# MOBILIZING DOMESTIC RESOURCES FOR ECONOMIC DEVELOPMENT: THE ROLE OF COMMERCIAL BANKS IN GHANA

BY

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## DECLARATION

This research paper is my original work and has not been presented for a degree award in any other University.

Signed: ..... Date: August 28, 2008

Beatrice Arthur

This research paper has been submitted for examination with our approval as University supervisors.

Signed: ..... Date: August 28, 2008

Prof. F. M. Mwega

Signed: ..... Date: 29/8/08

Prof. L. P. Mureithi

## DEDICATION

To my loving father Mr. Daniel Kingsley Arthur whom I admire and look up to.

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TABLE OF CONTENT

## LIST OF TABLES

## LIST OF FIGURES

## ABSTRACT

The purpose of the research was to find out the factors that affect financial resource mobilization (savings) and investment processes in Ghana. After a long period of liberalization in the financial and other sectors in the economy, GDS is still not sufficient to propel the country into taking up its investment prospects. Credit to the private sector is deemed important in this case to provide finance to businesses including small and medium scale enterprises.

The study reviewed both theoretical and empirical literature. Data from documented sources was collected and appropriate tests were conducted. The objectives of the study were to find out whether interest rate (Mckinnon-Shaw hypothesis) positively affects financial savings and private investment ratio in Ghana, and whether complementarity exists between financial savings and private investment ratio in Ghana. The results reveal that the main determinants of financial savings in Ghana are real deposit rate and real income. Contrary to the Mckinnon-Shaw hypothesis, real deposit rate is found to be negatively related to financial savings while real income is positively associated with financial savings in Ghana. However, the impact of private investment ratio on financial savings was negative but insignificant. The main determinants of private investment ratio were real exchange rate, credit to the private sector and public sector investment. It was found that although real deposit rate was negatively related to private investment ratio in Ghana, the coefficient was not significant.

The recommended policies are that commercial banks should implement more attractive instruments and products, ease the rigidities associated with accessibility of funds in order to draw small savers, and direct more credit to the private sector. The government should also promote policies that will boost productivity and increase income, devalue the domestic currency and restrain from carrying out major investments in the country.

# 1.0 CHAPTER ONE: BACKGROUND OF THE STUDY

## 1.1 Financial Reforms in Ghana

The financial system of Ghana compared to that of the developed countries is relatively young and has gone through a substantial crisis since the late 1970s. The country adopted various economic recovery programs, starting from 1980s. In 1988, the government carried out a Financial Sector Reform Programme (FINSAP) in a bid to restructure financially-distressed banks, to improve savings mobilization and enhance the efficiency of credit allocation through liberalization of interest rates; to enhance the soundness of the banking system through improved regulatory and supervisory framework and to develop money and capital markets. This was done with support from International Development Association (IDA) in the form of a Financial Sector Credit (FINSAP 1). The second part of the programme (FINSAP 2) was initiated in 1990 with the aim of reducing state shareholding in state-owned banks, to continue the bank restructuring program, to intensify the recovery of non-performing loans, and to enhance the effectiveness of a broad range of non-bank financial institutions. All these measures, at various stages, were meant to stimulate financial deepening, augment the supply of loanable funds, increase the quantity and quality of investments to a greater number of enterprises, and encourage efficient allocation of resource to all sectors of the economy.

The role of financial institutions is very important in economic development, basically in mobilizing savings and enhancing investments. Most literature supports this view that financial development precedes economic development (Gurley and Shaw, 1955; Goldsmith, 1969; Mckinnon, 1973). However, this view has come under severe criticisms by other economists who believe that the operation of the financial sector merely responds to economic development, adjusting to changing demands from the real sector. (Robinson, 1952; Lucas, 1988).

## 1.2 The Banking System

Ghana's formal banking sector comprised of the central bank (the Bank of Ghana), eleven commercial banks, five merchant banks and over one hundred rural unit banks in 2003. The Bank of Ghana is responsible for the overall regulation and supervision of the banking and financial services market.

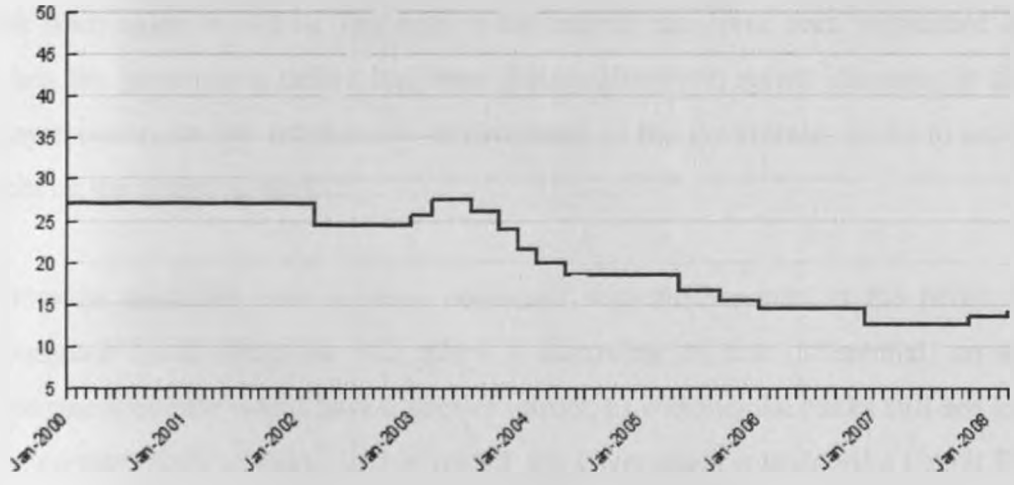
By 2006, all banks were in compliance with the minimum capital of ¢70.00 billion required for universal banking business by the deadline of December 31, 2006. Universal banking, which involves the removal of restrictions on banking activity, was introduced to allow banks to choose the type of banking services they would like to offer in line with their capital, risk appetite and business orientation. It removes for instance, the monopoly that was given to commercial banks in the area of retail banking. It creates room for diversification of the range of financial services that a bank can provide. It allows merchant banks for example to compete for retail deposits. This process would lead to branch network expansion, increasing banking penetration, and also competition for deposits at the retail level. Banks are also free to take on all aspects of banking, retail, corporate, etc, or they can choose to specialize in a particular segment. Three new banks were licensed during 2006, bringing the total number of banks to twenty-four. Two new rural banks were also licensed and commenced operations during the same year.

Although Ghana's informal financial sector is large, with an estimated 45 percent of all private sector's financial savings mobilized through informal channels, its capacity to intermediate between savers and investors has been limited. This is due in part to Ghanaians' savings behavior (not using the formal banking system), and in part to the absence of strong links with the formal sector.

Commercial banks offer services such as current and savings accounts, telegraphic transfers, safe custody of deposits, sale of traveler's cheques and foreign transactions, including the establishment of letters of credit.

The central bank was aware that high interest rates are hurting the private sector and therefore has a bias towards easing monetary policy in the hope that commercial banks will lower their lending rates, which will encourage private sector borrowing and therefore investment. Although lending rates have come down, so have deposit rates, and there has been little impact on the spread between the two. According to the BoG, in December 2004 the spread between the lending and savings rates was 19.25%, while in June 2006 the same spread had risen to 19.62%. However, the government has also taken other steps in order to promote the issuing of credit to the private sector. In July 2005 and August 2006 the central bank lowered reserve requirements (banks must still hold 9% of their eligible deposits as primary reserves at the central bank but the requirement to hold 35% of their eligible deposits as secondary reserves in the form of Treasury bills and medium-term government securities has been abolished). It is hoped that this will free up bank assets so they can be lent to the private sector.

**Figure 1: Trends in Prime rate**




SOURCE(Bank of Ghana)

In response to the inflationary impact of the near-doubling of petrol prices in January 2003, the Bank of Ghana (BoG, the central bank) increased the prime rate by 300 basis points over the following two months, to 27.5%. However, the rate was cut again in July

2003, to 26%, on the basis of improved fiscal performance, a slowdown in money supply growth and an easing of underlying inflationary pressure. The central bank continued to reduce the prime rate regularly, until it reached 16.5%, the lowest in decades in response to the continued decline in inflationary pressures and the central bank's optimism that this would continue. However, the cuts in inflation stalled in mid-2005, as the bank began taking a more cautionary stance given that inflationary pressures remained high, not least because of the 50% fuel price increase that was instituted in February 2005.

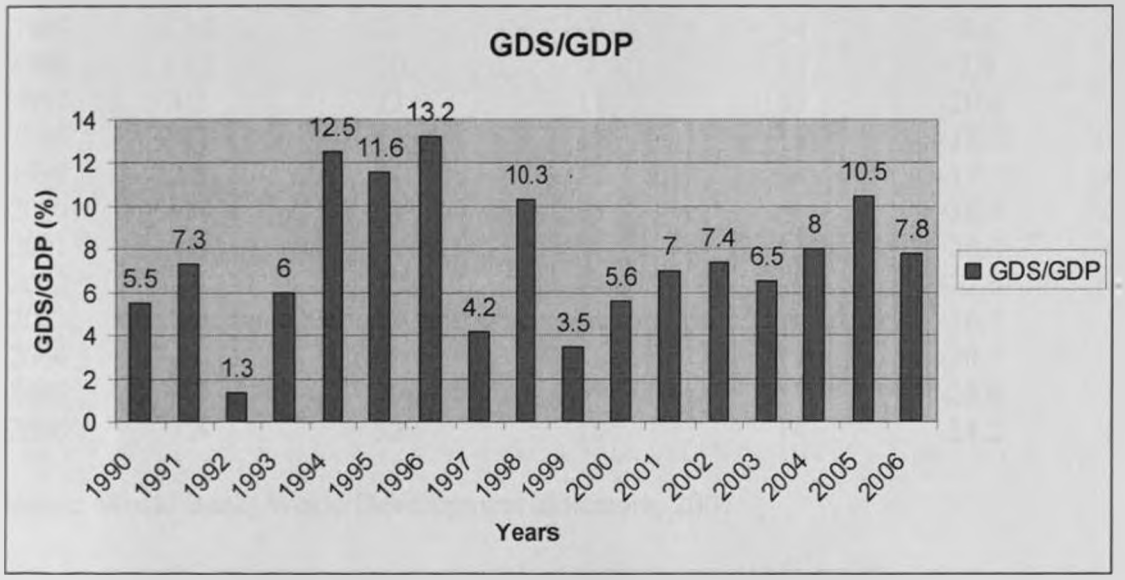
However, much of the inflationary effect of the petroleum price adjustments had eased by June 2005. The BoG therefore lowered the prime rate by a further 100 basis points, to 15.5%, in the third quarter of 2005, where it remained until the end of the year. The prime rate was then lowered by another 100 basis points to 14.5% in January 2006. Having remained stable throughout the year, the BOG announced a further reduction by 200 basis points, to 12.5% in December 2006. After assessing the balance of risks, the Monetary Policy Committee on November 6, 2007 announced its decision to raise the Bank of Ghana Prime Rate by 100 basis points to 13.5 per cent. Currently, the prime rate has risen again to 14.5%. The cuts in the interest rate have been introduced at a time when the government deficit has been falling. However, recent increases in the deficit may threaten the low interest rate environment, as the government looks to securitise its debt on the domestic market.

Although measures such as this, combined with further cuts in the prime rate and continued fiscal discipline will allow a narrowing of this differential, an improved repayment culture would have a greater impact, as commercial banks still see lending to the private sector as risky. In this regard, the government introduced a Credit Reporting Act in 2007. The Act will establish credit reference bureaus that provide valid credit risk assessments of borrowers. Implementation is therefore expected to lower risks associated with lending to the private sector and make credit more readily available.

Interest rates on the auction market broadly declined in the year 2007 through to October with continued investor preference for long-dated instruments. The 182-day Treasury bill

and 1-yr note shed 22 basis points and 70 basis points respectively to 10.31 and 12.30 per cent respectively in October 2007. The 3-year fixed instrument, the most preferred over the period moved to 13.0 per cent in October 2007 from 14.0 per cent in December 2006. The benchmark 91-day Treasury bill rate however gained some 20 basis points to 9.83 per cent over the same period. The 91-day Treasury bill rate however, firmed by 101 basis points to 10.65 per cent.

**Figure 2: The Trend in Gross Domestic Savings**




Source: World Bank; World Development Indicator 2007.

Ghana's domestic savings as a percentage of GDP between 1990 and 1991 rose from 5.5% to 7.3%. It however declined sharply in 1992 to 1.3%. In 1994, it rose again and peaked at 13.2% in 1996. The trend has been undulating in subsequent years and peaked at 10.5% in 2005 but dropped to 7.8% in 2006. The savings rate is therefore low compared to those of other African countries. This evokes the need to mobilize sufficient resources domestically to meet the investment requirement of the country. There is still more to be done to step up the domestic savings rate to over 30% which is analogous to those of the newly industrialized countries at the time they begun their industrialization.

**Table 1: Gross Domestic Savings and Investments in Ghana.**

| Year | (1) Gross Domestic Savings (%GDP) | (2) Gross Domestic Investment (%GDP) | (3) Gross Private Investment (%GDP) | (4) Gross Public Investment (%GDP) | (5) Gap (1-2) | (6) GDP growth rate |
|---|---|---|---|---|---|---|
| 1990 | 5.5 | 14 | 7 | 7 | -8.5 | 3.3 |
| 1991 | 7.3 | 16 | 8 | 8 | -8.7 | 5.3 |
| 1992 | 1.3 | 12 | 2 | 10 | -11.7 | 3.9 |
| 1993 | 6.0 | 24 | 13 | 11 | -16.0 | 4.8 |
| 1994 | 12.5 | 22 | 9 | 13 | -11.5 | 3.3 |
| 1995 | 11.6 | 21 | 7 | 14 | -8.4 | 4.1 |
| 1996 | 13.2 | 20 | 7 | 13 | -7.8 | 4.6 |
| 1997 | 4.2 | 23 | 11 | 12 | -20.8 | 4.2 |
| 1998 | 10.3 | 22 | 11 | 11 | -12.7 | 4.7 |
| 1999 | 3.5 | 21 | 12 | 9 | -17.5 | 4.4 |
| 2000 | 5.6 | 24 | 15 | 9 | -18.4 | 3.7 |
| 2001 | 7.0 | 27 | 14 | 13 | -20.0 | 4.0 |
| 2002 | 7.4 | 20 | 14 | 6 | -12.6 | 4.5 |
| 2003 | 7.0 | 23 | 14 | 9 | -16.0 | 5.2 |
| 2004 | 7.3 | 28 | 16 | 12 | -20.7 | 5.6 |
| 2005 | 3.4 | 29 | 17 | 12 | -25.6 | 5.9 |
| 2006 | 7.8 | 32 | 18 | 14 | -24.2 | 6.2 |

Source: World Bank; World Development Indicators, 2007.

It can be inferred from the above table that gross domestic savings have declined from a peak in 1996 to 2006. It can also be noted that gross private investment is an important component of gross domestic investment. Gross public investment on the average increased from 1990 to 1996 where it began to fall considerably. On the other hand, gross private investment almost followed a general upward trend from 1996. The gap between gross domestic savings and gross domestic investment is negative throughout the period under consideration. This presents a substantial resource gap. Hence, there is the need to mobilize sufficient resources domestically to meet the investment requirement in the country. To attain a middle income status by 2015 as stated in the country's vision, the private sector is expected to play the major role in attaining this objective. Hence,

investment financing should be focused on the private sector in order to stimulate economic growth and development to desirable levels.

### 1.3 Statement of the problem

Recently, there has been an ongoing concern about issues regarding economic development in Africa. At the launch of the 'Economic Development in Africa' report (2007) in Johannesburg, it was stated "that Africa could 'claim ownership' of its development, if it had relied more on domestic financial resources"[1]. Most African countries in their quest to develop their countries rely heavily on foreign direct investment and loans and grants from different organizations and financial institutions such as the World Bank and the International Monetary Fund to finance their economic activities. Hence these countries are vulnerable to donor countries and institutions and are subject to their dictates and advice that do not suit their developmental needs and goals.

Private sector growth in Ghana has been constrained by limited financing opportunities for productive private investment. Over 10 years after the beginning of financial sector reforms in 1988, much still remains to be done. Confidence in the financial sector has suffered because of policy interventions by the government, many of which have not facilitated the free flow of financial resources in the product and factor markets. Although the country has experienced a stable macroeconomic environment over the past few years, it has not been able to mobilize enough savings which could help the private sector's participation in the process of economic development.



Developments in the key monetary aggregates continue to show increased intermediation and financial deepening in the country. Changes in total liquidity of the banking system continue to be supported by deposit mobilization and/or creation. Time and savings deposits stood at 15.7% of GDP at the end of January 2007 from 12.8% in January 2006. The deposit-to-GDP and currency-to-GDP ratios, suggest an increase in the importance of the banking system in the country at the end of January 2007. Hence this study is

[1] By Sam Gayi, The UN Conference on Trade and Development (Unctad), head-special coordinator in Africa.

intended to assess the contribution of the commercial banks to the intermediary process that is needed to accelerate the course of development in the country.

## 1.4 Objectives of the study

This study seeks to establish the role of commercial banks in mobilizing resources from the domestic economy. The general objective is to find out the ways and means through which commercial banks effectively mobilize domestic resources for the purpose of economic development.

The specific objectives are:

1. To test the Mckinnon-Shaw hypothesis on savings mobilization by commercial banks in Ghana.
2. To investigate the effect of real deposit rate on private investment ratio in Ghana.
3. To find out if there exist complementarity between real financial savings and private investment ratio in Ghana.
4. To suggest policy recommendations that will help economic actors come up with suitable policies to enhance financial savings and investment activities in Ghana.

## 1.5 Research questions

1. After a long period of financial liberalization in Ghana, has it been able to induce more savings mobilized by commercial banks?
2. Does real deposit rate have a positive effect on private investment ratio in Ghana?
3. Is there complementarity between real financial savings and private investment ratio in Ghana?

## 1.6 Hypothesis

1. Financial sector liberalization leads to induces more financial savings.
2. Real deposit rate has a positive relationship on private investment ratio.

3. Complementarity exist real financial savings and private investment ratio.

## 1.7 Significance of the study

Many studies have been done in Ghana regarding mobilizing domestic savings for capital formation and economic development. These studies have concentrated more on the informal financial sector and the government sector. This study is intended to bring to the fore the role of the commercial banks in mobilizing domestic financial savings and also contribute to existing literature.

The findings from the study will help identify the determinants of financial savings and private investment in Ghana. The policy prescriptions drawn will assist policy makers in their formulation and implementation of policies that will not hinder the mobilization of savings by commercial banks.

## 2.0 CHAPTER TW0: LITERATURE REVIEW

### 2.1 Introduction

This chapter reviews both theoretical and empirical works to help direct the study. Under the theoretical literature various theories have looked at about the role of financial institutions in economic development, the finance-growth nexus and the relationship between savings and interest rates. Empirical works of some renowned researches have been examined.

### 2.2 Theoretical literature

#### 2.2.1 Financial Institutions, Resource Mobilization and Financing

A diverse, well-functioning, competitive financial system is crucial both for mobilizing savings and for investing them productively. Every country needs a financial system that promotes savings and provides credit efficiently to small, medium-sized and large firms. In most developing countries, such a system is missing

Financial institutions through the process of financial intermediation transfer funds from surplus units to deficit units in the economy. Transfer of funds is in the form of loans, shares and bond purchases and other financial assets. Gurley and Shaw (1955) identify three groups of spending units, namely: spending units with balanced budget, spending units with surplus budget and spending units with deficit budget. Spending units with a surplus save, so that their financial assets increase relative to outstanding debt including equity claims other than earned surplus. They are therefore suppliers of loanable funds. Spending units with deficit budget spend more than their income. They demand loanable funds, releasing financial assets or issuing debt, so that their financial assets decline relative to the sum of their liabilities and equity other than earned surplus. This represents a complete set of social accounts which report the flow of funds between spending units and the corresponding changes in the financial status.

Financial intermediaries transmit loanable funds by issues of indirect financial assets to surplus units and purchase of primary securities from deficit units. They include savings and loan associations, insurance companies, investment companies and others. Considering the monetary system, commercial banks play a vitally important role in view of their functions and size. They issue indirect financial assets, deposits and currency which are substitutes for primary securities by the others (Gurley and Shaw, 1956).

Commercial banks play a major role in financial intermediation and are the largest financial institutions in several respects. The commercial role of banks is wider than banking, and they have the largest branch network, deposit base, asset base and employment. They also transact business in two markets; the money market and the capital markets. It is in this respect that this study places emphasis on assessing their contribution to development by mobilizing domestic resources for investment.

Commercial banks in developing countries must take a much more active role in promoting new industries and financing existing ones than is usual for banks in developed nations. They have to be sources of venture capital as well as repositories of commercial knowledge and business skills that are typically in short supply domestically. It is because of their failure to do this that new financial institutions known as development banks, have emerged over the past few decades in a wide variety of LDCs (Todaro and Smith, 2003). Hence commercial banks, the basic component of financial institutions, should be the major relevant important institutions which encourage and mobilize savings because of their network of branches; through their normal credit operations often activating savings lying idle elsewhere; and the bank's liabilities which are part of money supply are highly liquid and thus attract savers (Khathate and Riechel, 1980).

One of the factors that pose restriction on investment financing as suggested by the literature is credit to the private sector. According to Loungani and Rush (1995), particularly, small and medium size enterprises (SMEs) find it difficult to get access to financing through the open market debt. Therefore, these enterprises tend to rely on credit from banking institutions which are characterized by imperfections due to asymmetric

information between lenders and borrowers. In developing countries, this problem of access to credit is critical, due to the absence of futures markets and poor access to long term financing. Thus, the evolution of the amounts of credit that goes to the private sector would be a good indicator of the restrictions operating in the domestic financing of investment.

### 2.2.2 Financial development and economic development

Theories of economic development specify mobilizing savings and transforming them into investment: 'one of the principal strategies of development necessary for any take off was the mobilization of domestic and foreign savings in order to generate sufficient investment and accelerate economic growth' (Todaro and Smith, 2003).

There are two opposing theories concerning financial and economic development, the supply-leading and demand-following hypothesis, and the demand-leading and supply following hypothesis. The supply-leading hypothesis posits that financial development precedes economic development. Financial systems improve economic performance by assessing investment opportunities and exerting corporate control, easing risk management, and lowering the cost of resource mobilization (Levine,1997). As financial systems develop, they become more efficient in providing these services which boost economic performance. Mckinnon and Shaw (1973) argue that policies leading to repression of financial system reduce incentives to save and invest. It reduces growth and size of the financial sector and this further retards economic development. They contend that financial liberalization will increase competition, and increase interest rates which stimulate savings and investment. On the other hand, the demand-leading and supply following hypothesis asserts that economic development precedes financial development.

While various literatures have been reviewed, the issue of direction of causality has not been fully established both theoretically and empirically.

### 2.2.3 Interest rates and Savings mobilization

The issue of interest rates has been part of humanity since the early stages of civilization starting from the Medieval period where the rich used to extend loans to the poor in the society and where some religions viewed and still view interest as a 'sin'. As trade developed during the latter part of the middle ages, the necessity of going about business by borrowing money became eminent and people who proposed the prohibition of interest charges were forced to accept it. The government at the time manipulated the interest rates. The idea of the demand and supply of capital in markets was however there. High interest will bring money out of hoards into trade whiles low interest will hold it back. The lowering of interest rate may keep some money coming from abroad whereas high interest rate takes it out (Cassel, 1957).

The classical school of thought believed that the forces of demand and supply of capital determine the interest rate and that the government role should be minimal or zero. They assumed that savings is the same thing as the supply of capital in the sense that people make capital available, that is saving, by abstention from consumption. They also stated that the demand for capital is basically made by businesses for investment. Hence interest rate is the price for supply of capital and equates savings to investment.

The neoclassical school of thought was of the view that interest rate is the price paid for the use of loanable funds. Whereas, high interest brings out money for businesses thus reducing hoarding, a low interest rate keeps money back which is an indication of increased hoarding.

In recent times, evidence abounds that the existence of financial intermediaries encourages savings and investment processes. Savings processes in developing countries involve the use of several instruments such as deposits of various forms, premiums and contributions. In order to encourage savings, interest rates are paid on deposits, as well as adoption of the methods such as publicity, prompt service to depositors and good environment that can attract depositors. Accumulated savings are transformed into

investment by various instruments such as loans (short, medium and long-term), treasury bills, commercial paper, bonds and others. A bulk of the investment is done through loans dominated by commercial banks.

Mckinnon and Shaw (1973) made a case against financially repressed economies by advocating for financial liberalization and development to accelerate the rate of economic growth. Interest rate ceilings distort the economy in four ways. Firstly, low interest rates produce a bias in favor of current consumption and against future consumption hence may reduce savings below the socially optimum level. Secondly, potential lenders may engage in relatively low-yielding direct investment instead of lending by way of depositing money in a bank. Thirdly, bank borrowers able to obtain all the funds they want at low loan rates will choose relatively capital intensive projects. Lastly, the pool of potential borrowers contains entrepreneurs with low-yielding projects who would not want to borrow at a higher market-clearing interest rate. Financial liberalization that increases interest rates induces savings. Raising interest rate ceiling also deters entrepreneurs from undertaking low-yielding investments which are no longer profitable at higher interest rate. The rate of economic growth rises in the process and thus induces more savings.

According to FitzGerald (2006), there is little evidence that financial liberalization has indeed resulted in higher savings rates, which was supposed to be the main contribution to higher investment and thus growth. The three reasons put forward for this outcome are: that first, financial reforms have the effect of shifting savings out of assets such as precious metals, property or currency into bank deposits and marketable securities. This raises the recorded financial 'depth' without raising savings rates. Second, an increase in interest rates increases the incomes of the lenders, increasing consumption and hence reducing savings. Third, financial liberalization expands access to consumer credit in the form of factoring systems, credit cards and personal loans. This in turn reduces aggregate savings because this is simply the difference between the increase in household financial assets and the increase in household financial liabilities. Savings rate appear to depend on other factors such as demographic and tax influences on pension provision, funding of

health and education, and the ownership structure of corporations or even family organizations.

The relationship between interest rates and aggregate savings involves a number of complex theoretical and econometric problems; the most important are separating out income and substitution effects of interest changes, quantifying the role of expectations and planning horizons in saving decisions, and solving a difficult econometric identification problem (Wright, 1967 and Weber, 1970). Further, it seems likely that interest rates are more significant in determining the channels into which savings will flow in the developed and developing countries than in altering saving propensities (Suitz, 1970). Moreover, it is quite conceivable that a period of negative real interest rates will disrupt the established savings pattern for most income classes. Some income receivers may tend to save more out of concern for future security, especially if they can acquire relatively secure assets

## 2.3 Empirical literature

Members of the World Bank and IMF entertain the possibility that maybe their structural adjustment policies did have some negative effects after undergoing many criticisms. It is impossible to ignore the sweeping critique by Stiglitz of policies still being imposed on poor countries as a condition of debt cancellation and aid, and it must be remembered that these are being imposed in the names of "good governance", "sound policies" and "poverty reduction" (Shah, 2007).

Proponents for the reform of the financial sector argue that it will lead to significant economic benefits, in particular through a more effective domestic savings mobilization and a more efficient resource allocation process, by reducing intermediation spreads, financial deepening, and enhanced access to credit. Various studies have tried to evaluate the impact of financial liberalization on private savings in a number of both developed and developing countries. However, the results have been inconclusive.

Aryeetey and Gockel (1991) conducted a study on the role of informal financial sectors in Ghana. The study investigated the factors that motivate the private sector of the economy of Ghana to conduct transactions in the informal financial sector. This was due to a decline in financial-asset holdings as a result of inappropriate fiscal policies and accommodating monetary policy, accompanied by repressive financial policies such as controls in pricing, distribution and exchange rate management. Consequently, the investment climate became unfavourable as the system became choked with non-bankable projects. The banks responded to governments' financial policies by raising the level of acceptable securities and subsequently could not find prospective credit-worthy customers. The banks did not institute appropriate and adequate savings mobilization techniques. These led to the scenario for the growth of an innovative informal financial sector that complements the formal institutions in urban areas and at the same time serves as a substitute for formal savings and lending facilities in rural areas. The activities of the informal financial sector hindered the large scale open market operations.

Uremadu (2007) conducted a study on financial savings mobilization in Nigeria using macroeconomic data covering the period 1980-2001. Among the variables used were total savings/GDP, GDP per capita, real interest rate, interest rate spread and money supply. The OLS estimation technique was employed and the findings revealed that real interest rate was negatively related to financial savings in Nigeria.

Bandiera et al. (2000) came up with an index of financial liberalization on the basis of eight different components: interest rates; reserve requirements; directed credit; bank ownership; prudential regulation; securities markets deregulation; and capital account liberalization. They used data for the period 1970-94 for Chile, Ghana, Indonesia, Korea, Malaysia, Mexico, Turkey and Zimbabwe. Their result based on their benchmark model show that, there was no evidence of any positive effect of the real interest rate on saving. They found out that in most cases the relationship was negative, especially in Ghana and Indonesia which was very significant. However, the long run impact of liberalization was sizeable. Based on an estimate of augmented Euler equations, Bandiera et al. gave some evidence of the presence of liquidity constraints. It was not established whether financial liberalization removes these constraints. The Euler equation results may suggest, at best, that financial liberalization has had little impact on the amount of credit available to consumers through the formal financial sector. The general conclusion that emerged from the study is that there was no systematic and reliable real interest rate effect on saving; whilst the effects of liberalization have a mixed record.

In Kenya, Mwega et al. (1990) conducted a study on real interest rates and the mobilization of private savings in Africa. The results showed that private sector savings rate and the real demand for money are insignificantly responsive to deposit rate of interest and also that high interest rate policy reduces private sector's demand for credit. Thus the study disputed the Mckinnon-Shaw hypothesis that an increase in interest rates induces more savings and hence investment.

A study by Hussain et al. (2002) used the data of 25 sample countries from 1972-1992 to identify determinants of saving in African countries. The result of the estimation was that

the real interest rate has a positive impact on total saving in the case of 15 counties. However, the coefficient on the variable was found to be positive and statistically significant only in 8 cases. The countries that demonstrated a statistically significant coefficient are Burkina Faso, Gabon, Mauritius, Nigeria, Swaziland, Zaire, Zambia, and Zimbabwe. The case of these countries indicates that the positive substitution effect of real interest rates outbalances the negative income effect. It further implies that a strong substitution effect prevails between present and future consumption. On the other hand, the real interest rate is found to have a negative and significant effect on the total saving rate of 5 countries – Benin, Cote d'Ivoire, South Africa, Togo and Tunisia.

Athukorala and Sen (2001) in their study to identify determinants of saving rate in India used income indicators, nominal interest rate, real wealth, inflation rate, public saving, level of financial intermediation (as measured by population per bank branch) and others as main variables. The result from their study suggests that real interest rate (rate of return on bank deposits) has a statistically significant positive effect on saving. This finding is in line with the McKinnon-Shaw proposition that the direct income effect of high real interest rates on saving behavior generally overwhelms the substitution of other asset for financial assets, in response to interest rate changes, in an economy where the saving behavior is highly intensive in money and near-money assets.

## 2.4 Overview of literature

There is a large degree of agreement among economists that financial liberalization facilitates economic development and growth. This view, embodied in the McKinnon-Shaw paradigm, states that the removal of financial repression, in the form of relaxation of interest rate controls, removal of credit ceilings and credit rationing, leads to significant improvement of growth prospects. This will occur as deposits (loanable funds) increase through real interest rate increases that attract household savings to bank deposits, and by increasing the efficiency of the banking system.

After a long period of financial liberalization in Ghana, savings mobilization has not improved considerably. The country still depends largely on foreign assistance for its

development prospects. This has attracted a lot of studies done to unearth the problem regarding how to mobilize domestic sources for economic growth and development. However, this study focuses on financial domestic resources by commercial banks in Ghana to assess its contribution to savings mobilization in the country in the context of the Mckinnon-Shaw framework.

# 3.0 CHAPTER THREE: METHODOLOGY

## 3.1 Introduction

This chapter includes the theoretical framework of the study, the model specification and the nature and sources of data which was used for the study. The model was based on the Mckinnon-Shaw hypothesis.

## 3.2 Theoretical framework

The theoretical review of the model stems from separate works of Mckinnon's Complementarity Hypothesis and Shaw's Debt-intermediation Hypothesis. It assumes the following:

i. All economic units are confined to self-finance.
ii. Investment is indivisible (lump sum).
iii. Potential investors therefore need to save or accumulate money balances to enable them undertake the lumpy investment.
iv. The incentive to do this comes from relatively low opportunity cost of accumulating money balances.

The assumptions imply that savings and investment move together in the same direction (complementary behavior) as illustrated below:

$$M/P = L(Y, I/Y, d - \pi^e ...) \quad \text{..... (1)}$$

$$I/Y = F(R, d - \pi^e ...) \quad \text{..... (2)}$$

where $M$ is money stock (broadly defined to include savings/time deposits as well as demand deposits and currency in circulation- $M_2$)

$P$ = the price level

$Y$ = real GNP

$I/Y$ = the ratio of gross investment to GNP

$d-\pi^e$ = the real deposit rate of interest ( $d$ is the nominal deposit rate and $\pi^e$ is expected inflation.

$R$ is the average return to physical capital

Complementarity appears in the partial derivatives:

$$\frac{\partial(M/P)}{\partial(I/Y)}>0, \qquad \frac{\partial(I/Y)}{\partial(d-\pi^e)}>0.$$

Mckinnon's (1973) view was that developing countries stress more on foreign aid, capital inflows or disguised subsidies from industrialized nations in their strategies for economic development. This however, does not solve the root cause of economic problems facing those countries and sometimes have damaging effects. Further, theoretical analyses of development also lay emphasis on the lack of resources and other real factors to the neglect of financial factors other than foreign exchange limitations on the capacity to import. With the assumption of self-finance nature of business in developing countries, Mckinnon asserted liberalization was required to channel external funds to large and small investors who can earn high marginal and intra-marginal rates of return. The assumption also signified the fact that complementarity exists between physical capital and real money balances. Hence positive and high interest rates stimulate savings and investment as long as interest rates do not exceed real rate of return on investment.



Shaw's (1973) debt-intermediation view, on the other hand, focuses on the role of deposit accumulation in explaining the lending potential of financial intermediation. In his monetary model, money is backed by productive investment loans to the private sector. The larger is the money stock in relation to the level of economic activity, the greater is the extent of financial intermediation between savers and investors through the banking system. Higher deposit rates encourage the inflow of deposits to banks, which in turn can increase lending, thereby stimulating externally financed investment. The debt-intermediation is based firmly on an inside money model. It produces a demand for money function as follows:

$$M/P = F(Y, v, d - \pi^e ...) \quad \text{.....(3)}$$

where $v$ is vector of opportunity costs in real terms of holding money. Shaw expects real yields on all forms of wealth, including money, to have a positive effect on savings ratio.

Complementarity does not apply here because investors are not constrained to self-finance. However, the two approaches complements each other because most projects are financed in part with own funds and in part with borrowings.

### 3.3 The specification of the model

The Mckinnon-Shaw model comprises two important hypotheses with respect to the impact of financial liberalization on savings, investment and growth. These are that:

- A rise in the real deposit rate leads to increased savings, and
- Income expands with the increase in real deposit rate as the quantum of investment as well as productivity of investment rises, among other factors.

Based on the theoretical underpinnings, the model is expanded to include other variables that influence financial savings and private investment.

$$FS = a_0 + a_1 RY + a_2 d - \pi^e + a_3 I/Y + e \quad \text{.....(4)}$$

$$I/Y = a_0 + a_1 d - \pi^e + a_2 TOT + a_3 RY + a_4 RER + a_5 YG + a_6 PCR + a_7 PSI + e \quad \text{.....(5)}$$

$FS$ = Financial Savings (Time Deposit + Demand Deposit)/income

$RY$ = Real GDP

$d - \pi^e$ = Real deposit rate of interest

$I/Y$ = Private investment-income ratio

$TOT$ = Terms of trade

$YG$ = Growth in GDP

$Y$ = income (GDP)

$RER$ = Real exchange rate

$PCR$ = Credit to private sector (%GDP)

$PSI$ = Public sector investment (%GDP)

$e$ = error term

The real deposit rate is positively related to real financial savings and private investment. The private investment ratio ($I/Y$), is in turn positively related to real financial savings or bank deposits, with real money balances complementary to investment. Economic agents have to accumulate money balances before they invest. Assuming rational expectations, the expected inflation is equal to the actual inflation, as agents are presumed to fully forecast inflation.

It has been hypothesized that private investment is affected positively by income level, as countries with higher income levels would tend to dedicate more of their wealth to domestic savings which would then be used to finance investment. Neoclassical investment theory suggests that private investment is positively related to the growth of real GDP (Greene and Villanueva, 1991).

Terms of trade are suggested to be another important determinant of investment in developing countries. This variable is often used to proxy external shocks to the economy. A negative terms of trade implies that more unit of exports are needed per unit of imports. This may worsen the current account deficit, which is an indicator for macroeconomic instability, and exert a negative effect on private investment. If the worsening terms of trade are generated by an increase in the price of imports this would tend to increase the consumer price index. If it is the effect of a reduction in export prices then export earnings will fall, which in turn will tend to reduce investment in that sector.

The real exchange rate can also affect the evolution of private investment. On one hand, just as suggested in Froot and Stein (1991), not only would devaluation reactivate the exportable sector of the economy, but it would also be favorable to the acquisition of local assets by foreign companies at a much lower price. Other authors like McCulloch (1989) reject this link between investment and exchange rate, suggesting that it is not the price of a domestic asset, but the rate of return that determines investment. When a country's currency is depreciated in real terms, not only the asset price falls, but also the nominal gain of the investment. This effect becomes particularly relevant in sectors producing non-exportable goods.

The effect of credit to the private sector on private investment is expected to be positive. Private firms in developing countries rely heavily on bank credit as a source of financing. On the empirical level, although the vast majority of studies seem to ascertain the positive impact of increases in private sector credit on private investment there are cases where these credits do not appear to have any effect on it. For example, Oshikoya (1994) found that increases in credit to the private sector were not associated with increases in private investment for Morocco, Tanzania, and Zimbabwe.

Public investment can also have differential impacts, and one of the following effects is expected to arise is the "crowding out" effect, in which the state displaces the private sector when the public investment increases in a country and competes for the appropriation of scarce (physical and financial) resources; and the "crowding in" effect that emphasizes the positive externalities (such as investments in infrastructure, anti-cyclical policies, public goods provision) and the complementarity that public investment has by inducing higher levels of private investment.

### 3.4 Estimation technique

The model was based on the linear multiple regression system. The Ordinary Least Squares (OLS) technique was employed. The choice of OLS technique is its ability to produce Linear Unbiased Estimators (BLUE). The intention of minimizing the errors also gives credence to the use of OLS.

Before estimation of this model, the time series characteristics of each variable were analyzed to ensure the variables were stationary. This was important so as to avoid problems associated with non-stationary time series such as spurious and inconsistent regression. Unit roots tests and cointegration analysis are important in order to determine the level of integration of the variables; and further, if the proposed model has got a long run solution that will enable the adoption of an error correction model. The order of integration of each variable was tested using the Augmented Dickey Fuller (ADF). In the case where some variables were not stationary, the Engle-Granger two-stage method was used to establish cointegrating relationship between the variables.

Diagnostics tests are used to specify model competence or failure. These include Auto regression test for autocorrelation residuals, white test for heteroskedasticity errors, normality test for the distribution of residuals and the Ramsey RESET test for the model stability and regression specification.

### 3.5 Data type and sources

The study will make use of time series data for period 1975-2005. The data sources include Bank of Ghana, International Financial Statistics Year Book of the International Monetary Fund, World Bank, Ghana Statistical Services and Ghana Investment Promotion Council.

# 4.0 CHAPTER FOUR: PRESENTATION AND ANALYSIS OF DATA

## 4.1 Introduction

This chapter presents the results of tests carried out and the estimation of the models in the preceding chapter. It includes tests for stationarity, tests for cointegration and the derivation, estimation and analysis of the empirical models.

## 4.2 Tests for Stationarity

For a regression model to be meaningful, it should reflect the relationship among stationary variables, with a constant mean and variance. A time series is stationary when its mean, variance and autocovariance (at various lags) remain the same no matter at what time we measure (Gujarati, 1995). If the data is non-stationary, differences need to be taken to make them stationary. Augmented Dickey-Fuller (ADF) Unit Root tests are employed to test for the presence of unit roots. This is necessary to avoid spurious correlation, misleading and incorrect regression results that might otherwise arise despite the absence of any correlation between the underlying series. Hence, to avoid this issue, the unit root test is done for all variables and the results presented below.

**Table 2: Results of the Augmented Dickey Fuller test for level variables**

| Variable | ADF statistic | Critical value | Lags | Remarks |
|---|---|---|---|---|
| $(d-\pi^e)$ | -1.902728* | -3.6752 | 1 | Non-stationary |
| PCR | 0.396205* | -3.6752 | 1 | Non-stationary |
| PSI | -0.669891* | -3.6752 | 1 | Non-stationary |
| RER | -1.551721* | -3.6752 | 1 | Non-stationary |
| TOT | -0.983719* | -3.6752 | 1 | Non-stationary |
| RY | 2.527407* | -3.6752 | 1 | Non-stationary |
| YG | -3.503064* | -3.6752 | 1 | Non-stationary |
| I/Y | -0.432236* | -3.6752 | 1 | Non-stationary |
| FS | -1.727475* | -3.6752 | 1 | Non-stationary |

ADF: * Significant at 1%, ** Significant at 5%, *** Significant at 10%

**Table 3: Results of Augmented Dickey Fuller test for 1st differenced variables**

| Variable | ADF statistic | Critical value | lags | Remarks |
|---|---|---|---|---|
| $(d-\pi^e)$ | -6.604787* | -4.3226 | 1 | Stationary |
| PCR | -4.414511* | -4.3226 | 1 | Stationary |
| PSI | -3.925800** | -3.5731 | 0 | Stationary |
| RER | -4.555470* | -4.3226 | 1 | Stationary |
| TOT | -6.451558* | -4.3226 | 1 | Stationary |
| RY | -3.290215*** | -3.2239 | 1 | Stationary |
| YG | -4.750683* | -4.3226 | 1 | Stationary |
| I/Y | -4.136097** | -3.5796 | 1 | Stationary |
| FS | -6.393159* | -4.3226 | 1 | Stationary |

ADF: * Significant at 1%, ** Significant at 5%, *** Significant at 10%

### 4.3 Test for Co-integration

Since all the variables in the models are not stationary but I(1), co-integration test has to be done to see if there is indeed a long run relationship among the variables. Non-stationarity economic series are said to be cointegrated if they can be transformed into a single series that exhibits stationarity. Ideally, any cointegration analysis should be preceded by identifying the order of integration of each series by running stationarity tests to decide the number of times a series should be differenced to achieve stationarity. If a series must be differenced $d$ times before it becomes a stationary non-deterministic AR/ARMA representation, then it contains d unit roots and is said to be integrated of order d, denoted by I(d). In general, using this definition, any linear combination of the two series will also be I(d). The residuals taken from cointegration regression are valid, which are then built into an error correction model (ECM). It restricts the long-run behavior of the endogenous variables to converge to their cointegration relationships at the same time allowing for short-run dynamics.

The Engle-Granger two-stage method is employed to test for cointegration among the variables. According to this method, to see the presence of cointegration, it is sufficient to see if the error term is stationary or follows an I(0) process. The results revealed a

cointegrating relationship amongst the financial savings and private investment functions. Using the Augmented Dickey-Fuller test the residual term of the savings equation is found to be stationary (I(0)) with ADF test statistics -3.6852 against 1%, -2.9705 against 5% and -2.6242 against 10% critical values. Also, the residual term of the investment function is stationary (I(0)) with ADF test statistics -3.6852 against 1%, -2.9705 against 5% and -2.6242 against 10% critical values. OLS estimation was used to establish the long-run and the cointegrating relationship of each equation (see Tables 6 and 9). From these long-run equations, the ADF tests of the residuals are given in Table 4 and 5.

**Table 4: Cointegration Results for Financial Savings function**

| Variable | ADF statistic | Critical Value | Lags | Remarks | Order of Integration |
|---|---|---|---|---|---|
| Residual | -3.234438** | -2.9705 | 1 | Staionary | I(0) |

ADF: * Significant at 1%, ** Significant at 5%, *** Significant at 10%

**Table 5: Cointegration Results for Private Investment function**

| Variable | ADF statistic | Critical value | Lags | Remarks | Order of integration |
|---|---|---|---|---|---|
| Residual | -5.040966* | -3.6852 | 1 | Stationary | I(0) |

ADF: * Significant at 1%, ** Significant at 5%, *** Significant at 10%

## 4.4 Derivation of empirical model for financial savings and private investment functions

In order to consider feedback effects amongst the variables, the predicted values of real deposit rate, private investment ratio, and GDP growth are used in the estimation. The predicted values are computed by identifying the endogenous and exogenous variables in each equation. The endogenous variables are regressed on their lags and the lags of the

exogenous variables. The predicted values are then substituted in their original equations for estimation.

Both equations have long-run and short-run dynamics. Thus the empirical derivation of the long run and ECM for financial savings and private investment ratio equations are given as:

$$FS = \alpha_0 + \alpha_1 P(d - \pi) + \alpha_2 P(I/Y) + \alpha_3 RY + d + \varepsilon_1 \quad \text{.....(6)}$$

$$I/Y = a_0 + a_1\left(d - \pi^e\right) + a_2 RY + a_3 P(YG) + a_4 PCR + a_5 PSI + a_6 RER + a_7 TOT + \varepsilon_2 \quad \text{.....(7)}$$

$FS$ = represents real financial savings comprising of demand deposit plus time, savings and foreign currency deposits as a ratio of income.

$\alpha_i$ and $a_i$ = long run estimates

The real deposit rate, $(d - \pi)$ is derived as the deposit rate minus annual inflation rate. It impacts positively on financial savings.

P $(d - \pi)$ is predicted real deposit rate

P $(Y/I)$ is predicted private investment ratio

P $(YG)$ is predicted GDP growth

$d$ = represent a dummy in the financial savings equation to capture the effect of shocks during the periods 1975-78 and 1987-89.

Real GDP $(RY)$, private investment ratio $(I/Y)$, public sector investment $(PSI)$, real exchange rate $(RER)$ and terms of trade $(TOT)$ are used as given by data.

The short-run models for financial savings and private investment ratio are as follows:

$$\Delta FS = \beta_0 + \beta_1 \Delta P(d - \pi) + \beta_2 \Delta P(Y/I) + \beta_3 \Delta RY + \gamma ECM_{t-1} + \varepsilon_3 \quad \text{.....(8)}$$

$$\Delta(I/Y) = b_0 + b_1 \Delta(d - \pi^e) + b_2 \Delta RY + b_3 \Delta P(YG) + b_4 \Delta PCR + b_5 \Delta PSI + b_6 \Delta RER + b_7 \Delta TOT + \lambda ECM_{t-1} + \varepsilon_4 \quad \text{.....(9)}$$

where $\beta_i$ and $b_i$ =short run effects

$\gamma$ and $\lambda$ =speed of adjustment

The equations for estimation are 6, 7, 8 and 9.

### 4.5 Estimation results for financial savings and private investment ratio

The long-run and ECM estimates for financial savings are presented in the Table 6 and 7 below:

**Table 6: Long run results for financial savings equation**

| Variable | Coefficient | Std. Error | t-Statistic | p.value |
|---|---|---|---|---|
| P($d-\pi^e$) | -0.016494 | 0.002701 | -6.106928 | 0.0000 |
| P(I/Y) | -0.037102 | 0.027544 | -1.347001 | 0.1901 |
| RY | 0.000683 | 9.24E-05 | 7.390926 | 0.0000 |
| D | 0.185719 | 0.151354 | 1.227051 | 0.2312 |
| C | -1.565834 | 0.277385 | -5.644974 | 0.0000 |

**Diagnostic Tests for Savings Model**

Dependent Variable=FS

R-squared=0.848982

Adjusted R-square=0.824819

F-statistic=35.13586(0.000000)

Jarque-Bera=0.599316(0.741072)

Ramsey-Reset Stability test

F-stat=1.807995(0.191320)

ARCH

F-stat=0.907462(0.0.349240)

DW=1.6

The sample regression gave adjusted R-squared to be 0.82. This implies that about 82% of the variations in financial savings in Ghana are explained by the independent variables. The F-statistic is given as 35.13586 at less than 1% significance level.

The Jarque-Bera, Ramsey-Reset and the ARCH tests were all found to be within acceptable bounds. Thus, the test for robustness of the model shows that there is no problem of specification error, instability of the model and the residuals are distributed normally. The DW statistic of 1.6 showed that there is no (serious) serial correlation that biases the results.

In the long run, real GDP had the expected positive sign while real deposit rate and private investment ratio had unexpected signs. The constant term was negative and significant at less than 1% level. The dummy variable was positive but had insignificant effect on financial savings in Ghana. The coefficient of real deposit rate was significantly negative at 1% level, although the impact was small. This therefore disputes the Mckinnon-Shaw theory that real deposit rate induces more savings in the case of Ghana. This is in line with the findings of Mwega et al. (1990) and Uremadu (2007). The latter study suggested that nominal rather than real savings interest is the main determinant of financial savings in Nigeria. The coefficient of private investment ratio was not significantly different from zero, therefore implying the variable is not important in explaining financial savings in Ghana. The coefficient of real income was positive and significant. The significance of real income is good for the economy since it has the tendency to increase the propensity to save more. Hence, real income is an important determinant of financial savings in Ghana.

Before the Error Correction Model for financial savings was estimated, the general form of the model was considered by using variables lagged by one period. This was done to take into account the dynamic patterns in the model. The results as shown in Table 7 gave an over-parameterized model.

**Table 7: The General Model Results**

| Variable | Coefficient | Std. Error | t-Statistic | p.value |
|---|---|---|---|---|
| $\Delta P(d-\pi^e)$ | -0.032789 | 0.023615 | -1.388482 | 0.1819 |
| $\Delta P(d-\pi^e)(-1)$ | 0.000295 | 0.004266 | 0.069232 | 0.9456 |
| $\Delta P(I/Y)$ | -0.111017 | 0.081059 | -1.369586 | 0.1877 |
| $\Delta P(I/Y)(-1)$ | -0.043475 | 0.033514 | -1.297213 | 0.2109 |
| $\Delta RY$ | 0.002501 | 0.001978 | 1.264304 | 0.2222 |
| $\Delta RY(-1)$ | -0.000400 | 0.001355 | -0.295228 | 0.7712 |
| $\Delta FS(-1)$ | -0.483266 | 0.828987 | -0.582960 | 0.5672 |
| D | 0.364041 | 0.156902 | 2.320187 | 0.0323 |
| ECM(-1) | -1.387132 | 0.384769 | -3.605099 | 0.0020 |
| C | -0.470068 | 0.163803 | -2.869704 | 0.0102 |

Dependent variable=FS

R-squared=0.555810

Adjusted R-squared=0.333715

F-statistic=2.502579(0.046646)

The results as presented are over-parameterized. Thus, the general model was reduced to a more parsimonious one. This was done by assigning zero coefficients to those variables with low t-statistic while checking for the significance of the f-statistic and other tests. The results for the reduced form of the model are shown in Table 8.

**Table 8: The Error Correction Model results for financial savings**

| Variable | Coefficient | Std. Error | t-Statistic | p.value |
|---|---|---|---|---|
| $\Delta P(d-\pi^e)$ | -0.021939 | 0.006745 | -3.252723 | 0.0038 |
| $\Delta P(I/Y)$ | -0.110734 | 0.078807 | -1.405130 | 0.1761 |
| $\Delta P(I/Y)(-1)$ | -0.041668 | 0.031271 | -1.332493 | 0.1970 |
| $\Delta RY$ | 0.001681 | 0.000462 | 3.639478 | 0.0015 |
| D | 0.356286 | 0.147694 | 2.412318 | 0.0251 |
| ECM(-1) | -1.451807 | 0.352852 | -4.114496 | 0.0005 |
| C | -0.454797 | 0.151730 | -2.997418 | 0.0069 |

Diagnostic Test

Dependent Variable=$\Delta$FS

R-squared=0.539087

Adjusted R-square=0.407398

F-statistic=4.093625(0.007111)

Jarque-Bera=1.229394(0.540805)

Ramsev-Reset Stability test

F-stat=0.348064(0.0.561818)

ARCH

F-stat=0.392903(0.536460)

DW=1.5

The estimates pass all the diagnostic tests.

In the short-run dynamic Error Correction Model, the coefficient of real deposit rate, private investment ratio and their lags all had negative signs while real income and the

dummy variable had positive signs. However, the coefficient of real deposit rate, real income and the dummy variable were significant and that of the private investment ratio and its lag were not significantly different from zero. Therefore, the main determinants of financial savings mobilization in Ghana are the real deposit rate, real income and the dummy (shocks) as given by the model. The adjustment coefficient of approximately (-1.45) indicates that the gap between the actual and the equilibrium financial savings is more than fully closed in one year.

The long-run and ECM estimates for private investment are presented in Tables 9 and 10 as follows:

**Table 9: Long run estimates for Private investment**



| Variable | Coefficient | Standard error | t-statistic | p.value |
|---|---|---|---|---|
| $d-\pi^e$ | -0.000113 | 0.014025 | -0.008044 | 0.9937 |
| RY | 0.001175 | 0.000806 | 1.457056 | 0.1592 |
| PSI | -0.608877 | 0.131807 | -4.619474 | 0.0001 |
| PCR | 0.591058 | 0.194374 | 3.040830 | 0.0060 |
| RER | 0.008250 | 0.003271 | 2.521718 | 0.0194 |
| TOT | -0.020189 | 0.019068 | -1.058780 | 0.3012 |
| P(YG) | 0.032671 | 0.208311 | 0.156836 | 0.8768 |
| C | 2.799809 | 3.420873 | 0.818449 | 0.4219 |

**Diagnostic tests**

Dependent variable=(I/Y)

R-squared=0.905675

Adjusted R-squared=0.875663

F-statistic=30.17671(0.000000)

Jarque-Bera=0.567980(0.752774)

Ramsey-Reset Stability test

F-stat=2.173245(0.155264)

ARCH

F-stat=0.006114(0.938252)

DW=2.0

The estimates did pass all the diagnostic tests.

The estimated results show that the constant is positive but insignificant. The coefficients of credit to the private sector and real exchange rate had positive signs while that of private sector investment had a negative sign. Moreover, they were all important in explaining private investment in Ghana.

It was found that a 1% rise in credit to the private sector leads to a 0.59% increase in private investment ratio in Ghana at 5% level in the long run. Also, private investment ratio reduces by 0.60% as a result of 1% increase in public sector investment. This confirms the theory that public sector investment can have differential impacts on private investment. In this case, it implies that increase in public sector investment results in a "crowding out" effect which displaces the private sector. Also, the coefficient of real exchange rate implies that a devaluation/depreciation of the cedi by 1% leads to about 0.0082% increase in private investment ratio in Ghana.

The other variable, namely; real GDP, terms of trade and GDP growth had their expected signs as predicted by theory while that of real deposit rate was negative. However, they were all not important determinants of private investment as given by the model.

The estimated results of the short-run model are presented in Table 10 below:

**Table 10: Error Correction Model results for private investment ratio**

| Variable | Coefficient | Standard error | t-statistic | p.value |
|---|---|---|---|---|
| $\Delta(d-\pi^e)$ | -0.004971 | 0.009479 | -0.524411 | 0.6055 |
| ΔRER | 1.036031 | 0.243265 | 4.258864 | 0.0003 |
| ΔTOT | -0.016398 | 0.016142 | -1.015856 | 0.3213 |
| ΔRY | 0.000643 | 0.001439 | 0.446441 | 0.6598 |
| ΔPYG | 0.113230 | 0.152997 | 0.740081 | 0.4674 |
| ΔPSI | -0.040541 | 0.205888 | -0.196910 | 0.8458 |
| ΔPCR | 0.450992 | 0.183841 | 2.453163 | 0.0230 |
| ECM(-1) | -1.155572 | 0.209276 | -5.521761 | 0.0000 |
| C | 0.016487 | 0.364081 | 0.045283 | 0.9643 |

**Diagnostic Tests**

Dependent variable=Δ(I/Y)

R-squared=0.734445

Adjusted R-squared=0.645927

F-statistic=8.297091(0.000071)

Jarque-Bera=1.058543(0.589034)

Ramsey-Reset Stability test

F-stat=0.049900(0.825504)

ARCH

F-stat=0.623039(0.437060)

DW=1.8

The estimates did pass all the diagnostic tests.

In the short-run, real deposit rate, public sector investment and terms of trade are negatively signed whereas real income and GDP growth are positively signed. However, their coefficients were all not different from zero. Hence, these variables are all not important in explaining private investment. The coefficients of credit to the private sector and real exchange rate are significant; hence, private sector credit and real exchange rate are important in explaining private investment in Ghana in the short-run.

The results showed that the short run changes in credit to the private sector had a significantly positive effect on private sector investment at 5% level. Thus, a 1% increase in credit to the private sector is associated with 0.45% increase in private investment. The positive and significant effect of real exchange rate implied that a depreciation of the domestic currency by 1% increases private investment by 1.03%.

The estimated coefficient of the error correction term, ECM (-1) had the expected sign being negatively related to private investment and significant at 1% level. Therefore, the gap between the actual and the equilibrium private investment ratio is fully closed in one year.

### 4.6 Test of hypotheses

The hypotheses stated in chapter one are as follows:

1. $H_0$: Financial sector liberalization does not induce an increase in financial savings.

   $H_1$: Financial sector liberalization induces an increase in financial savings.

2. $H_0$: Real deposit rate has a positive effect on private investment ratio.

   $H_1$: Real deposit rate has a negative effect on private investment ratio.

3. $H_0$: There is no complementarity between savings and investment.

$H_1$ : There is complementarity between savings and investment.

Based on the results of the analysis, financial sector liberalization (increase in interest rate) was found to be negatively related to financial savings in Ghana contrary to the theory put forward by Mckinnon-Shaw. This was true for both the short-run and long-run analyses. Hence, the null hypothesis is accepted, which implies that financial liberalization does not induce an increase in financial savings in Ghana in the period under review.

The second null hypothesis indicates that real deposit rate is positively related to private investment ratio according to Mckinnon-Shaw's model, that is, the partial derivative of real deposit rate to private investment is positive. However, the finding showed that real deposit rate is also negatively associated with private investment ratio in Ghana. This holds for both the short and long-run equations. Thus, the null hypothesis is rejected and the alternative accepted.

The third null hypothesis states that there is no complementarity between real financial savings and private investment ratio. Private investment ratio was found to be negatively related to financial savings, although the coefficient was not significant. This finding also contradicts the Mckinnon-Shaw's complementarity hypothesis which states that the partial derivatives of savings to investment ratio should be positive. The null hypothesis is therefore accepted.

# 5.0 CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

## 5.1 Introduction

This chapter presents the summary, conclusions and recommendations of the study. It also includes some limitations of the study and suggestions for future research.

## 5.2 Summary

The main objectives of the study were to test for the Mckinnon-Shaw hypotheses, that an increase in real deposit rate induces an increase in financial savings and private investment ratio, and also that complementarity exists between financial savings and private investment ratio in Ghana. The study makes use of data covering the period 1975-2005. Both theoretical and empirical literatures were reviewed. The estimation technique employed was Ordinary Least Square which incorporated an error correction model to capture both short-run and long-run adjustment mechanisms. The main determinants of financial savings ratio in Ghana according to the results of the study were real deposit rate and real income. On the other hand, the main factors important in explaining private investment were real exchange rate, public sector investment and credit to the private sector. The regression results indicated that whereas the coefficient of real deposit rate is significant, it has an inverse effect on financial savings in Ghana. Also, it was found that real deposit rate has a negative impact on private investment ratio in Ghana, although the coefficient was not significant. Hence, complementarity does not exist between financial savings and private investment ratio in Ghana as postulated by the Mckinnon-Shaw model. The coefficient of adjustment in both equations was significant and at least 100%.

## 5.3 Conclusions

The outcome of the regression results for the financial savings equation suggest that in the long-run, real deposit rate of interest and real income are the important variables in determining financial savings in Ghana. Private investment ratio had unexpected sign contrary to theory. However, the coefficient was insignificant. The coefficient of the dummy variable was positive but also insignificant in the long-run.

In the short-run dynamic analysis of the financial savings equation, only the coefficients of real income and the dummy variable had significant positive effect on financial savings mobilization in Ghana whereas that of private investment ratio and its lags had negative effects. The coefficient of real deposit rate was also found to be negatively associated with financial savings mobilization in Ghana. The adjustment coefficient was significant.

The main determinants of private investment under the review period were credit to the private sector and real exchange rate, both in the long and short-run analyses. Public investment was important in the long-run in explaining private investment Ghana; however, it was not important in the short-run. They were all correctly signed according to theory. The coefficients of the rest of the variables (real deposit rate, real income, GDP growth and terms of trade) were all insignificant both in the long-run and short-run. The adjustment coefficient was also significant.

## 5.4 Policy implications

Based on the regression results, real deposit rate was found to be negatively related to financial savings contrary to the Mckinnon-Shaw hypothesis. This could be attributed to the fact that major banks such as the commercial banks usually deal with large established firms and entities who deposit huge amount of money. This can be manifested in the huge minimum deposit required by the commercial banks. As a result a chunk of small savers and households are not attracted to deposit with commercial banks. This in

turn may lead to the evolution of other forms of savings institutions and associations such as the rural banks and the informal financial sector in the economy. According to Aryeetey et al. (1991) there is a significant growth of informal financial sector in the economy and that financial savings which enhance intermediation, are less important than non-financial savings in Ghana. There could also be income and financial liberalization effects which leads to increase in consumption and expansion in the access to consumer credit respectively, thereby reducing financial savings. Again, the real deposit rate could be competing with the other rates in the market such as the T-bills and bonds among others. It is therefore recommended policies be geared towards implementing more attractive financial instruments and products that will draw the masses of the people. This can be done by reducing commercial banks' minimum deposit requirement, adopting methods such as publicity, public relations activity or campaign, delivering prompt service to depositors and good environment that can attract depositors. Financial liberalization should also be accompanied by adequate institutional provision such as fiscal discipline among other factors in order to reap the full benefits and to avoid financial crises.

Again, real deposit rate was found to have a negative impact on private investment ratio, although the coefficient was not significant. The Mckinnon-Shaw hypothesis assumes smooth transmission of funds and ignores rigidities such as collateral security, information asymmetry and credit rationing associated with market forces. These have the tendency of limiting access to funds for investment purposes although funds may be available. It can also be expected that an increase in real deposit rate might lead to an increase in real lending rate which may be due to high likelihood of loan default or if commercial banks have to at least maintain their profit margin. This in turn will lead to a reduction in private investment. Hence, commercial banks should ease the demand of collateral and any rigidity associated with accessibility of funds by investors but rather stir up supervision and monitoring of their customers, to ensure they use the funds for the intended purposes. To this end, government policies can also help to facilitate financial intermediation process by ensuring stability in the financial system, establish public

credit registries and also enforce the legal system needed for conflict resolution and contract enforcement.

The coefficient of real income was positive and significant in determining financial savings mobilization in Ghana. This is proper for the economy, thus the government should encourage growth-enhancing policies geared towards increasing productivity while putting inflation under control in order not to wipe out the benefit associated with increases in income.

Also, public sector investment had a negative significant effect on private investment ratio in Ghana. Government deficit financing of public investment has the tendency of crowding out the private sector investment. It is therefore recommended that the government restrict itself from undertaken major investments in the country that competes with resources available to the private sector but rather provide the stable environment that will encourage greater private sector participation in economic activities.

The results again indicate that real exchange rate impacts positively on private investment. This proposes that a real depreciation/devaluation of the cedi will be favorable to the exportable sector which will in turn boost the production and business sector of the economy. Devaluation also has the tendency to attract foreign companies and investors to acquire local asset at a lower rate. Monetary policy also needs to be consistent with the chosen exchange rate regime, which must give reasonable assurance that the country will avoid an unsustainably large current account deficit.

Finally, as given by the findings, the effect of credit to the private sector on private investment is positive and significant. Banks should be encouraged to direct more credit to the private sector at the expense of the public sector to avoid crowding out effect that may occur.

## 5.5 Limitations of the study

The interest rate used in the study is real deposit rate of interest as employed by the Mckinnon-Shaw model. However, with regards to mobilizing domestic financial resources, there are a number of interest rates to be considered such as Treasury bill rates, bond rates among others.

Also, the scope of the study is limited to financial savings mobilized by commercial banks. Hence, the results might not be representative of the entire formal financial institutions (banks) in the country. There are categories of banks that can be included in the study such as development banks, investment banks and others.

The study employs the Mckinnon-Shaw's model which has been widely criticized by many economists over the years about its focus on the effect of financial repression in developing countries as at the time. Many empirical investigations have been carried out in examining the literature in varying contexts. Thus, other variables can be incorporated into the model to capture institutional and other factors that play a role in reaping the benefits of financial liberalization process.

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## APENDIX 1: PREDICTED VALUES

| Year | Real deposit rate $(d-\pi^e)$ | Private investment ratio $(I/Y)$ | Growth in GDP $YG$ |
|---|---|---|---|
| 1976 | -67.7524 | 4.939849 | 2.55 |
| 1977 | -70.4684 | 4.231118 | 5.42 |
| 1978 | -69.8874 | 3.147836 | 5.44 |
| 1979 | -35.4045 | 3.042007 | 3.17 |
| 1980 | -36.3843 | 3.205034 | 2.25 |
| 1981 | -36.9093 | 3.279957 | -0.14 |
| 1982 | -39.5673 | 1.781488 | 4.77 |
| 1983 | -42.9163 | 3.362749 | 3.06 |
| 1984 | -44.5709 | 1.15371 | 5.96 |
| 1985 | -38.7739 | 3.291594 | 4.81 |
| 1986 | -34.5089 | 4.152291 | 4.99 |
| 1987 | -31.8949 | 4.169492 | 4.41 |
| 1988 | -29.3637 | 4.145285 | 6.22 |
| 1989 | -25.8931 | 4.623795 | 8.00 |
| 1990 | -21.6133 | 5.062486 | 8.51 |
| 1991 | -20.2397 | 5.069139 | 8.67 |
| 1992 | -15.7163 | 5.876498 | 9.56 |
| 1993 | -16.1609 | 6.211544 | 8.24 |
| 1994 | -12.3339 | 6.426286 | 8.60 |
| 1995 | -38.4158 | 8.079528 | 9.51 |
| 1996 | -7.0639 | 6.413352 | 9.82 |
| 1997 | -4.7599 | 7.16903 | 7.48 |
| 1998 | -30.8398 | 9.341079 | 5.38 |
| 1999 | -22.4238 | 9.9577 | 8.06 |
| 2000 | -16.3798 | 10.25268 | 9.44 |
| 2001 | -10.1958 | 10.46822 | 10.88 |
| 2002 | -6.6958 | 10.78898 | 10.23 |
| 2003 | -2.2218 | 11.34524 | 9.43 |
| 2004 | 3.8962 | 11.65817 | 12.21 |
| 2005 | 11.0326 | 12.58285 | 13.19 |

Sources: World Bank, World Development Indicators, 2007 and Ghana Statistical Services.

Note: The data is computed by author with original data sourced from the above mentioned sources.

## APENDIX 2: FINANCIAL SAVINGS RATIO

| Year | Financial Savings/GDP<br><br>FS |
|---|---|
| 1975 | 1.651515 |
| 1976 | 1.765697 |
| 1977 | 1.586022 |
| 1978 | 1.330157 |
| 1979 | 1.112491 |
| 1980 | 0.950938 |
| 1981 | 0.798007 |
| 1982 | 0.846595 |
| 1983 | 0.504032 |
| 1984 | 0.513417 |
| 1985 | 0.631103 |
| 1986 | 0.619767 |
| 1987 | 0.629759 |
| 1988 | 0.622146 |
| 1989 | 0.001034 |
| 1990 | 0.86588 |
| 1991 | 1.128962 |
| 1992 | 1.389465 |
| 1993 | 1.399675 |
| 1994 | 1.535178 |
| 1995 | 1.449167 |
| 1996 | 1.412581 |
| 1997 | 1.682227 |
| 1998 | 1.604558 |
| 1999 | 1.566819 |
| 2000 | 1.639325 |
| 2001 | 1.821994 |
| 2002 | 2.097609 |
| 2003 | 2.049842 |
| 2004 | 2.199271 |
| 2005 | 2.040571 |

Source: Computed from International Monetary Fund; International Financial Statistics, 2007.

## APPENDIX 3: OTHER VARIABLES

| Year | Real exchange rate index RER | Private Investment ratio I/Y | Public Investment ratio PSI |
|---|---|---|---|
| 1975 | 580 | 6.4 | 5.2 |
| 1976 | 380 | 5.3 | 4.5 |
| 1977 | 160 | 4.6 | 4.6 |
| 1978 | 150 | 3.3 | 3.1 |
| 1979 | 150 | 4.7 | 1.2 |
| 1980 | 100 | 4.2 | 1.9 |
| 1981 | 50 | 3.0 | 1.7 |
| 1982 | 50 | 2.6 | 0.9 |
| 1983 | 50 | 3.0 | 0.8 |
| 1984 | 60 | 5.2 | 1.6 |
| 1985 | 430 | 7.3 | 2.2 |
| 1986 | 280 | 7.1 | 2.2 |
| 1987 | 350 | 6.9 | 3.5 |
| 1988 | 370 | 7.1 | 3.7 |
| 1989 | 370 | 8.5 | 4.9 |
| 1990 | 330 | 7.5 | 4.7 |
| 1991 | 310 | 8.7 | 8.2 |
| 1992 | 340 | 4.7 | 9.1 |
| 1993 | 290 | 4.9 | 9.8 |
| 1994 | 470 | 8.1 | 10.2 |
| 1995 | 340 | 4.3 | 11.5 |
| 1996 | 320 | 2.4 | 12.2 |
| 1997 | 310 | 4.2 | 10.4 |
| 1998 | 340 | 9.4 | 10.2 |
| 1999 | 310 | 11.7 | 9.8 |
| 2000 | 510 | 14.8 | 9.2 |
| 2001 | 550 | 13.8 | 7.5 |
| 2002 | 530 | 13.3 | 7.2 |
| 2003 | 460 | 13.6 | 7.4 |
| 2004 | 500 | 14.3 | 9.9 |
| 2005 | 510 | 17.8 | 11.4 |

Source: Ghana Statistical services and Ghana Investment Promotion Council.

## APPENDIX 4: OTHER VARIABLES

| Year | Real GDP *RY* | Terms of Trade index TOT | Private Sector Credit PCR |
|---|---|---|---|
| 1975 | 2,600.27 | 172 | 6 |
| 1976 | 2,508.47 | 145 | 6 |
| 1977 | 2,565.52 | 191 | 5 |
| 1978 | 2,782.97 | 176 | 4 |
| 1979 | 2,677.98 | 176 | 3 |
| 1980 | 2,671.73 | 205 | 2 |
| 1981 | 2,586.83 | 187 | 2 |
| 1982 | 2,435.38 | 126 | 2 |
| 1983 | 2,336.65 | 172 | 2 |
| 1984 | 2,538.50 | 133 | 2 |
| 1985 | 2,667.75 | 122 | 3 |
| 1986 | 2,806.45 | 136 | 4 |
| 1987 | 2,941.01 | 132 | 3 |
| 1988 | 3,106.54 | 106 | 3 |
| 1989 | 3,264.53 | 100 | 6 |
| 1990 | 3,373.21 | 103 | 5 |
| 1991 | 3,551.38 | 96 | 4 |
| 1992 | 3,689.15 | 89 | 5 |
| 1993 | 3,872.50 | 95 | 5 |
| 1994 | 3,999.10 | 106 | 5 |
| 1995 | 4,160.00 | 108 | 5 |
| 1996 | 4,351.20 | 113 | 6 |
| 1997 | 4,533.90 | 124 | 8 |
| 1998 | 4,746.70 | 110 | 9 |
| 1999 | 4,956.90 | 100 | 13 |
| 2000 | 5,142.10 | 104 | 14 |
| 2001 | 5,357.10 | 112 | 12 |
| 2002 | 5,600.80 | 117 | 12 |
| 2003 | 5,894.70 | 96 | 12 |
| 2004 | 6,223.52 | 85 | 13 |
| 2005 | 6,588.73 | 87 | 16 |

Sources: Bank of Ghana, World Bank: World Development Indicators, 2007