coefficient should be positive. Monetary liabilities (M2) are obtained from the IFS line 35(l). It is divided by GDP to express it as a ratio of the size of the economy.

vi) **Private sector credit as a ratio of income (PSC):** Taken as a proxy for borrowing constraints. The coefficient is expected to be negative. Private sector credit is obtained from the IFS line 22(d). It refers to the credit extended by the deposit taking institutions.

vii) **Terms of trade (TOT)**: This variable is taken from the World Development Indicators and its sign is expected to be positive.

4.3.3. Summary Statistics and the Correlation Matrix

Table 4.1 presents the descriptive statistics of the data while table 4.2 presents the correlation coefficients between the variables stacked in the panel. There are notably wide disparities in most of the variables as shown by the difference between the maximum and minimum values of those variables. For example, the maximum saving rate is 55.9 percent

compared to a minimum saving rate of -4.6 percent and the maximum private sector credit and M2 to GDP ratio are 82.6 percent and 101.1 percent compared to a minimum of 1.5 percent and 5.7 percent respectively.

The private sector credit to GDP ratio (PSC), real GDP per capita (CAPITA) and the age dependency ratio (AGE) are highly correlated. With the exception of the age dependency ratio and the terms of trade (TOT), the rest of the variables are positively correlated with the saving rate (SVG).

Table 4.1 Descriptive Statistics of the Data

	Mean	Median	Maximum	Minimum	Std. Dev.	Observations
SVG	14.491	11.147	55.900	-4.600	11.856	330
FL	0.422	0.393	0.911	0.000	0.306	352
M2	32.354	27.989	101.060	5.708	17.345	352
PSC	18.652	12.888	82.619	1.542	17.573	352
RIR	-4.531	-1.429	37.216	-60.004	13.064	339
CAPITA	964.612	314.363	4709.226	98.000	1254.620	352
AGE	87.425	91.813	112.753	44.053	15.941	352
CAB	-3.824	-3.562	31.982	-36.058	7.284	330
TOT	108.890	103.068	243.698	57.600	32.602	322

Table 4.2 Correlations Matrix

	SVG	FL	M2	PSC	RIR	CAPITA	AGE	CAB	TOT
SVG	1								
FL	0.2311	1.0000							
M2	0.3798	0.3440	1.0000						
PSC	0.3582	0.4073	0.8521	1.0000					
RIR	0.1765	0.4866	0.2923	0.2860	1.0000				
CAPITA	0.7483	0.4357	0.7032	0.7733	0.2267	1.0000			
AGE	-0.3790	-0.4591	-0.7413	-0.7036	-0.2554	-0.7712	1.0000		
CAB	0.5161	0.1393	0.1406	0.0999	0.0091	0.4077	-0.2463	1.0000	
TOT	-0.1965	-0.2342	-0.2468	-0.1529	-0.3036	-0.1723	0.1436	0.0055	1

4.4. Estimation Results

This section presents the panel data estimation results. A panel regression model with the domestic saving rate (SVG) as the dependent variable and the financial liberalisation index (FL) and a number of conditioning variables as explanatory variables is estimated. The conditioning set of variables include the real interest rate (RIR), private sector credit to GDP ratio (PSC), real per capita GDP (CAPITA), the growth rate of real per capita GDP (GCAPITA), the dependency ratio (AGE) and current account balance as a ratio of GDP (CAB). The M2 to GDP ratio is excluded from the estimations because of its strong correlation with the private sector credit and the real per capita GDP variables. The terms of trade variable was also excluded because its inclusion was changing the statistical significance of the other variables quite significantly. The estimation was carried out using the Pool OLS, the fixed effect WITHIN estimation, and the Arellano-Bond one-step estimator. The results are reported in table 4.3.

The financial liberalisation index is statistically insignificant in all estimations and has a negative sign in most of the estimations. This finding casts doubt on the role of financial liberalisation in promoting savings. Contrary to the predictions of the financial liberalisation thesis, financial liberalisation does not emerge as a significant determinant of savings. This finding is, however, consistent with Bandeira *et al.,* (2000) who find mixed evidence on the impact of financial reforms on savings and Loayza and Shankar (2000) who find that financial reforms have not changed the saving rate in India.

Table 4.3 Estimation Results for the Domestic Savings Equation

Dependent Variable: Gross Domestic Savings to GDP Ratio (SVG)							
	POOL OLS		Cross-Section Fixed Effects WITHIN			Arrelano-Bond One step GMM	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
SVG (-1)	0.7794***	0.7867***	0.6211***	0.6207***		0.4357***	0.2590*
	(0.0469)	(0.0349)	(0.0357)	(0.0438)		(0.0894)	(0.1611)
FL	-1.3880		-0.4966		-0.0378	1.8359	
	(0.9516)		(1.6845)		(4.0822)	(3.8676)	
RIR	0.0502***	0.0384**	0.0548**	0.0505***	0.0725	0.0356	0.0179
	(0.1939)	(0.0186)	(0.0260)	(0.0187)	(0.0503)	(0.0314)	(0.0302)
PSC	-0.0652***	-0.065***	-0.0816**	-0.0838**	-0.2113*	-0.1845	-0.1762*
	(0.0224)	(0.0219)	(0.0406)	(0.0346)	(0.1199)	(0.1231)	(0.1023)
CAPITA	0.0024***	0.0023***	0.0026***	0.0026***	0.0089***	0.0051*	0.0061**
	(0.0007)	(0.0005)	(0.0009)	(0.0007)	(0.0018)	(0.0029)	(0.0031)
GCAPITA	0.1518**	0.1395***	0.1343***	0.1300**	0.1350	0.0867*	0.0959**
	(0.0620)	(0.0533)	(0.0394)	(0.0548)	(0.0848)	(0.0524)	(0.0437)
AGE	0.0548	0.0577***	0.0980**	0.1073***	0.2788**	0.2125	0.2846
	(0.0349)	(0.0230)	(0.0502)	(0.0365)	(0.0988)	(0.1866)	(0.2006)
CAB	0.1021***	0.0999***	0.1571***	0.1562***	0.2574***	0.1942***	-0.2062***
	(0.0400)	(0.0333)	(0.0559)	(0.0347)	(0.0750)	(0.0627)	(0.0659)
Intercept	-1.6753	-2.5922	-3.2241	-4.2361	-13.7365		
	(2.8784)	(2.1596)	(4.8020)	(3.4559)	(11.1939)		
Observations	301	301	301	301	301	290	290
Adjusted R-squared	0.9114	0.9110	0.9192	0.9194	0.8590		
DW	2.1296	2.1231	2.0312	2.0256	0.7489		
Sargan test (p-value)						0.1798	0.1584
Notes:							
1. Figures in parentheses are standard errors							
2. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels respectively.							

The coefficient on the private sector credit variable is negative and statistically significant in most of estimations. This result provides support to the view that if financial liberalisation eases borrowing constraints, it reduces domestic savings. This result is in line with the findings by Loayza *et al.*, (2000) but contradicts the findings by Edwards (1995).

The real interest rate variable yields mixed results. The coefficient is positive and statistically significant in the OLS and Fixed Effects estimations but statistically insignificant in the GMM estimations. A number of previous studies also fail reach conclusive evidence regarding the impact of real interest rates on savings (Baharumshah *et al.*, 2003; Bandeira *et al.*, 2000; Edwards, 1995).

The results confirm the widely established finding in empirical estimations that the growth rate and level of per capita GDP has a positive effect on savings. The coefficients on these two variables are positive and statistically significant in all the estimations.

The current account balance to GDP ratio is positive and statistically significant in all the regressions. The coefficient is however less than one implying that foreign savings partially crowd out domestic savings.

The results, however, do not confirm the negative association between the age dependency ratio and domestic savings. The coefficient is positive in all the estimations but statistically insignificant in the GMM estimations. The relationship between the dependency ratio and

saving has remained theoretically and empirically ambiguous. Some studies find a negative relationship between saving and the dependency ratio as suggested by the life cycle models (Edwards, 1995) while others find a positive relationship (Faruquee and Hussain, 1995) and others find mixed and inconclusive results (Baharumshah *et al.*, 2003; Gutierrez, 2007).

The results did not change significantly when the financial liberalisation index was excluded from the list of regressors. The coefficient on the real interest rate remains positive and statistically significant in the OLS and Fixed Effects estimations but is statistically insignificant in the GMM estimation. The private sector credit variable also remains negative and statistically significant in all the regressions.

When we re-estimated the equation excluding the lagged dependent variable but using the WITHIN Fixed Effects estimation, the results are not significantly different. The real interest rate variable becomes statistically insignificant but with a positive sign and the real per capita income variable becomes statistically insignificant.

These results fail to provide support to the hypothesis that financial liberalisation increases domestic savings. The significant determinants of savings are the level and growth rate of income, private sector credit and current account balance. Financial liberalisation will affect savings through its effects on access to private sector credit by households.

4.5. Conclusions

This chapter examines the impact of financial liberalisation on domestic savings. A modified savings function that encompasses the effects of financial liberalisation is derived based on the Life Cycle Hypothesis and the Permanent Income Hypothesis as well as other recent theories of consumption namely, the precautionary motive for saving, the liquidity constraints and habits. A dynamic panel regression model is formulated and estimated with the domestic saving rate as the dependent variable and the financial liberalisation variable plus a set of conditioning variables as explanatory variables. The number of countries in the panel drops to eleven due to the difficulty of getting a complete dataset on Nigeria.

The results fail to provide support to the hypothesis that financial liberalisation increases domestic savings. The financial liberalisation index is statistically insignificant in all estimations and has a negative sign in some of the estimations which casts doubt on the role of financial liberalisation in promoting savings contrary to the predictions of the financial liberalisation thesis. The private sector credit variable is negative and statistically significant in all estimations thus providing support to the view that easing borrowing constraints reduces savings. The real interest rate variable on the other hand produces mixed results. The coefficient is positive and statistically significant in the OLS and Fixed Effects estimations but statistically insignificant in the GMM estimations.

Most of the other conditioning variables have the expected signs. The growth rate and level of per capita GDP and the current account balance to GDP ratio have the expected positive

sign and are statistically significant. However, the results do not confirm the negative association between the age dependency ratio and domestic savings as envisaged under the life cycle theory.

CHAPTER FIVE

THE IMPACT OF FINANCIAL LIBERALISATION ON ECONOMIC GROWTH

Deriving from the financial liberalisation thesis, it is expected that financial liberalisation would have a positive effect on economic growth. Two channels have been proposed. The first channel is through an increase in availability of credit that would follow the removal of interest rate ceiling due to increased private savings, and the second channel is through the enhanced screening of investment projects due to higher interest rates thereby increasing the efficiency of investment. This chapter examines the direct effects of financial liberalisation and economic growth.

This chapter first presents the neoclassical and the endogenous growth theories. Based on these theories, the effects of financial liberalisation on economic growth are demonstrated. The finance-growth relationship is also reviewed starting with the early work of Schumpeter (1911) followed by the McKinnon-Shaw hypothesis and the subsequent endogenous growth literature.

An estimation model is derived from the neoclassical growth model that is modified to encompass the other growth theories. The modification is necessitated by the need to include other variables such as macroeconomic policy variables, and institutions. In order to

estimate the direct effects of financial liberalisation on economic growth, an index of financial liberalisation is included amongst the explanatory variables in the growth equation.

5.1. The Neoclassical and Endogenous Growth Theories

One of the early growth models that have been a basis of empirical research is the neoclassical growth model developed by Solow (1956). According to the neoclassical growth model, output comes from a linearly homogeneous and concave production function of capital and labour which are paid their marginal products. Assuming a Cobb-Douglas production function, output at time t is given by

$$Y(t) = K(t)^{\alpha}(A(t)L(t))^{1-\alpha}; \qquad 0 < \alpha < 1 \qquad (5.1)$$

Where Y is output, K is capital and L is labour, and A is the level of technology. L and A are assumed to grow exogenously at rates n and g. It is assumed that a constant fraction of output, s, is saved and invested. By defining k as the stock of capital per effective unit of labour, $k = K/AL$, and y as the level of output per effective unit of labour, $y = Y/AL$, the system then satisfies the equation

$$\dot{k}(t) = sy(t) - (n + g + \delta)k(t) \qquad (5.2)$$

where δ is the rate at which capital stock physically depreciates. The above equation has a unique and stable equilibrium solution for capital per head given as

$$k^* = \left[s/(n+g+\delta)\right]^{1/(1-\alpha)} \qquad (5.3)$$

The steady-state capital-labour ratio is related positively to the rate of saving and negatively to the rate of population growth. According to the neoclassical growth model, the increases in the saving rate increase the capital output ratio, raise output and capital per head, but cannot change the steady-state rate of growth. Output per head in this model increases only through technical progress, most simply modelled as labour augmenting, by which the labour force grows in efficiency units at the rate $n+g$.

One interpretation of the Solow model is that saving does not cause growth, at least not in the long run equilibrium. Nonetheless, an increase in the saving rate would increase the rate of growth temporarily as output per head move from the old equilibrium to the new higher one, and the transition could be a very long one. In the neoclassical framework, the higher the saving rate, the richer the country while the higher the population growth, the poorer the country.

In the neoclassical model, the rate of technical change, the savings ratio and the rate of population growth are the three parameters that determine the rate of growth of the economy in steady-state. In this model, the investment ratio therefore plays a role only in the transition between steady-states but not in the configuration of long run growth

equilibrium of the economy. In the Solow model, there is no independent investment function. Full wage-price flexibility solves any ex-ante discrepancy between intended savings and desired investment avoiding the sort of macroeconomic fluctuations that were the concern of Keynesian tradition where investment played a critical role both as a component of aggregate demand as well as a vehicle for creation of productive capacity on the supply side (Solimano and Gutierrez, 2006).

Beginning the mid 1980s, the neoclassical growth model came to be challenged on the grounds that it failed to account for the cross-country differences in income. The neoclassical growth model predicts that poor countries should have lower rates of return to physical and human capital and as a result predicts long-run convergence in per capita income. This alleged failure of the neoclassical theory of growth has led to the endogenous growth theory which assumes constant or increasing returns to scale in capital (Romer, 1986; Lucas, 1988; and Barro, 1991). The implication of this assumption is that countries which save more grow faster indefinitely and countries do not need to converge in income par capita, even if they have the same preferences and technology (Mankiw, Romer and Weil, 1992).

The proponents of the endogenous growth theory try to explain the rate of technical progress and in particular the incorporation of the knowledge and human capital into the production function and the process of growth. Romer (1986, 1992) argues that a production function containing knowledge, capital, and labour must exhibit greater than constant returns to scale; doubling labour and capital with existing technology should

double output, so that the doubling of all three must more than do so. Lucas (1988) and Romer (1992) develop models containing human capital or stocks of knowledge in addition to capital and labour, and demonstrate how growth rates can be permanently increased in societies that are prepared to postpone consumption, not just to increase capital formation, but to increase simultaneously both capital and knowledge (or human capital). The endogenous growth theory therefore re-emphasises a new role for investment to affect long run growth by making the rate of change and productivity growth linked either to the accumulation of physical capital or the accumulation of human capital.

In contrast with the Solow model, endogenous growth models do not predict convergence among countries. There is no steady-state level of income in endogenous growth models and differences in income per capita among countries can persist indefinitely.

Research on the rate of convergence by Barro (1991) and Barro and Sala-i-Martin (1992) suggests slow transitions, and Mankiw, Romer and Weil (1992) has shown that a Solow model, albeit augmented for human capital, and in which saving rates are treated as exogenous is capable of explaining a large fraction of the international variation in growth rates. Hence, without abandoning the Solow model, it is possible to revive much of the standard view, that higher rates of saving engender higher economic growth.

In the Solow model, financial liberalisation would therefore affect growth through its effects on the savings rate. By increasing the saving rate, financial liberalisation raises the steady-state level of per capita income. In the endogenous growth theory, financial

liberalisation affects growth through its effects on the savings rate and the efficiency of investment (Galbis, 1977; Eschenbach, 2004). Given a simple endogenous growth model of the form

$$Y = AK \tag{5.4}$$

where Y is output, K is the capital stock and A stands for a constant output-capital ratio. Assuming that a constant fraction of income, θ, is saved and invested, then

$$\Delta K = \theta Y - \delta K \tag{5.5}$$

Where δ the depreciation rate and is a constant. Therefore,

$$\Delta K / K = \theta A - \delta \tag{5.6}$$

and

$$y = \theta A - \delta \tag{5.7}$$

Where y is the steady-state growth rate in per capita income and is determined by the savings rate and the marginal productivity of capital or efficiency of investment.

5.2. The Finance-Growth Theoretical Literature

Following the early work of Schumpeter (1911), there has been a considerable amount of debate regarding the role of the financial sector in the process of economic development. Schumpeter contends that a well-functioning financial sector spurs technological innovation by identifying and funding those entrepreneurs with high chances of success. In effect, Schumpeter argued for the productivity growth enhancing effects of the services provided by a developed financial sector. On the other hand, Robinson (1952) argues that finance follows economic growth.

Patrick (1966) focused on the issue of casual relationship between finance and growth. He identified two patterns which he dubbed “demand following” and “supply leading” which he attributed to the stage of economic development. In the first pattern, economic development establishes a demand for financial services while in the second pattern, financial intermediation induces economic growth by channelling savings of mostly small savers to large investors.

Goldsmith (1969) provides the early empirical evidence between finance and economic growth. Using data on 35 countries comprising of developed and developing countries, he finds a positive correlation between financial development and the level of real per capita GNP. He finds that periods of more rapid economic growth have been accompanied by an above the average rate of financial development. He concludes that the positive effect of

financial intermediation on growth could be due to increasing efficiency and volume of investment but he assigns less importance to the latter.

These studies were followed by the McKinnon (1973) and Shaw (1973) criticism of the financial repression. They argue that financial repression in terms of controls on interest rates result into non-price rationing of funds. Credit allocation is determined by criteria like transaction costs, perceived risks of default, quality of collateral, political influence, reputation, loan size, and covert benefits to loan officers instead of expected investment productivity. The average efficiency of investment is reduced because investments with lower returns become profitable after the loan rate ceiling has been set at a low level. Furthermore, controls on interest rates below market clearing levels reduce savings and the volume of investment. The policy prescription of the McKinnon and Shaw is to abolish institutional constraints on nominal interest rates and to reduce inflation (Eschenbach, 2004).

In the context of the McKinnon-Shaw school, financial liberalisation affects economic development through two channels. The first channel is through an increase in availability of credit that would follow the removal of interest rate ceiling due to increased private savings, and the second channel is through the enhanced screening of investment projects due to higher interest rates thereby increasing the efficiency of investment.

Criticism of the McKinnon-Shaw hypothesis has come mainly from the neostructuralists led by Taylor (1983) and van Wijnbergen (1983). If increased real interest rates following

financial liberalisation lead to a shift of assets from the curb or unorganised markets to the formal credit markets, the existence of reserve requirements will result into a decline in financial intermediation. The substitution between the time deposits and the curb market will result in a reduction in the total supply of funds available to the business sector. The effect will be more pronounced if banks lend to the public sector, for example, in form of investing in treasury bills. This would lead to the overall decline in private sector credit.

Another criticism to the financial repression hypothesis has come from Stiglitz and Weiss (1981). They show that due to adverse selection effect, the high interest rates induced by financial liberalisation may attract bad borrowers or encourage borrowers to undertake high risky investment projects resulting into increased default. This phenomenon may induce banks not to raise interest rates to their market clearing levels but instead resort to credit rationing.

The finance-growth debate was later motivated by the emergence of the endogenous growth literature. Greenwood and Jovanovic (1990) present a model in which both financial intermediation and growth are endogenous. In their framework, the role of financial institutions is to collect and analyse information in order to find the investment project with the highest return and to channel funds to the most productive investment with the highest return thus increasing growth. They show that there is a two-way casual relationship between economic growth and financial development. On the one hand, the process of growth stimulates higher participation in financial markets thereby facilitating the creation

and expansion of financial institutions. On the other hand, growth provides the means needed to implement and develop a costly financial structure.

Bencivenga and Smith (1991) present a model in which individuals face uncertainty about their future liquidity needs. They can choose to invest in a liquid asset which is safe but has low productivity and/or an illiquid asset which is riskier but has high productivity. In this framework, the presence of financial intermediation increases economic growth by channelling savings into the activity with high productivity, while allowing individuals to reduce the risk associated with their liquidity needs. In addition, they show in their model that growth increases even when aggregate savings are reduced as a result of financial development, the reason being the dominant effect that financial development has on the efficiency of investment.

King and Levine (1993b) develop a Schumpeterian model of technological progress similar to Romer (1990). In this model, financial intermediaries and the securities markets enable particular entrepreneurs to undertake innovative activity, which affects growth through productivity enhancement. They emphasize four ways through which financial systems affect entrepreneurial activity. They pool resources, evaluate entrepreneurs, diversify risks, and value the expected profits from innovative activity.

Levine (1997) provides five functions of the financial system. First, they produce information exante about possible investments. Second, they mobilise and pool savings and allocate capital. Third, they monitor investments and exert corporate governance after

providing finance. Fourth, they facilitate trading, diversification and management of risk. Fifth, they ease the exchange of goods and services. These functions of the financial system are re-emphasised in Levine (2004). Each of these functions provides a channel through which the financial system affects savings and investment decisions and henceforth economic growth.

5.3. Empirical Literature

There is a substantial amount of literature that has tried to investigate the relationship between financial factors and economic growth. The general consensus is that financial development affects growth but the direction of causality and the transmission channel remain a subject of controversy.

Diaz-Alejandro (1985) using the Latin American experience, find that financial deepening is unlikely to increase savings and conclude that financial deepening affects economic growth through increasing the marginal productivity of capital rather than the volume of savings and investment.

King and Levine (1993a), using cross-country analysis covering 80 countries, investigate whether higher levels of financial development are significantly and robustly correlated with faster current and future rates of economic growth, physical capital accumulation and economic efficiency improvements. They find that higher levels of financial development are strongly associated with the current and future levels of economic growth, the rate of

physical capital accumulation, and economic efficiency improvements both before and after controlling for numerous country and policy characteristics.

De Gregorio and Guidotti (1995) examine the relationship between long-run growth and financial development in a cross-country framework using a sample of 100 countries during the period 1960-1985. They find that financial development is associated with improved growth performance and the main channel from finance to growth is through increasing the efficiency of investment.

Kar and Pentecost (2000) constructs five alternative proxies for financial development to examine the casual relationship between financial development and economic growth in Turkey. Applying Granger causality tests, they find that the direction of causality between financial development and economic growth in Turkey is sensitive to the choice of proxy used for financial development. For example, when financial development is measured by the money to income ratio, the direction of causality runs from financial development to economic growth, but when the bank deposits, private sector credit and domestic credit ratios are alternatively used to proxy financial development, growth is found to lead financial development.

Benhabib and Spiegel (2000) uses panel data techniques for a sample of four Latin American and South East Asian countries over the period 1965-1985. They find that specific components of financial development variables are associated with capital

accumulation and productivity growth. Their results, however, are sensitive to the inclusion of country specific effects.

Deidda and Fattouh (2002) find that financial depth and growth are only positively related for a high income subsample. They argue that in developing countries, the fixed cost of providing financial services inhibits growth.

Levine *et al.*, (2000) and Beck *et al.*, (2000b) apply GMM techniques for panel data analysis and find evidence that financial intermediation has a strong and casual effect on economic growth. Beck *et al.*,(2000b) find a strong positive link between financial intermediary development and both real per capita GDP growth and total factor productivity growth. Bekaert, Harvey and Lundblad (2005) examine the effects of equity market liberalisations on growth. Using different measures of financial liberalisation, they find that equity market liberalisations, on average, lead to 1 percent increase in annual real economic growth and the effect is robust to alternative definitions of liberalisation.

Using Chinese provincial data from 1985 to 1999 and applying the GMM panel data techniques, Hao (2006) find that financial intermediation contributed to China's rapid economic growth through two channels: first, the substitution of loans for state budget appropriation and second, the mobilisation of household savings. Ang and McKibbin (2007), on the other hand, find that although financial sector reforms have enlarged the financial system in Malaysia, these policy changes do not appear to have led to higher long-run growth. Instead, financial deepening has been an outcome of the growth process and

therefore economic growth seem to lead to higher financial development in Malaysia but not vice versa.

In a recent study, Rousseau and Yilmazkuday (2009) find that high levels of inflation wipe out the positive growth effects of financial deepening. They establish an inflation threshold of 4-19 percent outside which the finance-growth is less affected by inflation.

Gamra (2009) use panel data techniques to investigate the relationship between financial liberalisation and economic growth for six emerging East Asian countries over the period 1980-2002. Three measures of financial liberalisation are used namely, domestic financial sector liberalisation, stock market openness, and capital account liberalisation. They find that financial liberalisation's growth effect depends on the nature as well as the intensity of financial sector liberalisation. Full liberalisation of the financial sector is associated with slower growth outcomes while more moderate partial liberalisation is associated with more positive outcomes.

Those studies that have examined the relationship between financial development and economic growth for the African countries have also reached mixed findings. Ogun (1986) uses cross-section analysis to estimate the correlation between financial deepening and economic growth by using data for 20 countries in Africa from 1969-1983. The degree of financial intermediation is measured using ratios of monetary liabilities (M1, M2, and M3) to GDP. For the full sample, all monetary liabilities are negative and only the ratio of M3 to GDP is statistically significant. When the countries are split into high and low income

countries, some of the coefficients of the monetary liabilities are positive while some are negative. However, they are all insignificant and offer no support to the growth enhancing capabilities of financial intermediation.

Allen and Ndikumana (2000) used the ratio of liquid liabilities, ratio of banks' private sector credit, ratio of banks' total credit, and an index to include all the three measures as proxies for financial intermediation. They find that only the ratio of liquid liabilities is positive and significant, but this variable is insignificant in the fixed effects estimation and when annual data are used. The other financial variables take on different signs and are insignificant.

Aziakpono (2004) used the ratio of liquid liabilities and the ratio of banks' private sector credit as measures of financial intermediation and find mixed results. They find that growth is negatively related to financial intermediation in Botswana and Swaziland while the relationship is positive in Lesotho and South Africa.

Fowowe (2008) examine the relationship between economic growth and financial liberalization policies in 19 SSA countries. Two indices are developed which track the specific measures and institutional changes involved in financial liberalization. Using the fixed effects estimator to control for unobservable country specific effects and a dynamic panel estimator to control for potential endogeneity, they find that financial liberalization has had a positive effect on economic growth. Most particularly, the two indices of financial liberalization and a dummy variable to capture major moves towards liberalization

show a significant positive relationship between economic growth and financial liberalization. The results are robust to alternative specifications of the model, and also across slow and fast-growing countries.

5.4. Summary of the Literature

The country case studies and time-series analysis provide less clear-cut results than cross-section studies. Cross-section studies generally find support for the hypothesis that finance causes growth. A significant number of studies, however, establish bi-directional causality.

Very few studies have examined the direct relationship between financial liberalisation and economic growth. The few studies that have tried to investigate this issue have reached contradicting results.

5.5. Methodology

5.5.1. The Empirical Model Specification

The direct effects of financial liberalisation on economic growth are estimated by including a measure of financial liberalisation among the explanatory variables in the growth equation. A neoclassical growth model as developed by Solow (1956) and later tested by Mankiw, Romer, and Weil (1992) is modified to encompass the other growth theories. The modification is necessitated by the need to include other variables such as macroeconomic

policy variables (Barro, 1991; 1996), and institutions (Acemoglu, Johnson, and Robinson, 2001; Acemoglu and Johnson, 2005). The choice of the neoclassical growth model derives support from the recent work by Durlauf, Kourtellos and Tan (2008) which finds evidentiary support for the canonical neoclassical growth variables such as initial income, investment, and population growth as well as macroeconomic policies as major determinants of growth. They find little evidence in favour of geography, institutions, religion and ethnic fractionalisation as major determinants of growth.

An unbalanced panel regression model of real per capita GDP growth on a measure of financial liberalisation and a conditioning set of variables identified in the literature is subsequently developed and estimated (Barro, 1991; Mankiw *et al.*, 1992; Levine and Renelt, 1992; Beck *et al.*, 2000b; and Durlauf *et al.*, 2008). The advantages of panel data regression over cross-country regressions are well discussed in the literature (Beck *et al.*, 2000b). We therefore estimate a panel regression model of the form

$$GROWTH_{it} = \alpha + \varphi FL_{it} + \psi' X_{it} + \eta_i + \nu_{it}; \qquad (5.2)$$

$$i = 1,2,---,N$$
$$t = 2,3,---,T$$

Where $GROWTH_{it}$ is the average rate of growth in real per capita GDP over 4-year non-overlapping periods for country i in year t, N includes twelve SSA included in the panel, FL_{it} is the average of the financial liberalisation index over 4-year non-overlapping periods

and X_{it} represents a matrix of conditioning information to control for other factors associated with economic growth.

5.5.2. Variable Definition, Measurement, Expected Signs and Data Sources

The data are averaged over 4-year periods yielding eight non-overlapping periods. The averaging helps in dampening the influence of short-term shocks and business cycles. The choice of the four years rather than five years that is traditionally used in most growth studies is to enable us keep sufficient number of time-series observations given the small number of the cross-sections. The four year period is even longer than the three years that has been used in some of the studies (Hao, 2006).

The dependent variable is the growth rate of real per capita GDP obtained from the WDI online database. The growth variable is defined as $Logy = \log(1 + GROWTH)$. This is equivalent to defining y_t as

$$y_t = \ln\left(\frac{GDP_t}{POPN_t} \Big/ \frac{GDP_{t-1}}{POPN_{t-1}} \right) \qquad (5.3)$$

Where GDP_t is the real GDP in year t and $POPN_t$ is the population in year t.

Based on the neoclassical growth theory and other growth theories, the relevant variables included as regressors are:

i) The logarithm of initial level of real per capita GDP in 1976 to control for convergence (ICAPITA). In the neoclassical growth model with diminishing returns to capital, the growth rate is expected to be inversely related to the absolute level of the initial per capita GDP. The data for this variable was obtained from the World Development Indicators online database for 2009.

ii) The logarithm of the secondary school enrolment as a proxy for human capital stock (SEC). Human capital plays a special role in the endogenous growth models (Barro, 1990; 1991). The data for this variable was obtained from the World Development Indicators online database for 2009.

iii) Macroeconomic variables measured using three proxies as in Barro (1996) which include the ratio of exports plus imports to GDP (OPEN), the inflation rate (INF) and the ratio of government consumption to GDP (GOV). All the three variables are averaged over 4-year non-overlapping periods. Increased openness is expected to lead to improved resource allocation. Various studies have found inflation and growth to be negatively associated (De Gregorio, 1993; Gylfason and Herbertsson, 2001, and Rousseau and Yilmazkuday, 2009). A common measure of the role of government in economic activity is the ratio of government consumption expenditures to GDP. The effect of this variable depends on whether the bulk of government expenditure is tilted towards growth-promoting public goods or other government expenditures that do not

support growth (Levine and Renelt, 1992; Barro, 1996). The data on government consumption as a ratio of GDP, exports of goods and services as a ratio of GDP, and import of goods and services as a ratio of GDP was obtained from World Development Indicators online database 2009. Inflation data was calculated from the consumer price index obtained from the IFS.

iv) Investment as a proportion of GDP (INV). In the neoclassical growth model for the closed economy, the saving rate is exogenous and equal to the ratio of investment to output. The higher saving rate raises the steady-state level of output per capita and therefore raises the growth rate for a given starting value of GDP (Barro, 1996). Levine and Renelt (1992) conducted extensive tests on the robustness of alternative specifications of the growth process. In particular, they looked for the specification least sensitive to changes in additional explanatory variables, the sample of countries and the choice of time periods. Their main result is that the only robust regressor in the different growth equations (both across countries and overtime) is the ratio of physical investment to GDP. A similar finding is reached by Sala-i-Martin (1997). The investment to GDP ratio was proxied by the gross fixed capital formation to GDP ratio obtained from the World Development Indicators online database 2009.

v) The population growth rate (POP). In the neoclassical growth model, the growth rate of real GDP per capita is inversely related to the population growth rate. The data on the population was taken from the World Development Indicators 2009 online database.

vi) Institutions have been recently emphasised as a key determinant of growth (Rodrik, Subramanian and Trebbi, 2004). The political instability variable is obtained from the Polity IV database.

Given that financial liberalisation may not necessarily spur the development of the financial sector, the growth equation (5.2) is re-estimated with the financial liberalisation index replaced by the measures of financial development to establish whether financial development positively affects growth. Three measures of financial development are considered namely, the private sector credit to GDP ratio (PSC), the broad money (M2) to GDP ratio and the combined measure of financial development (LFD). The derivation of these variables was explained in chapter 3.

5.5.3. Data Descriptive Statistics and the Correlation Matrix

Table 5.1 presents the descriptive statistics and correlations between the logarithm of real per capita GDP growth rate (LY) and the different dependent variables which include; the logarithm of investment to GDP ratio (LINV), the logarithm of trade openness to GDP ratio (LOPEN), the logarithm of private sector credit to GDP ratio (LPSC), the logarithm of secondary school enrolment (LSCHOOL), the logarithm of initial per capita GDP (LINCAPITA), the logarithm of government expenditure to GDP ratio (LGOV), the index of financial liberalisation, the inflation rate (INF) and population growth rate (POP).

Table 5.1 Descriptive Statistics and Correlations

	LY	LINV	LOPEN	LPSC	LSCHOOL	LINCAPITA	LGOV	INF	FL	POP
Mean	0.01	2.86	4.06	2.55	3.15	5.98	2.67	20.87	0.43	2.72
Median	0.01	2.94	4.09	2.55	3.25	5.84	2.70	13.05	0.40	2.82
Maximum	0.09	3.48	4.89	4.32	4.67	8.11	3.61	140.35	0.91	4.79
Minimum	-0.07	1.51	2.43	0.61	1.12	4.74	1.57	1.96	0.00	0.76
Std. Dev.	0.03	0.40	0.53	0.85	0.95	0.89	0.37	24.13	0.30	0.81
Skewness	-0.03	-1.20	-0.59	0.01	-0.30	0.86	-0.32	2.72	0.09	-0.62
Kurtosis	3.32	4.38	3.10	2.75	2.28	3.35	3.51	10.93	1.57	3.28
Observations	92	94	95	96	96	96	94	96	96	96

Correlation	LY	LINV	LOPEN	LPSC	LSCHOOL	LINCAPITA	LGOV	INF	FL	POP
LY	1.00									
LINV	0.44	1.00								
LOPEN	0.40	0.51	1.00							
LPSC	0.19	0.47	0.51	1.00						
LSCHOOL	0.36	0.18	0.47	0.47	1.00					
LINCAPITA	0.14	0.20	0.38	0.68	0.67	1.00				
LGOV	0.04	0.51	0.41	0.38	0.21	0.33	1.00			
INF	-0.38	-0.57	-0.27	-0.48	-0.20	-0.13	-0.19	1.00		
FL	0.41	0.22	0.40	0.40	0.57	0.34	-0.03	-0.37	1.00	
POP	-0.31	-0.15	-0.25	-0.45	-0.52	-0.45	0.05	0.14	-0.50	1.00

As expected, the investment to GDP ratio, trade openness to GDP ratio, private sector credit to GDP ratio, secondary school enrolment, initial per capita GDP, government expenditure to GDP ratio, and the index of financial liberalisation are positively correlated to the logarithm of per capita GDP growth rate. On the other hand, the inflation rate and population growth rate are negatively correlated with the logarithm of per capita GDP growth rate.

5.6. Estimation Results

The estimations are carried out using the Eviews 6 software and the panel results of the Within-fixed effects models are reported in table 5.2. The results of the pool model (OLS)

are not presented because the F-test showed the presence of the unobserved country specific effects and in some cases, the diagnostic tests fail to reject the presence of the period specific effects. The heterogeneity of slope coefficients of growth regressions have been pointed out by Evans (1995) in his criticism of the cross-country growth regressions.

The Hausman specification test is also carried out and the findings fail to reject the null for the exogeneity of the explanatory variables. Moreover, when the growth variable is regressed on its lag, the coefficient is positive but small in magnitude ruling out the possibility of persistence in the growth variable. As a result, the GMM estimations are not reported here. Therefore, only the results from the fixed-effects estimation are reported.

The investment to GDP ratio and the trade openness variable are strongly correlated. This is consistent with findings of earlier studies (Levine and Renelt, 1992). When the two variables are included among the regressors in the same equation, the trade openness variable becomes statistically insignificant. The growth equation is therefore estimated with either of the two variables but not both. The results are presented in table 5.2.

The results fail to provide evidence of a strong positive and statistically significant relationship between financial liberalisation and economic growth. The coefficient on the financial liberalisation index is positive but statistically insignificant in some of the regressions while in others it enters the regression with a negative coefficient but is statistically insignificant.

Table 5.2 Estimation Results for the Growth Function

Dependent Variable: Real Per Capita GDP growth rate							
	Cross-Section Fixed Effects Model				Cross-Section and Time Fixed Effects Model		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
LOG(OPEN)	0.0445***			0.0460***	0.0408***		0.0409***
	(0.0124)			(0.0113)	(0.0133)		(0.0121)
LOG(INV)		0.0238**	0.0197**			0.0149	
		(0.0117)	(0.0097)			(0.0113)	
LOG(SCHOOL)	0.0080	0.0065	0.0074	0.0132	0.0038	0.0002	0.0061
	(0.0116)	(0.0119)	(0.0099)	(0.0097)	(0.0107)	(0.0090)	(0.0110)
INF	-0.0005***	-0.0003*	-0.0003*	-0.0005**	-0.0004**	-0.0003*	-0.0004***
	(0.0001)	(0.0002)	(0.0002)	(0.0001)	(0.0002)	(0.0002)	(0.0001)
FL	-0.0218	0.0054			0.0034	0.0234	
	(0.0140)	(0.0198)			(0.0330)	(0.0341)	
FLDUM				-0.0276***			-0.0252***
				(0.0049)			(0.0030)
LOG(GOV)	-0.0304***	-0.0281***	-0.0362***	-0.0296***	-0.0307***	-0.0245*	-0.0270***
	(0.0089)	(0.0103)	(0.0118)	(0.0077)	(0.0076)	(0.0129)	(0.0077)
LOG(INCAPITA)	-19.6036***	-12.111	-10.7593*	-14.6133	-9.7402	-0.9275	-8.3468
	(7.4420)	(9.9029)	(6.4471)	(7.0196)	(8.0419)	(21.7852)	(8.5972)
POP	-0.0083**	-0.0046	-0.0045	-0.0118**	-0.0084**	-0.0051	-0.0107**
	(0.0039)	(0.0052)	(0.0036)	(0.0035)	(0.0040)	(0.0061)	(0.0045)
LOG(PSC)			0.0094*				
			(0.0054)				
Intercept	117.573***	72.7300	64.6209*	87.6149**	58.3983	5.6119	50.0391
	(44.6207)	(59.4376)	(38.6820)	(42.0920)	(48.2426)	(130.7945)	(51.5894)
Observations	92	91	91	92	92	91	92
Adjusted R-squared	0.5208	0.4203	0.4340	0.5904	0.5804	0.6120	0.6267
DW	2.0260	1.8155	1.8650	2.3088	1.9148	0.4628	2.1336

Notes:

1. Figures in parentheses are standard errors

2. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels respectively.

When the financial liberalisation dummy (FLDUM) replaces the financial liberalisation index, the coefficient is consistently negative across all the specifications and statistically significant. FLDUM takes a value of one after liberalisation and zero before liberalisation. This result implies that financial liberalisation affects growth negatively. This finding sharply contradicts with the theoretical preposition of McKinnon (1973) and Shaw (1973) and the recent findings by Gamra (2009) for six East Asian countries. Moreover, several studies find a strong positive link between finance and growth (Levine and King, 1993; Levine *et al.,* 2000; Beck *et al.,* 2000b). However, Rioja and Valev (2004) show that the effect of financial development on economic growth depends on the stage of development of the country with minimal or no growth effects being felt in the early stages of development. The overall implication of these findings is that financial liberalisation has not led to higher economic growth levels in the sample countries.

As a robustness test, the credit to the private sector variable is included among the regressors and the financial liberalisation variable is dropped. In the regression with trade openness among the regressors instead of the investment rate, the coefficient on the private sector variable is positive and statistically significant. On the other hand, the coefficient becomes statistically insignificant in the regression equation with the investment rate instead of the trade openness variable. This finding could imply that the effect of financial development, as proxied by the private sector to GDP ratio, on growth operates through the enhancement of total factor productivity rather than boosting capital accumulation as suggested by Beck *et al.,* (2000b).

These findings are not entirely surprising. Some empirical studies find that the impact of financial development on economic growth may vary across countries (Arestis and Demetriades, 1997), depend on the level of inflation (Rousseau and Yilmazkuday, 2009), or depend on the level of financial development (Rioja and Valev, 2004). Moreover, other studies fail to find evidence of a strong positive relationship between financial development and economic growth or casual relationship from finance to growth (Ang and McKibbin, 2007; De Gregorio and Guidotti, 1995; and Demetriades and Hussein, 1996).

Most of the conditioning variables have the expected signs and are statistically significant in most of the specifications. The logarithm of the initial level of real per capita GDP enters the regression with a negative sign and is statistically significant in the Fixed Effects WITHIN estimation. When the model is run with the logarithm of investment to GDP ratio as one of the explanatory variables, the coefficient becomes statistically insignificant contrary to the conventional wisdom. More generally, the inclusion of the investment rate as one of the explanatory variables weakens the statistical significance of the other variables. When investment is included among the explanatory variables, the only channel through which the other explanatory variables affect growth is through the total factor productivity. A few other studies find a convergence parameter that has the right sign but is statistically insignificant (Barro and Sala-i-Martin, 1995; Gylfason and Herbertsson, 2001; Rousseau and Yilmazkuday, 2009).

The coefficient on the inflation variable is consistently negative and statistically significant in all the specifications. This is consistent with the view that inflation hurts economic growth. A negative effect of inflation on growth has been found in several empirical studies (Barro, 1991, 1996; Boyd *et al.*, 1999; Gylfason and Herbertsson, 2001).

As expected, government consumption as a ratio of GDP enters with a negative sign and is statistically significant across the various specifications. This is in support of the theoretical proposition that government consumption expenditure lowers growth through the distortionary effects of taxation or unproductive government expenditure programs.

The secondary school enrolment ratio, as a proxy for human capital, is surprisingly statistically insignificant in most of the regressions. Other studies also find a wrong sign for the school enrolment variable (Bekaert *et al.*, 2005; Gylfason and Herbertsson, 2001). This could imply that the secondary school enrolment ratio is not a good proxy of the quality of education. Human capital may represent more than secondary school enrolment.

The share of trade (the sum of exports and imports) in GDP as a measure of openness has the expected positive sign that is large and statistically significant. This implies that trade openness is growth enhancing. Similarly, when the investment variable replaces the trade openness variable, the coefficient remains positive and statistically significant although the coefficients of the other regressors reduce in magnitude and others become statistically insignificant.

5.7. Conclusions

This chapter examines the direct relationship between financial liberalisation and economic growth. The direct effects of financial liberalisation on economic growth are estimated by including a measure of financial liberalisation among the explanatory variables in the growth equation. The other explanatory variables include the logarithm of initial level of real per capita GDP in 1976 to control for convergence, the logarithm of the secondary school enrolment, the ratio of exports plus imports to GDP, the inflation rate, and the ratio of government consumption to GDP, the population growth rate, and a measure of political instability. All the three variables are averaged over 4-year non-overlapping periods. The investment rate is not included among the explanatory variables because it is strongly correlated with the openness variable. The equation is re-estimated with the financial liberalisation index being replaced by the measures of financial development.

The results fail to provide evidence of a strong positive and statistically significant relationship between financial liberalisation and economic growth. The coefficient on the financial liberalisation index is positive but statistically insignificant in some of the regressions while in others it enters the regression with a negative but also statistically insignificant coefficient. When the financial liberalisation dummy replaces the index of financial liberalisation, the coefficient is consistently negative across all the specifications and statistically significant.

Most of the conditioning variables have the expected signs and are statistically significant in most of the specifications. The initial level of real per capita GDP, government consumption as a ratio of GDP, and the inflation rate has the expected negative sign. The secondary school enrolment ratio, as a proxy for human capital, is surprisingly statistically insignificant in most of the regressions. The share of trade (the sum of exports and imports) in GDP as a measure of openness has the expected positive sign.

CHAPTER SIX

CONCLUSIONS AND POLICY IMPLICATIONS

This chapter presents the conclusions and policy implications drawn from the study findings. In addition, the study highlights on the areas for further research.

6.1. Conclusions

Several SSA countries adopted Economic Reform Programmes beginning late 1980s and early 1990s which were aimed at promoting macroeconomic stability and improving the functioning of markets in order to promote economic growth. One of the main components of these reforms was the liberalisation of their financial sectors. It was expected that freeing interest rates, removal of credit controls and ease in reserve requirements while strengthening prudential regulation would result into positive real interest rates, deepen the financial systems and enhance financial intermediation, increase domestic savings and increase economic growth. However, the theoretical literature identifies several opposing channels through which financial liberalisation affects the development of the financial sector and domestic savings. It is therefore not obvious that financial liberalisation will always yield the desired results. The motivation of this study is to determine the impact of financial liberalisation policies carried out by the SSA countries on the development of the financial sector, domestic savings mobilisation, and economic growth.

The study utilises data from the period 1976 to 2007 obtained largely from the World Development Indicators, International Financial Statistics database and World Economic Outlook. The key variable in the analysis is the index of financial liberalisation. This has been constructed based on the reform experience of each of the countries taking into account the gradual nature and sequencing of the liberalisation policies.

In order to achieve the study objectives, the analysis is divided into three chapters. The first analytical chapter examines the impact of financial liberalisation on financial development in SSA region. One of the key predictions of the financial liberalisation thesis is that removal of controls on interest rates and credit allocation as well as reduction of reserve requirements improves financial intermediation and leads to the development of the financial sector. This chapter provides a test of this hypothesis.

One of the challenges in the empirical literature on the determinants of financial development is how to construct a measure of financial development that encompasses the services provided by the financial system such as reduction of information and transaction costs, mobilization of savings, management of risks and facilitation of transactions. Therefore, in addition to the ratio of liquid liabilities to GDP and the ratio of private credit by deposit money banks to GDP, the study constructs an index of financial development using the principal component analysis. Two methodological approaches are employed in the analysis. The first approach compares the indicators of financial development in the pre- and post-liberalisation periods using the equality of means test. The second approach involves the estimation of a panel regression model. The financial development variable is

regressed on the index of financial liberalisation and macroeconomic and institutional variables as control variables.

The findings do not provide conclusive evidence that financial liberalisation per se has spurred the development of the financial sector in the sample countries. The indicators of financial development have moved in opposite directions in some of the countries following liberalisation (for example, Gambia) and in other countries there is no notable improvement (for example, Kenya). Other countries have experienced deterioration in the indicators of financial development (Zambia, Malawi and Nigeria). A few countries have registered an improvement in the indicators of financial development (Uganda, Tanzania, Mauritius, and Botswana). This finding appears to support the view that the sequencing of financial reforms affects their outcomes. Countries that maintained low and stable inflation during and after reforms registered significant improvements in the indicators of financial development after liberalisation compared to those countries that were characterised by high inflation and policy reversals. What appears to be a unanimous outcome of financial liberalisation is an increase in real interest rates and the corresponding spreads. In those countries with high inflation, the interest rate spreads increased sharply after liberalisation.

The panel regression results, on the other hand, show that the impact of financial liberalisation on financial development is positive and felt after a lag of approximately one year. The impact is higher on private sector compared to the monetary aggregates. The inflation variable is negative and statistically significant in all estimations reinforcing the argument that macroeconomic stability is critical for the success of financial liberalisation

reforms. The real per capita GDP is positive and statistically significant in almost all the specifications which is in support of the view that financial development follows economic development. The study, however, fails to find support for the hypothesis that political instability has a negative effect on financial development.

The second analytical chapter examines the impact of financial liberalisation on domestic savings. Following McKinnon (1973) and Shaw (1973), it is expected that liberalising the financial sector increases real interest rates, enhances domestic savings mobilisation as agents substitute away from current consumption to future consumption and also enhances financial intermediation. A dynamic panel regression model is estimated with the domestic saving rate as the dependent variable and the financial liberalisation variable plus a set of conditioning variables as explanatory variables. The number of countries in the panel drops to eleven due to the difficulty of getting a complete dataset on Nigeria.

The results fail to provide support to the hypothesis that financial liberalisation increases domestic savings. The financial liberalisation index is statistically insignificant in all estimations and has a negative sign in some of the estimations. This finding casts doubt on the role of financial liberalisation in promoting savings contrary to the predictions of the financial liberalisation thesis. The private sector credit variable is negative and statistically significant in all estimations thus providing support to the view that easing borrowing constraints reduces savings. The real interest rate variable on the other hand produces mixed results. The coefficient is positive and statistically significant in the OLS and Fixed Effects estimations but statistically insignificant in the GMM estimations.

Most of the other conditioning variables have the expected signs. The growth rate and level of per capita GDP and the current account balance to GDP ratio have the expected positive sign and are statistically significant. However, the results do not confirm the negative association between the age dependency ratio and domestic savings as envisaged under the life cycle theory.

The last analytical chapter examines the direct relationship between financial liberalisation and economic growth. This chapter is motivated by the finance-growth literature and hypothesised relationship between financial liberalisation, financial development, savings and the efficiency of resource allocation. The point of departure is the neoclassical growth model which is modified to encompass the other growth theories. The modification is necessitated by the need to include other variables such as macroeconomic policy variables and institutions. The direct effects of financial liberalisation on economic growth are estimated by including a measure of financial liberalisation among the explanatory variables in the growth equation. The other explanatory variables include the logarithm of initial level of real per capita GDP in 1976 to control for convergence, the logarithm of the secondary school enrolment, the ratio of exports plus imports to GDP, the inflation rate, and the ratio of government consumption to GDP, the population growth rate, and a measure of political instability. All the three variables are averaged over 4-year non-overlapping periods. The investment rate is not included among the explanatory variables because it is strongly correlated with the openness variable. The equation is re-estimated with the financial liberalisation index being replaced by the measures of financial development.

The results fail to provide evidence of a strong positive and statistically significant relationship between financial liberalisation and economic growth. The coefficient on the financial liberalisation index is positive but statistically insignificant in some of the regressions while in others it enters the regression with a negative but also statistically insignificant coefficient. When the financial liberalisation dummy replaces the index of financial liberalisation, the coefficient is consistently negative across all the specifications and statistically significant.

Most of the conditioning variables have the expected signs and are statistically significant in most of the specifications. The initial level of real per capita GDP, government consumption as a ratio of GDP, and the inflation rate has the expected negative sign. The secondary school enrolment ratio, as a proxy for human capital, is surprisingly statistically insignificant in most of the regressions. The share of trade (the sum of exports and imports) in GDP as a measure of openness has the expected positive sign.

6.2. Policy Implications

A number of policy implications emerge from this study. The findings of this study support the view that financial liberalisation per se if not well sequenced does not promote financial development. Most importantly, countries should ensure that financial liberalisation policies are accompanied by measures aimed at achieving low and stable inflation during and after reforms. Low and stable inflation is therefore a prerequisite to successful financial

liberalisation. Inflationary environment coupled with limited competition in the credit and money markets simply results into overshooting in real interest rates and excessive interest rate spreads.

The findings show that economic growth is a significant determinant of financial development. This implies that SSA countries can promote financial development by promoting growth enhancing policies.

The results demonstrate that financial liberalisation per se does not increase domestic savings. SSA countries can promote domestic savings through measures that promote economic growth, raise per capita incomes and reduce the current account deficits.

The results further indicate that financial liberalisation policies are not likely to have any direct impact on economic growth in SSA. The only effect of financial liberalisation on economic growth is through the private sector credit. Therefore by increasing the availability of private sector credit, financial liberalisation policies have an indirect positive effect on growth but this may be negated by the reduction in domestic savings arising from greater access to credit by the private sector.

In order to promote economic growth, countries should aim at implementing policies and programs that reduce government consumption expenditure, and inflation. In addition, policies aimed at promoting trade openness or increasing the investment rate will have strong positive effects on economic growth. SSA countries should therefore continue to

implement policies that are aimed at removing barriers to trade so that there is smooth movement of goods and services across the borders.

6.3. Areas for Further Research

In this study, an attempt has been made to determine the effects of financial liberalisation on the levels of financial development, domestic savings and growth in a selected sample of twelve SSA countries. Due to data limitations, it was not possible to extend the size of the panel. Future research in this area should attempt to increase the size of the countries in the panel in order to allow for several robustness checks to be carried such as groupings the countries by region, level of economic development and inflation levels.

Furthermore, it is desirable that future research concentrates on specific country studies and should be extended to micro-economic studies. This will help to identify the differential effects of financial liberalisation depending on the countries stage of development, institutional and structural characteristics of the countries.

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Appendix 1: **Selected Comparative Macroeconomic Indicators**

	Units	1981-1990	1991-2000	2001-2005	2006	2007
Newly industrialized Asian economies						
Gross domestic product, constant prices	Annual percent change	7.65	6.15	4.12	5.57	5.59
Investment	Percent of GDP	29.22	31.02	25.44	26.04	25.70
Gross national savings	Percent of GDP	32.93	33.79	31.02	31.38	31.95
Inflation, average consumer prices	Annual percent change	6.65	4.13	1.78	1.63	2.22
Inflation, end of period consumer prices	Annual percent change	5.65	3.98	1.71	1.58	3.59
Terms of trade of goods and services	Annual percent change	0.40	-0.66	-1.13	-1.89	-0.33
Terms of trade of goods	Annual percent change	0.62	-0.90	-2.21	-2.88	-1.48
Unemployment rate	Percent of total labor force	3.12	3.04	4.17	3.66	3.43
General government balance	Percent of GDP	-0.11	-0.69	0.26	1.93	3.33
Current account balance	Percent of GDP	3.19	2.50	5.54	5.24	5.99
Emerging and developing economies						
Gross domestic product, constant prices	Annual percent change	3.42	3.56	5.86	7.77	7.87
Investment	Percent of GDP	n.a	25.04	25.74	27.89	28.82
Gross national savings	Percent of GDP	25.07	23.75	27.77	32.70	33.03
Inflation, average consumer prices	Annual percent change	36.56	50.20	6.50	5.38	6.31
Terms of trade of goods and services	Annual percent change	0.13	-0.16	1.54	4.68	1.45
Terms of trade of goods	Annual percent change	-1.64	-0.05	1.87	3.79	0.93
Current account balance	Percent of GDP	-0.68	-1.31	2.04	4.84	4.16
Private capital flows, net	U.S. dollars	10.25	134.46	166.34	231.94	604.96
Direct investment, net	U.S. dollars	12.58	107.44	191.64	250.13	309.90
External debt, total	Percent of GDP	24.19	36.82	34.22	27.05	26.64
Africa: Sub-Sahara						
Gross domestic product, constant prices	Annual percent change	2.54	2.37	5.98	6.37	6.83
Investment	Percent of GDP	18.83	17.81	19.79	21.91	22.39
Gross national savings	Percent of GDP	16.41	15.44	17.53	21.38	19.29
Inflation, average consumer prices	Annual percent change	17.23	29.85	10.30	7.32	7.20
Inflation, end of period consumer prices	Annual percent change	n.a	21.00	9.42	7.98	8.10
Terms of trade of goods and services	Annual percent change	2.35	-0.14	3.62	9.43	3.12
Terms of trade of goods	Annual percent change	1.71	0.26	3.63	10.32	4.92
Current account balance	Percent of GDP	-2.90	-2.64	-2.37	-0.08	-3.29
External debt, total	Percent of GDP	49.25	68.03	54.79	26.56	24.52
Developing Asia						
Gross domestic product, constant prices	Annual percent change	6.71	7.39	7.67	9.57	9.71
Investment	Percent of GDP	29.50	32.85	33.64	37.88	37.94
Gross national savings	Percent of GDP	26.31	32.28	36.31	43.78	44.71
Inflation, average consumer prices	Annual percent change	9.89	8.17	3.01	4.06	5.31
Inflation, end of period consumer prices	Annual percent change	n.a	4.28	3.13	3.99	6.28
Terms of trade of goods and services	Annual percent change	0.16	-0.72	-0.89	2.82	0.74
Terms of trade of goods	Annual percent change	0.87	-0.60	-0.41	-0.37	-1.04
Current account balance	Percent of GDP	-1.70	-0.31	2.66	5.92	6.70
Private capital flows, net	U.S. dollars	11.74	40.38	69.72	47.93	193.54
Direct investment, net	U.S. dollars	5.05	45.80	68.98	97.41	90.52
External debt, total	Percent of GDP	22.19	31.79	23.91	19.06	17.33

Source: World Economic Outlook Database

Appendix 2: Results of the Principal Component Analysis

Botswana

Eigenvalues: (Sum = 3, Average = 1)

Number	Value	Difference	Proportion
1	1.922198	1.022167	0.6407
2	0.900031	0.72226	0.3
3	0.177771	---	0.0593

Eigenvectors (loadings):

Variable	PC 1	PC 2	PC 3
LPSC_BWA	0.626356	-0.43688	0.645613
LDEPOS_BWA	0.684161	-0.08888	-0.7239
LM2_BWA	0.373634	0.895119	0.243226

Ethiopia

Eigenvalues: (Sum = 3, Average = 1)

Number	Value	Difference	Proportion
1	2.39363	1.826256	0.7979
2	0.567375	0.528379	0.1891
3	0.038995	---	0.013

Eigenvectors (loadings):

Variable	PC 1	PC 2	PC 3
LPSC_ETH	0.498947	0.842249	0.204128
LDEPOS_ETH	0.632297	-0.19271	-0.75038
LM2_ETH	0.592666	-0.50347	0.628704

Gambia

Eigenvalues: (Sum = 3, Average = 1)

Number	Value	Difference	Proportion
1	1.970989	0.95712	0.657
2	1.013869	0.998727	0.338
3	0.015142	---	0.005

Eigenvectors (loadings):

Variable	PC 1	PC 2	PC 3
LPSC_GMB	-0.07005	0.988183	0.136341
LDEPOS_GMB	0.708819	-0.04687	0.703832
LM2_GMB	0.701904	0.145942	-0.69716

Ghana

Eigenvalues: (Sum = 3, Average = 1)

Number	Value	Difference	Proportion
1	2.773239	2.581966	0.9244
2	0.191272	0.155783	0.0638
3	0.035489	---	0.0118

Eigenvectors (loadings):

Variable	PC 1	PC 2	PC 3
LPSC_GHA	0.560241	0.821822	0.103633
LDEPOS_GHA	0.589006	-0.30728	-0.74743
LM2_GHA	0.582411	-0.47978	0.656207

Malawi

Eigenvalues: (Sum = 3, Average = 1)

Number	Value	Difference	Proportion
1	2.387073	1.804751	0.7957
2	0.582322	0.551716	0.1941
3	0.030606	---	0.0102

Eigenvectors (loadings):

Variable	PC 1	PC 2	PC 3
LPSC_MWI	0.483228	0.871606	0.082422
LDEPOS_MWI	0.627033	-0.27885	-0.72737
LM2_MWI	0.610999	-0.40317	0.681275

Mauritius

Eigenvalues: (Sum = 3, Average = 1)

Number	Value	Difference	Proportion
1	2.955045	2.915059	0.985
2	0.039986	0.035017	0.0133
3	0.004969	---	0.0017

Eigenvectors (loadings):

Variable	PC 1	PC 2	PC 3
LPSC_MUS	0.57432	0.792076	0.206817
LDEPOS_MU	0.577425	-0.57104	0.583518
LM2_MUS	0.580291	-0.2157	-0.78532

Nigeria

Eigenvalues: (Sum = 3, Average = 1)

Number	Value	Difference	Proportion
1	2.503377	2.040433	0.8345
2	0.462944	0.429265	0.1543
3	0.033679	---	0.0112

Eigenvectors (loadings):

Variable	PC 1	PC 2	PC 3
LPSC_NGA	0.518136	0.840562	0.158084
LDEPOS_NGA	0.61748	-0.23973	-0.74917
LM2_NGA	0.591822	-0.48578	0.643243

South Africa

Eigenvalues: (Sum = 3, Average = 1)

Number	Value	Difference	Proportion
1	2.230359	1.472832	0.7435
2	0.757527	0.745414	0.2525
3	0.012114	---	0.004

Eigenvectors (loadings):

Variable	PC 1	PC 2	PC 3
LPSC_ZAF	0.406055	0.913577	0.022254
LDEPOS_ZAF	0.648595	-0.27095	-0.71127
LM2_ZAF	0.643773	-0.30325	0.702564

Tanzania

Eigenvalues: (Sum = 3, Average = 1)

Number	Value	Difference	Proportion
1	1.998436	1.02024	0.6661
2	0.978195	0.954826	0.3261
3	0.023369	---	0.0078

Eigenvectors (loadings):

Variable	PC 1	PC 2	PC 3
LPSC_TZA	0.149315	0.988291	0.031399
LDEPOS_TZA	0.697557	-0.12779	0.705042
LM2_TZA	0.700799	-0.08337	-0.70847

Uganda

Eigenvalues: (Sum = 3, Average = 1)

Number	Value	Difference	Proportion
1	2.806489	2.620395	0.9355
2	0.186093	0.178675	0.062
3	0.007418	---	0.0025

Eigenvectors (loadings):

Variable	PC 1	PC 2	PC 3
LPSC_UGA	0.562031	0.778951	0.27813
LDEPOS_UGA	0.594341	-0.14649	-0.79076
LM2_UGA	0.575221	-0.60974	0.545292

Zambia

Eigenvalues: (Sum = 3, Average = 1)

Number	Value	Difference	Proportion
1	2.721263	2.44948	0.9071
2	0.271783	0.26483	0.0906
3	0.006954	---	0.0023

Eigenvectors (loadings):

Variable	PC 1	PC 2	PC 3
LPSC_ZMB	0.545492	0.836641	0.049704
LDEPOS_ZMB	0.590078	-0.42549	0.686122
LM2_ZMB	0.595186	-0.34495	-0.72579

Kenya

Eigenvalues: (Sum = 3, Average = 1)

Number	Value	Difference	Proportion
1	2.682228	2.382984	0.8941
2	0.299244	0.280717	0.0997
3	0.018527	---	0.0062

Eigenvectors (loadings):

Variable	PC 1	PC 2	PC 3
LPSC_KEN	0.544341	0.827449	0.137915
LDEPOS_KEN	0.600663	-0.2697	-0.75264
LM2_KEN	0.585574	-0.49253	0.643829

Appendix 3: A Summary Measure of the Financial Development Derived from the Principal Component Analysis. All the original variables are in logs and expressed as ratios of GDP

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Botswana	1.7861	1.8030	1.7458	1.7681	1.6370	1.6648	1.7037	1.6617	1.7006	1.6379	1.5419	1.6979	1.6664	1.5659	1.5568	1.6768
Ethiopia	1.5671	1.5764	1.6385	1.4788	1.3770	1.3895	1.4037	1.3987	1.4693	1.4373	1.4486	1.5102	1.4519	1.4731	1.4979	1.4530
Gambia, The	1.6221	1.5227	1.6359	1.5399	1.5869	1.6526	1.6254	1.7176	1.6970	1.7338	1.5437	1.5405	1.5368	1.5274	1.4944	1.5531
Ghana	1.8597	1.7796	1.6259	1.4951	1.3611	1.2645	1.2860	1.0299	1.1271	1.2920	1.3248	1.3046	1.3089	1.6126	1.5018	1.4967
Kenya	2.1779	2.2562	2.3433	2.3466	2.3177	2.2970	2.3035	2.2562	2.2714	2.1166	2.1628	2.1439	2.1221	2.1372	2.1427	2.1777
Malawi	1.6759	1.6972	1.7618	1.7963	1.7687	1.8093	1.8172	1.7847	1.7623	1.6586	1.6946	1.6666	1.6222	1.6095	1.6182	1.6314
Mauritius	2.6121	2.6046	2.6274	2.5635	2.5985	2.5431	2.5720	2.5896	2.6173	2.7223	2.7665	2.8052	2.8655	2.8729	2.8840	2.9283
Nigeria	1.5940	1.6822	1.6946	1.7283	1.8505	1.9363	2.0081	2.0081	1.9982	1.9698	2.0469	1.8962	1.8497	1.6131	1.6853	1.7099
South Africa	2.3496	2.3401	2.3388	2.3220	2.2794	2.3067	2.3140	2.3224	2.3447	2.3430	2.2996	2.3037	2.3378	2.3387	2.3261	2.3236
Tanzania	1.4171	1.4358	1.4813	1.5728	1.5959	1.5797	1.5780	1.6123	1.4277	1.4827	1.4434	1.5480	1.4748	1.5068	1.5353	1.5499
Uganda	1.8076	1.4447	1.4944	1.3626	1.4010	1.3632	1.1940	1.1533	1.1463	1.1161	1.1004	0.9284	0.8218	0.9239	1.0559	1.0966
Zambia	1.5170	1.5462	1.4535	1.4953	1.4714	1.4484	1.5613	1.5413	1.5385	1.4731	1.4914	1.5008	1.5280	1.4816	1.3389	1.3494

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Botswana	1.7083	1.6590	1.6192	1.6075	1.6068	1.6046	1.7195	1.7705	1.6973	1.7467	1.7221	1.7854	1.7684	1.7714	1.8945	1.9607
Ethiopia	1.5551	1.6348	1.7846	1.8626	1.9790	2.0143	2.0509	2.1056	2.1270	2.1611	2.1026	2.1186	2.0825	2.0829	2.0913	2.0436
Gambia, The	1.5143	1.5851	1.5586	1.5702	1.5680	1.6247	1.6613	1.6777	1.7627	1.7713	1.8762	1.8935	1.8482	1.8793	1.9598	1.9575
Ghana	1.6818	1.6705	1.7406	1.7099	1.7352	1.8861	1.8949	1.9759	2.0482	2.0173	2.0867	2.0759	2.1290	2.1316	2.2551	2.3703
Kenya	2.2670	2.2283	2.2640	2.3795	2.2676	2.3261	2.2910	2.3141	2.3002	2.3041	2.3417	2.3434	2.3647	2.3441	2.3592	2.3990
Malawi	1.7321	1.6191	1.7432	1.4862	1.3434	1.2378	1.4778	1.3684	1.4473	1.4507	1.4423	1.5109	1.5737	1.5841	1.5758	1.6485
Mauritius	2.9690	3.0070	3.0339	3.0818	3.0384	3.0941	3.1196	3.1559	3.1482	3.1545	3.1802	3.2881	3.3194	3.3352	3.3258	3.3436
Nigeria	1.8012	1.8501	1.9015	1.5669	1.4617	1.5533	1.6857	1.7760	1.7325	1.9261	1.7878	1.7764	1.7291	1.7187	1.7510	1.9623
South Africa	2.3219	2.2896	2.3162	2.3293	2.3435	2.3725	2.4075	2.4102	2.3945	2.4370	2.3516	2.3949	2.3960	2.4392	2.4890	2.5201
Tanzania	1.5183	1.5818	1.5629	1.4945	1.3025	1.2904	1.3038	1.3255	1.3363	1.4426	1.5187	1.5809	1.5943	1.6794	1.7417	1.7923
Uganda	1.0697	1.3542	1.3411	1.3591	1.4549	1.4649	1.5655	1.5827	1.6301	1.6836	1.7920	1.8056	1.8068	1.8128	1.8567	1.8915
Zambia	1.1712	1.1484	1.1708	1.2358	1.2464	1.2292	1.2591	1.2716	1.3822	1.3034	1.3184	1.3150	1.3318	1.2490	1.3256	1.3592

Source: Own Computations

Appendix 4: The Financial Liberalisation Index for 13 SSA Countries for the Period 1973-2007

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Botswana	5.700	5.700	5.700	4.200	4.950	4.950	5.550	5.550	5.550	5.550	5.550	5.550	5.925	5.925	5.925	5.925	7.282	9.157
Ethiopia	8.000	3.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Gambia, The	1.163	1.163	1.163	1.163	1.163	1.163	1.163	1.163	1.163	1.163	1.163	1.163	1.163	1.163	5.173	5.173	5.173	5.173
Ghana	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	1.029	1.457	1.457	5.357
Kenya	5.725	5.725	5.163	5.163	5.163	6.163	6.163	6.163	6.163	6.163	6.163	6.163	6.163	6.163	6.163	6.163	6.163	6.663
Malawi	1.725	1.725	1.725	1.725	1.725	1.725	1.725	1.725	1.725	1.725	1.725	1.725	1.725	1.725	1.939	3.154	3.904	7.845
Mauritius	4.163	4.163	4.163	4.163	4.163	4.163	4.163	4.163	4.591	4.591	5.020	5.877	5.877	5.877	5.877	7.291	8.291	8.291
Mozambique	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Nigeria	3.163	3.163	3.163	3.163	3.163	3.163	3.163	3.163	3.163	3.163	3.163	3.163	3.163	2.163	5.958	6.958	7.315	7.315
South Africa	5.250	5.250	5.250	3.000	3.750	5.036	6.036	6.036	6.036	7.036	12.071	12.071	10.571	11.571	11.571	11.571	12.800	12.800
Tanzania	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Uganda	2.325	2.325	2.325	2.325	2.325	2.325	2.325	2.325	2.606	2.606	2.606	3.606	3.606	2.606	2.606	2.606	2.606	3.356
Zambia	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Botswana	11.257	11.257	11.257	11.257	14.057	14.057	14.057	14.057	15.257	15.257	15.257	15.257	15.257	15.257	15.257	15.257	15.257
Ethiopia	1.000	1.000	1.429	2.629	4.729	5.657	5.657	6.957	6.957	7.057	7.057	8.486	8.486	8.486	8.486	8.486	8.486
Gambia, The	6.030	11.580	13.618	11.082	10.082	10.082	10.582	10.582	12.752	16.252	16.252	17.280	17.880	17.880	18.309	18.309	18.309
Ghana	6.214	9.518	11.143	13.343	13.343	14.780	15.343	15.343	15.643	15.643	15.643	16.500	16.500	16.500	16.800	16.800	16.800
Kenya	7.805	6.555	7.680	9.280	11.280	15.309	15.309	15.309	16.309	16.309	16.309	16.738	15.938	17.688	17.688	17.688	17.688
Malawi	9.130	9.645	9.645	10.645	11.282	12.282	12.882	13.096	13.596	13.596	13.596	13.596	13.846	13.846	13.846	13.846	14.409
Mauritius	9.320	10.445	10.445	16.545	17.295	17.857	17.857	17.857	18.757	18.757	18.757	18.757	18.757	18.757	18.757	18.757	18.757
Mozambique	1.000	1.750	4.750	7.750	8.750	11.500	13.250	14.250	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000
Nigeria	7.115	9.972	9.972	6.258	8.621	10.183	12.768	14.205	14.205	17.138	17.138	17.138	17.353	17.915	17.915	17.915	17.915
South Africa	12.800	12.800	13.800	15.800	18.400	18.400	18.400	18.400	18.400	19.400	19.400	19.400	19.400	19.400	19.400	19.400	19.400
Tanzania	0.857	4.982	6.439	8.752	10.109	10.859	11.159	11.159	11.159	13.409	13.409	15.809	16.738	16.738	16.738	16.738	16.738
Uganda	3.356	5.413	7.913	10.429	11.857	11.857	15.057	16.057	16.657	16.095	16.309	17.309	18.309	18.609	18.609	18.609	18.609
Zambia	0.600	0.600	7.105	10.699	10.949	12.112	12.712	12.749	13.349	13.849	13.849	13.849	14.349	14.599	14.599	16.695	17.257

Source: Own Computations